

Chapter 3: Wireless

This chapter provides only a subset of Cisco products and part numbers.

Wireless At-a-Glance		
Product	Features	Page
ENTERPRISE WIRELESS		
Access Points and Client Devices		
Cisco Aironet 3500 Series Access Points *NEW PRODUCT*	<ul style="list-style-type: none"> • Cisco Aironet 3500 Series Access Points with CleanAir technology are the first access points to actively avoid wireless interference using ASIC-based intelligence • Provides standard 802.3af Power over Ethernet • 3500i model has internal antennas for typical office deployments • 3500e model has external antenna connectors and extended operating temperatures for challenging environments • Offers easy retrofits to existing Cisco Aironet 1130 and Aironet 1240 Series mounting brackets to simplify 802.11n migration • Cisco M-Drive technology provides the following benefits: <ul style="list-style-type: none"> - Cisco ClientLink technology improves reliability and coverage for established clients. - BandSelect improves 5-GHz client connections in mixed client environments. - VideoStream uses multicast to improve multimedia applications. • Available in a lightweight version only 	3-3
Cisco Aironet 1140 Series Access Points	<ul style="list-style-type: none"> • 802.11n AP designed for simple deployment and energy efficiency. • Sleek design blends into enterprise environments. • Easy to deploy and offers efficient power with standard 802.3af PoE. • Cisco M-Drive Technology provides the following benefits: <ul style="list-style-type: none"> - ClientLink improves reliability and coverage for legacy clients - BandSelect improves 5 GHz client connections in mixed client environments - VideoStream uses multicast to improve multimedia applications - Optional WirelessPLUS software allows the access point to be configured to support the OfficeExtend solution for wireless teleworking. • Available in standalone or lightweight. 	3-7
Cisco Aironet 1260 Series Access Points *NEW PRODUCT*	<ul style="list-style-type: none"> • 802.11n rugged indoor access points are designed for challenging RF environments that require connectorized antennas, a rugged metal enclosure, and a broad operating-temperature range • Provides power with standard 802.3af Power over Ethernet (PoE) • Combined data rates of up to 600 Mbps provide mobile access to high-bandwidth data, voice, and video applications. • Cisco M-Drive technology provides the following benefits: <ul style="list-style-type: none"> - Cisco ClientLink technology improves reliability and coverage for established clients. - BandSelect improves 5-GHz client connections in mixed client environments. - VideoStream uses multicast to improve multimedia applications. • Available in a lightweight version only; standalone versions will be available later in 2010 	3-10
Cisco Aironet 1250 Series Access Points	<ul style="list-style-type: none"> • 802.11n rugged indoor AP designed for challenging RF environments that require connectorized antennas, a rugged metal enclosure, and a broad operating temperature range. • Combined data rates of up to 600 Mbps provide mobile access to high-bandwidth data, voice, and video applications. • Cisco M-Drive Technology provides the following benefits: <ul style="list-style-type: none"> - ClientLink improves reliability and coverage for legacy clients - BandSelect improves 5 GHz client connections in mixed client environments - VideoStream uses multicast to improve multimedia applications • Available in standalone or lightweight. 	3-13
Cisco Aironet 1240 Series Access Points	<ul style="list-style-type: none"> • Rugged 802.11a/b/g AP designed for indoor industrial deployments and installations that require antenna versatility. • Ideal for factories, warehouses, and retailers. • Operating temperature range and UL 2043 certification for plenum rating requirements set by local fire codes support installation in environmental air spaces. • Available in standalone or lightweight. 	3-16
Cisco Aironet 1130 Series Access Points	<ul style="list-style-type: none"> • Dual-band 802.11a/b/g indoor AP. • Cost-compelling solution for easy deployment in offices and similar facilities. • Optional WirelessPLUS software allows the access point to be configured to support the OfficeExtend solution. • Available in standalone or lightweight. 	3-18

Cisco Aironet 1520 Series Access Points *NEW UPDATES*	<ul style="list-style-type: none"> · Flexible, secure mesh platform for demanding environments · Enables cost-effective and scalable deployment of secure outdoor wireless LANs. · Multiple-radio support (802.11 b/g, licensed for 4.9-GHz public safety applications). · Improved 802.11 b/g radio sensitivity and range performance with maximal ration combining (MPC) · NEMA Type 4X certified enclosure, FIPS 140-2 certifiable 	3–19
Cisco Aironet 1400 Series Wireless Bridge	<ul style="list-style-type: none"> · Support both point-to-point and point-to-multipoint configurations. · Range and throughput support data rates up to 54 Mbps. · Enhanced security mechanisms based on 802.11 standards. · Ruggedized enclosure optimized for harsh outdoor environments with an extended operating temperature range. 	3–22
Cisco Aironet 1300 Series Access Points	<ul style="list-style-type: none"> · Configurable for AP bridge, or workgroup bridge roles. · Support for both point-to-point or point-to-multipoint configurations. · Industry-leading range and throughput, supporting 802.11 b/g 2.4 GHz with data rates up to 54 Mbps. · Ruggedized enclosure optimized for harsh outdoor environments with extended operating temperature range. · Integrated or optional external antennas for flexibility in deployment. 	3–23
Cisco Aironet Wireless LAN Client Adapters	<ul style="list-style-type: none"> · Cisco Aironet 802.11a/b/g CardBus Wireless LAN Client Adapter, with the Cisco Wireless Security Suite and support for Wi-Fi Protected Access (WPA), offer secure network communications. · Flexible, easy configuration and management. · High-performance 54-Mbps connectivity in the 2.4- and 5-GHz bands. · Exceptional range and throughput. · World mode for international roaming. 	3–25
Cisco Secure Services Client	<ul style="list-style-type: none"> · Software application allows businesses of all sizes to deploy single 802.1x authentication framework across endpoint devices to enable access to both wired and wireless networks. · Supports Federal Information Processing Standards (FIPS). · Simple end-user experience (two-click connect, integrated and automated VPN, and automated access to the network). · Central provisioning of users' access profiles. 	3–26
Cisco Aironet Antennas and Accessories *NEW UPDATES*	<ul style="list-style-type: none"> · Cisco many options for antennas and accessories. · FCC-approved directional and omnidirectional antennas are available. · Low-loss cable, mounting hardware, and other accessories are also available. 	3–28
Wireless LAN Controllers		
Cisco 5500 Series Wireless LAN Controller *NEW UPDATES*	<ul style="list-style-type: none"> · Ideal for enterprise wireless LAN (WLAN) deployments that require enhanced scalability, system-level security, integrated RF monitoring and management, and teleworking features. · Supports OfficeExtend to provide corporate wireless service for mobile and remote workers with secure wired tunnels to the Cisco Aironet 1130 and 1140 Series Access Points. The Control and Provisioning of Wireless Access Points (CAPWAP) protocol centrally controls Cisco Aironet lightweight access points for WLAN performance optimization and automated network resiliency. · Available with eight Gigabit Ethernet Small Form-Factor Pluggables (SFPs) and flexible licensing to support up to 500 access points and up to 7000 clients. 	3–33
Cisco 4400 Series Wireless LAN Controller	<ul style="list-style-type: none"> · Ideal for enterprise WLAN deployments that require system-level security, scalability, and RF management. · The LWAPP or CAPWAP protocols centrally control Cisco Aironet lightweight APs for WLAN performance optimization and automated network resiliency. · Available with two Gigabit Ethernet ports to support 12, 25, and 50 APs or with four Gigabit Ethernet ports to support 100 APs. 	3–35
Cisco 2100 Series Wireless LAN Controller	<ul style="list-style-type: none"> · Ideal for enterprise branch, and small business WLAN deployments that require system-level security, scalability, and RF management. · The LWAPP or CAPWAP protocols centrally control Cisco Aironet lightweight APs for WLAN performance optimization and automated network resiliency. · Supports 6, 12, or 25 lightweight APs and up to 256 clients, making it a cost-effective solution for enterprise branch offices and small businesses. 	3–36
Network Management		
Cisco Wireless Control System *NEW UPDATES*	<ul style="list-style-type: none"> · Comprehensive enterprise-class wireless LAN lifecycle management of the Cisco Unified Wireless Network. · Wide range of easy-to-use tools, guides, and templates for simplified planning, deployment, monitoring, troubleshooting, and reporting on indoor and outdoor wireless networks including the next-generation 802.11n WLAN infrastructure and client devices. · Centralized platform for managing complete network of Cisco Wireless LAN Controllers, Cisco Aironet APs, Cisco Mobility Services Engine (MSE), mobility services, and Cisco CleanAir technology. · Includes monitoring of standalone (autonomous) APs and supports their migration to operate as lightweight APs. · Supports a wide range of mobility services including context-aware mobility, adaptive wireless intrusion prevention system (WIPS), and secure guest access. 	3–37

Cisco Wireless Control System Navigator	<ul style="list-style-type: none"> Aggregated platform for enhanced scalability, manageability, and visibility of large-scale implementations of the Cisco Unified Wireless Network. Centralizes operational control and management of up to 20 geographically dispersed Cisco WCS management platforms. 	3–39
Cisco Spectrum Expert Wi-Fi	<ul style="list-style-type: none"> (Alternately: See Cisco Aironet 3500 Series access point for integrated RF detection and mitigation using the system-level intelligence of Cisco CleanAir technology). Spectrum analyzer tool offers visibility into the RF layer of wireless networks so that organizations can determine the causes of interference problems and optimize network performance. Active Devices offers comprehensive lists of all access points, temporary networks, and interferer devices (for example, microwave ovens, cordless phones, wireless security cameras, Bluetooth devices, and RF jammers). Channel Summary, Devices View, and Device Finder details visibility of RF activity, effect on the wireless network, and the location of devices causing wireless interference. 	3–40
Mobility Services		
Cisco 3300 Series Mobility Services Engine	<ul style="list-style-type: none"> Transforms existing WLANs into comprehensive mobility networks through uniform way of mobility services delivery. Integrates with the Cisco Unified Wireless Network and Cisco Unified Communications Solutions to build on existing business mobility investments. Extensible platform supports suite of software with ability to scale services through clustering. The software suite includes context-aware services and adaptive wireless intrusion prevention systems (IPS) with a unified, open API for developing business-relevant applications. 	3–42
Cisco Context-Aware Software	<ul style="list-style-type: none"> Advanced and scalable context-aware mobility services simultaneously track thousands of Wi-Fi clients or Wi-Fi tags for indoor, indoor high ceiling, and outdoor (parking lot/yards) environment. Contains CleanAir technology, providing location information and interference history in conjunction with the Cisco Unified Wireless Network with CleanAir technology. Transparent integration with existing networks and applications for faster adoption. Cisco offers an open API with the context-aware mobility software, making it easier for technology partners to integrate their applications and for customers to choose the right application over the right network for particular users. 	3–43
Cisco Adaptive Wireless Intrusion Prevention System (IPS)	<ul style="list-style-type: none"> Employs network analysis and signature-based techniques, combined with tight integration to Cisco Unified Wireless Network, to deliver protection against rogue APs and clients, network reconnaissance, eavesdropping, authentication and encryption cracking, man-in-the-middle attacks, wireless DoS attacks, and zero-day unknown attacks. Proactive threat prevention through automated wireless vulnerability and performance monitoring that proactively and persistently scans the wireless network to mitigate problems before they arise. 	3–45
Cisco Physical Security For product information on Cisco Video Surveillance products, refer to Chapter 5, “Security.”		See 5–1
SERVICES		
Cisco Wireless Services Services from Cisco and its partners help customers plan, build, and run wireless LANs to create the Borderless Mobility experience and deliver anytime, anywhere access.		3–46
FOR MORE INFORMATION		
Product Ordering To place an order, visit: http://www.cisco.com/en/US/ordering/index.shtml .		
End-of-Life and End-of-Sale Please visit the end-of-life and end-of-sale website for a complete and up-to-date listing of products that are no longer being sold or supported, what replacement products are available, and information about product support. http://www.cisco.com/en/US/products/prod_end_of_life.html		
NOTE: This chapter provides only a subset of Cisco products and part numbers. For the most up-to-date and comprehensive information, refer to the Cisco website at http://www.cisco.com , the Cisco ordering website at http://www.cisco.com/en/US/ordering/index.shtml , or reference the URL listed in the “For More Information” section of each product.		

Cisco Aironet 3500 Series Access Points

Cisco Aironet 3500 Series Access Points with CleanAir technology are the first 802.11n access points to create a self-healing, self-optimizing wireless network by intelligently avoiding interference.



Ideal for Companies That Need These Features

- Cisco Aironet 3500 Series**
- The highest-performance connectivity for mission-critical mobility
 - Reliable application delivery
 - 802.11n performance with standard 802.3af Power over Ethernet (PoE)

Key Features and Benefits

CleanAir technology that supports:

- Automatic interference mitigation for reliable and predictable wireless LAN (WLAN) coverage
- Remote troubleshooting for fast problem resolution and less downtime
- Robust security with non-Wi-Fi detection for off-channel rogue devices
- Policy enforcement with customizable alerts to prohibit devices that interfere with the network

Specifications

Software	Cisco Unified Wireless Network Software Release 7.0 or later			
802.11n Version 2.0 (and Related) Capabilities	<ul style="list-style-type: none"> • 2x3 multiple-input multiple-output (MIMO) with two spatial streams • Maximal ratio combining (MRC) • Legacy beamforming • 20- and 40-MHz channels • PHY data rates up to 300 Mbps • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 dynamic frequency selection (DFS) • Cyclic shift diversity (CSD) support 			
Data Rates Supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps			
	802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps			
	802.11n data rates (2.4 GHz and 5 GHz)			
	MCS Index ¹	GI ² =800ns		GI=400ns
		20-MHz rate (Mbps)	40-MHz rate (Mbps)	20-MHz rate (Mbps)
				40-MHz rate (Mbps)
	0	6.5	13.5	7.2
	1	13	27	14.4
	2	19.5	40.5	21.7
	3	26	54	28.9
	4	39	81	43.3
	5	52	108	57.8
	6	58.5	121.5	65
	7	65	135	72.2
	8	13	27	14.4
	9	26	54	28.9
	10	39	81	43.3
	11	52	108	57.8
	12	78	162	86.7
	13	104	216	115.6
	14	117	243	130
	15	130	270	144.4
Maximum Number of Nonoverlapping Channels	2.4 GHz <ul style="list-style-type: none"> • 802.11b/g: <ul style="list-style-type: none"> • 20 MHz: 3 • 802.11n: <ul style="list-style-type: none"> • 20 MHz: 3 • 40 MHz: 1 			5 GHz <ul style="list-style-type: none"> • 802.11a: <ul style="list-style-type: none"> • 20 MHz: 21 • 802.11n: <ul style="list-style-type: none"> • 20 MHz: 21 • 40 MHz: 9
Maximum Transmit Power	2.4 GHz <ul style="list-style-type: none"> • 802.11b <ul style="list-style-type: none"> • 23 dBm with 2 antennas • 802.11g <ul style="list-style-type: none"> • 20 dBm with 2 antennas • 802.11n (non-HT duplicate mode) <ul style="list-style-type: none"> • 20 dBm with 2 antennas • 802.11n (HT20) <ul style="list-style-type: none"> • 20 dBm with 2 antennas • 802.11n (HT40) <ul style="list-style-type: none"> • 20 dBm with 2 antennas 			5 GHz <ul style="list-style-type: none"> • 802.11a <ul style="list-style-type: none"> • 20 dBm with 2 antennas • 802.11n non-HT duplicate mode <ul style="list-style-type: none"> • 20 dBm with 2 antennas • 802.11n (HT20) <ul style="list-style-type: none"> • 20 dBm with 2 antennas • 802.11n (HT40) <ul style="list-style-type: none"> • 20 dBm with 2 antennas

Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Frequency Band and 20MHz Operating Channels	<p>A (A regulatory domain):</p> <ul style="list-style-type: none"> · 2.412 to 2.462 GHz; 11 channels · 5.180 to 5.320 GHz; 8 channels · 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) · 5.745 to 5.825 GHz; 5 channels <p>C (C regulatory domain):</p> <ul style="list-style-type: none"> · 2.412 to 2.472 GHz; 13 channels · 5.745 to 5.825 GHz; 5 channels <p>E (E regulatory domain):</p> <ul style="list-style-type: none"> · 2.412 to 2.472 GHz; 13 channels · 5.180 to 5.320 GHz; 8 channels · 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) <p>I (I regulatory domain):</p> <ul style="list-style-type: none"> · 2.412 to 2.472 GHz; 13 channels · 5.180 to 5.320 GHz; 8 channels <p>K (K regulatory domain):</p> <ul style="list-style-type: none"> · 2.412 to 2.472 GHz; 13 channels · 5.180 to 5.320 GHz; 8 channels · 5.500 to 5.620 GHz; 7 channels · 5.745 to 5.805 GHz; 4 channels 	<p>N (N regulatory domain):</p> <ul style="list-style-type: none"> · 2.412 to 2.462 GHz; 11 channels · 5.180 to 5.320 GHz; 8 channels · 5.745 to 5.825 GHz; 5 channels <p>Q (Q regulatory domain):</p> <ul style="list-style-type: none"> · 2.412 to 2.472 GHz; 13 channels · 5.180 to 5.320 GHz; 8 channels <p>S (S regulatory domain):</p> <ul style="list-style-type: none"> · 2.412 to 2.472 GHz; 13 channels · 5.180 to 5.320 GHz; 8 channels · 5.745 to 5.825 GHz; 5 channels <p>T (T regulatory domain):</p> <ul style="list-style-type: none"> · 2.412 to 2.462 GHz; 11 channels · 5.280 to 5.320 GHz; 3 channels · 5.500 to 5.700 GHz; 11 channels · 5.745 to 5.825 GHz; 5 channels
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Note: Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit <http://www.cisco.com/go/aironet/compliance>.

Available Transmit Power Settings	<p>2.4 GHz</p> <ul style="list-style-type: none"> · 23 dBm (200 mW) CCK Only · 20 dBm (100 mW) · 17 dBm (50 mW) · 14 dBm (25 mW) · 11 dBm (12.5 mW) · 8 dBm (6.25 mW) · 5 dBm (3.13 mW) · 2 dBm (1.56 mW) · -1 dBm (0.78 mW) 	<p>5 GHz</p> <ul style="list-style-type: none"> · 20 dBm (100 mW) · 17 dBm (50 mW) · 14 dBm (25 mW) · 11 dBm (12.5 mW) · 8 dBm (6.25 mW) · 5 dBm (3.13 mW) · 2 dBm (1.56 mW) · -1 dBm (0.78 mW)
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Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Integrated Antenna	<ul style="list-style-type: none"> · 2.4 GHz, Gain 4 dBi, internal Omni, horizontal beamwidth 360° · 5 GHz, Gain 3 dBi, internal Omni, horizontal beamwidth 360°
External Antenna (sold separately)	Cisco offers the industry's broadest selection of 802.11n antennas delivering optimal coverage for a variety of deployment scenarios.
Interfaces	<ul style="list-style-type: none"> · 10/100/1000BASE-T autosensing (RJ-45) · Management console port (RJ-45)
Indicators	<ul style="list-style-type: none"> · Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors.
Dimensions (W x L x H)	<ul style="list-style-type: none"> · Access point (without mounting bracket): 8.7 x 8.7 x 1.84 in. (22.1 x 22.1 x 4.7 cm)
Weight	<ul style="list-style-type: none"> · 2.3 lbs (1.04 kg)
System Memory	<ul style="list-style-type: none"> · 128 MB DRAM · 32 MB Flash
Input Power Requirements	<ul style="list-style-type: none"> · AP3500: 44 to 57 VDC · Power Supply and Power Injector: 100 to 240 VAC; 50 to 60 Hz
Powering Options	<ul style="list-style-type: none"> · 802.3af Ethernet Switch · Cisco AP3500 Power Injectors (AIR-PWRINJ4=) · Cisco AP3500 Local Power Supply (AIR-PWR-B=)
Environmental	<p>Cisco Aironet 3500i</p> <ul style="list-style-type: none"> · Nonoperating (storage) temperature: -22 to 185°F (-30 to 85°C) · Operating temperature: 32 to 104°F (0 to 40°C) · Operating humidity: 10 to 90% percent (noncondensing) <p>Cisco Aironet 3500e</p> <ul style="list-style-type: none"> · Nonoperating (storage) temperature: -40 to 185°F (-40 to 85°C) · Operating temperature: -4 to +131°F (-20 to +55°C) · Operating humidity: 10 to 90 percent (noncondensing)
Power Draw	<ul style="list-style-type: none"> · AP3500: 12.95 W <p>Note: When deployed using Power over Ethernet (PoE), the power drawn from the power sourcing equipment will be higher by some amount dependent on the length of the interconnecting cable. This additional power may be as high as 2.45W, bringing the total system power draw (access point + cabling) to 15.4W.</p>

Warranty	Limited Lifetime Hardware Warranty
Receive Sensitivity	<ul style="list-style-type: none"> • 802.11a (non HT20): -93 dBm @ 6 Mb/s; -93 dBm @ 9 Mb/s; -92 dBm @ 12 Mb/s; -90 dBm @ 18 Mb/s; -87 dBm @ 24 Mb/s; -84 dBm @ 36 Mb/s; -79 dBm @ 48 Mb/s; -79 dBm @ 54 Mb/s • 802.11b (CCK): -101 dBm @ 1 Mb/s; -98 dBm @ 2 Mb/s; -92 dBm @ 5.5 Mb/s; -89 dBm @ 11 Mb/s • 802.11g (non HT20): -92 dBm @ 6 Mb/s; -92 dBm @ 9 Mb/s; -92 dBm @ 12 Mb/s; -90 dBm @ 18 Mb/s; -86 dBm @ 24 Mb/s; -84 dBm @ 36 Mb/s; -79 dBm @ 48 Mb/s; -78 dBm @ 54 Mb/s • 2.4-GHz: 802.11n (HT20): -92 dBm @ MCS0; -90 dBm @ MCS1; -88 dBm @ MCS2; -85 dBm @ MCS3; -82 dBm @ MCS4; -77 dBm @ MCS5; -76 dBm @ MCS6; -74 dBm @ MCS7; -92 dBm @ MCS8; -90 dBm @ MCS9; -87 dBm @ MCS10; -85 dBm @ MCS11; -82 dBm @ MCS12; -77 dBm @ MCS13; -75 dBm @ MCS14; -74 dBm @ MCS15 • 2.4-GHz: 802.11n (HT40): -89 dBm @ MCS0; -87 dBm @ MCS1; -85 dBm @ MCS2; -82 dBm @ MCS3; -79 dBm @ MCS4; -73 dBm @ MCS5; -72 dBm @ MCS6; -70 dBm @ MCS7; -90 dBm @ MCS8; -87 dBm @ MCS9; -85 dBm @ MCS10; -81 dBm @ MCS11; -78 dBm @ MCS12; -74 dBm @ MCS13; -72 dBm @ MCS14; -71 dBm @ MCS15 • 5-GHz: 802.11n (HT20): -93 dBm @ MCS0; -91 dBm @ MCS1; -89 dBm @ MCS2; -86 dBm @ MCS3; -83 dBm @ MCS4; -78 dBm @ MCS5; -77 dBm @ MCS6; -75 dBm @ MCS7; -87 dBm @ MCS8; -87 dBm @ MCS9; -85 dBm @ MCS10; -83 dBm @ MCS11; -79 dBm @ MCS12; -75 dBm @ MCS13; -73 dBm @ MCS14; -72 dBm @ MCS15 • 5-GHz: 802.11n (HT40): -91 dBm @ MCS0; -89 dBm @ MCS1; -87 dBm @ MCS2; -83 dBm @ MCS3; -80 dBm @ MCS4; -75 dBm @ MCS5; -74 dBm @ MCS6; -72 dBm @ MCS7; -86 dBm @ MCS8; -85 dBm @ MCS9; -84 dBm @ MCS10; -80 dBm @ MCS11; -77 dBm @ MCS12; -72 dBm @ MCS13; -71 dBm @ MCS14; -70 dBm @ MCS15
Compliance Standards	<ul style="list-style-type: none"> • Safety: UL 60950-1; CAN/CSA-C22.2 No. 60950-1; UL 2043; IEC 60950-1; EN 60950-1 • Radio approvals: FCC Part 15.247, 15.407; RSS-210 (Canada); EN 300.328, EN 301.893 (Europe); ARIB-STD 33 (Japan); ARIB-STD 66 (Japan); ARIB-STD T71 (Japan); EMI and susceptibility (Class B); FCC Part 15.107 and 15.109; ICES-003 (Canada); VCCI (Japan); EN 301.489-1 and -17 (Europe); EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC; IEEE Standard: IEEE 802.11a/b/g, IEEE 802.11n 2.0, IEEE 802.11h, IEEE 802.11d • Security: 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA; 802.1X; Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP); EAP Type(s); Extensible Authentication Protocol-Transport Layer Security (EAP-TLS); EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2); Protected EAP (PEAP) v0 or EAP-MSCHAPv2; Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST); PEAPv1 or EAP-Generic Token Card (GTC); EAP-Subscriber Identity Module (SIM) • Multimedia: Wi-Fi Multimedia (WMM™) • Other: FCC Bulletin OET-65C; RSS-102

1. MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.
2. GI: A guard interval (GI) between symbols helps receivers overcome the effects of multipath delays.

Selected Part Number and Ordering Information

Cisco Aironet 3500 Series Controller-Based Access Point	
AIR-CAP3502I-x-K9	Cisco Aironet 3500i mode-Indoor environments, with internal antennas, dual-band controller-based 802.11a/g/n
AIR-CAP3501I-x-K9	Cisco Aironet 3500i mode-Indoor environments, with internal antennas, single-band controller-based 802.11g/n
AIR-CAP3502I-xK910	Cisco Aironet 3500i mode-Indoor environments, with internal antennas, eco-pack (dual-band 802.11a/g/n) 10 quantity access points
AIR-CAP3502E-x-K9	Cisco Aironet 3500e mode-Indoor, challenging environments, with external antennas, dual-band controller-based 802.11a/g/n
AIR-CAP3501E-x-K9	Cisco Aironet 3500e mode-Indoor, challenging environments, with external antennas, single-band controller-based 802.11g/n
AIR-CAP3502E-xK910	Cisco Aironet 3500e mode-Indoor, challenging environments, with external antennas, eco-pack (dual-band 802.11a/g/n) 10 quantity access points
CON-SNT-CAP352Ix	Cisco SMARTnet Services for the Cisco Aironet 3500i model with internal antennas, SMARTnet 8x5xNBD 3500i access point (dual-band 802.11 a/g/n)
CON-SNT-CAP351Ix	Cisco SMARTnet Services for the Cisco Aironet 3500i model with internal antennas, SMARTnet 8x5xNBD 3500i access point (single-band 802.11 g/n)
CON-SNT-CAP352Ix	Cisco SMARTnet Services for the Cisco Aironet 3500i model with internal antennas, SMARTnet 8x5xNBD 10 quantity eco-pack 3500i access point (dual-band 802.11a/g/n)
CON-SNT-CAP3502x	SMARTnet Services for the Cisco Aironet 3500e model with external antennas, SMARTnet 8x5xNBD 3500e access point (dual-band 802.11 a/g/n)
CON-SNT-CAP3501x	SMARTnet Services for the Cisco Aironet 3500e model with external antennas, SMARTnet 8x5xNBD 3500e access point (single-band 802.11 g/n)
CON-SNT-CAP3502x	SMARTnet Services for the Cisco Aironet 3500e model with external antennas, SMARTnet 8x5xNBD 10 quantity eco-pack 3500e access point (dual-band 802.11a/g/n)
Cisco Wireless LAN Services	

AS-WLAN-CNSLT	Cisco Wireless LAN Network Planning and Design Service
AS-WLAN-CNSLT	Cisco Wireless LAN 802.11n Migration Service
AS-WLAN-CNSLT	Cisco Wireless LAN Performance and Security Assessment Service

Regulatory domains: (x = regulatory domain)

Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit <http://www.cisco.com/go/aironet/compliance>.

Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.

Limited Lifetime Hardware Warranty

This Cisco Aironet 3500 Series Access Point comes with a Limited Lifetime Warranty that provides full warranty coverage of the hardware for as long as the original end user continues to own or use the product. The warranty includes 10-day advance hardware replacement and ensures that software media is defect-free for 90 days. For more details, visit <http://www.cisco.com/go/warranty>.

Cisco Wireless LAN Services

Seamlessly integrate mobile services and take full advantage of the systemwide capabilities of the Cisco Unified Wireless Network with services from Cisco and our partners. Better utilize the self-healing, self-optimizing features built into the silicon-level intelligence of CleanAir technology and the increased performance of the 802.11n standard while simplifying the transition to these new technologies. For more details, visit <http://www.cisco.com/go/wirelesslanservices>.

For More Information

<http://www.cisco.com/go/wireless>

Cisco Aironet 1140 Series Access Points

The Cisco Aironet 1140 Series Access Point is a business-ready, 802.11n access point designed for simple deployment and energy efficiency. The high-performance platform, which offers at least six times the throughput of existing 802.11a/g networks, prepares the business for the next wave of mobile devices and applications. Building on the Cisco Aironet heritage of RF excellence, this access point combines the industry's most widely deployed 802.11n technology with a sleek industrial design that blends transparently into any enterprise environment.

Designed for sustainability, the Cisco Aironet 1140 Series delivers high performance from standard 802.3af PoE while decreasing waste with multiunit eco-packs and Energy Star-certified power supplies. As part of the Cisco Unified Wireless Network, these access points provide the industry's lowest total cost of ownership and investment protection by integrating transparently with the existing network.



Ideal for Companies That Need These Features

- Cisco Aironet 1140 Series**
 - Simple deployment and energy efficiency
 - 802.11n performance with standard 802.3af PoE
 - Reliable and predictable WLAN coverage

Key Features and Benefits

- Six times the throughput of existing 802.11a/g networks
- A sleek industrial design that blends into any enterprise environment
- Cisco M-Drive technology for optimized client performance
- Environmentally friendly multiunit eco packs and Energy Star-certified power supplies
- Optional WirelessPLUS software allows the access point to be configured to support the OfficeExtend solution for wireless teleworking.
- Optional software allows the access point to be configured to support enterprise wireless mesh.

Specifications

Feature	Cisco Aironet 1140 Series Access Point	
Software	Cisco Unified Wireless Network Software Release 7.0 or later.	
Draft 802.11n Version 2.0 (and Related) Capabilities	2x3 multiple-input multiple-output (MIMO) with two spatial streams; Maximal ratio combining (MRC); PHY data rates up to 300 Mbps; Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx); Cyclic shift diversity (CSD) support	
Maximum Number of Non-Overlapping Channels	2.4 GHz 802.11b/g: 20 MHz: 3 802.11n: 20 MHz: 3 40 MHz: 1	5 GHz 802.11a: 20 MHz: 21 802.11n: 20 MHz: 21 40 MHz: 9

Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Integrated Antenna	2.4 GHz, Gain 4.0 dBi, horizontal beamwidth 360°; 5 GHz, Gain 3 dBi, horizontal beamwidth 360°
Interfaces	10/100/1000BASE-T autosensing (RJ-45); Management console port (RJ45)

Indicators	Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors.	
Frequency Band and 20-MHz Operating Channels	<ul style="list-style-type: none"> • A (Americas (FCC)): 2.412 to 2.462 GHz; 11 channels; 5.180 to 5.320 GHz; 8 channels; 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz); 5.745 to 5.825 GHz; 5 channels • C (China): 2.412 to 2.472 GHz; 13 channels; 5.745 to 5.825 GHz; 5 channels • E (ETSI): 2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels; 5.500 to 5.700 GHz; 11 channels • I (Israel): 2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels • K (Korea): 2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels; 5.500 to 5.620 GHz; 7 channels; 5.745 to 5.805 GHz; 4 channels 	<ul style="list-style-type: none"> • N (Non-FCC): 2.412 to 2.462 GHz; 11 channels; 5.180 to 5.320 GHz; 8 channels; 5.745 to 5.825 GHz; 5 channels • P (Japan2): 2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels • S (Singapore): 2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels; 5.745 to 5.825 GHz; 5 channels • T (Taiwan): 2.412 to 2.462 GHz; 11 channels; 5.280 to 5.320 GHz; 3 channels; 5.500 to 5.700 GHz; 11 channels; 5.745 to 5.825 GHz; 5 channels
Maximum Transmit Power	2.4GHz <ul style="list-style-type: none"> • 802.11b: 20 dBm with 1 antenna • 802.11g: 17 dBm with 1 antenna • 802.11n (HT20): 20 dBm with 2 antennas • 802.11n (HT40): 20 dBm with 2 antennas 	5GHz <ul style="list-style-type: none"> • 802.11a: 17 dBm with 1 antenna • 802.11n non-HT duplicate (802.11a duplicate) mode: 17 dBm with 1 antenna • 802.11n (HT20): 20 dBm with 2 antennas • 802.11n (HT40): 20 dBm with 2 antennas
Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.		
Available Transmit Power Settings	2.4GHz: 20 dBm (100 mW); 17 dBm (50 mW); 14 dBm (25 mW); 11 dBm (12.5 mW); 8 dBm (6.25 mW); 5 dBm (3.13 mW); 2 dBm (1.56 mW); -1 dBm (0.78 mW)	5GHz: 20 dBm (100 mW); 17 dBm (50 mW); 14 dBm (25 mW); 11 dBm (12.5 mW); 8 dBm (6.25 mW); 5 dBm (3.13 mW); 2 dBm (1.56 mW); -1 dBm (0.78 mW)
Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.		
Dimensions (W x L x H)	Access point (without mounting bracket): 8.7 x 8.7 x 1.84 in. (22.1 x 22.1 x 4.7 cm)	
Weight	2.3 lbs (1.04 kg)	
Environmental	Nonoperating (storage) temperature: -22 to 185°F (-30 to 85°C); Operating temperature: 32 to 104°F (0 to 40°C); Operating humidity: 10 to 90% percent (non-condensing)	
System Memory	128 MB DRAM; 32 MB flash	
Input Power Requirements	AP1140: 36 to 57 VDC; Power Supply and Power Injector: 100 to 240 VAC; 50 to 60 Hz	
Powering Options	802.3af Ethernet Switch; Cisco AP1140 Power Injectors (AIR-PWRINJ4=); Cisco AP1140 Local Power Supply (AIR-PWR-A=)	
Power Draw	AP1140: 12.95 W Note: When deployed using PoE, the power drawn from the power sourcing equipment will be higher by some amount dependent on the length of the interconnecting cable. This additional power may be as high as 2.45W, bringing the total system power draw (access point + cabling) to 15.4W.	
Warranty	Limited lifetime hardware warranty	
Compliance	Standards <ul style="list-style-type: none"> • Safety: UL 60950-1; CAN/CSA-C22.2 No. 60950-1; UL 2043; IEC 60950-1; EN 60950-1 • Radio approvals: FCC Part 15.247, 15.407; RSS-210 (Canada); EN 300.328, EN 301.893 (Europe); ARIB-STD 33 (Japan); ARIB-STD 66 (Japan); ARIB-STD T71 (Japan); AS/NZS 4268.2003 (Australia and New Zealand); EMI and susceptibility (Class B); FCC Part 15.107 and 15.109; ICES-003 (Canada); VCCI (Japan); EN 301.489-1 and -17 (Europe); EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC • IEEE Standard: IEEE 802.11a/b/g, IEEE 802.11n draft 2.0, IEEE 802.11h, IEEE 802.11d • Security: 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA; 802.1X; Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP) • EAP Type(s): Extensible Authentication Protocol-Transport Layer Security (EAP-TLS); EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2); Protected EAP (PEAP) v0 or EAP-MSCHAPv2; PEAPv1 or EAP-Generic Token Card (GTC); EAP-Subscriber Identity Module (SIM) • Multimedia: Wi-Fi Multimedia (WMM™) Other: FCC Bulletin OET-65C; RSS-102	

Data Rates Supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps			
	802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps			
	802.11n data rates (2.4 GHz and 5 GHz):			
MCS Index ¹	GI ² = 800ns		GI = 400ns	
	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)
0	6.5	13.5	72	15
1	13	27	14.4	30
2	19.5	40.5	21.7	45
3	26	54	28.9	60
4	39	81	43.3	90
5	52	108	57.8	120
6	58.5	121.5	65	135
7	65	135	72.2	150
8	13	27	14.4	30
9	26	54	28.9	60
10	39	81	43.3	90
11	52	108	57.8	120
12	78	162	86.7	180
13	104	216	115.6	240
14	117	243	130	270
15	130	270	144.4	300

Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Receive Sensitivity	802.11b: -91 dBm @ 1 Mb/s, 2 Mb/s, 5.5 Mb/s; -88 dBm @ 11 Mb/s	802.11g: -86 dBm @ 6 Mb/s, 9 Mb/s, 12 Mb/s, 18 Mb/s; -85 dBm @ 24 Mb/s; -83 dBm @ 36 Mb/s; -78 dBm @ 48 Mb/s; -77 dBm @ 54 Mb/s	802.11a: -90 dBm @ 6 Mb/s, 9 Mb/s, 12 Mb/s, 18 Mb/s; -88 dBm @ 24 Mb/s; -85 dBm @ 36 Mb/s; -80 dBm @ 48 Mb/s; -79 dBm @ 54 Mb/s	
2.4-GHz 802.11n (HT20)	2.4-GHz 802.11n (HT40)	5-GHz 802.11n (HT20)	5-GHz 802.11n (HT40)	
-88 dBm @ MCS0	-85 dBm @ MCS0	-91 dBm @ MCS0	-78 dBm @ MCS0	
-87 dBm @ MCS1	-85 dBm @ MCS1	-91 dBm @ MCS1	-78 dBm @ MCS1	
-86 dBm @ MCS2	-83 dBm @ MCS2	-90 dBm @ MCS2	-78 dBm @ MCS2	
-83 dBm @ MCS3	-80 dBm @ MCS3	-87 dBm @ MCS3	-78 dBm @ MCS3	
-80 dBm @ MCS4	-77 dBm @ MCS4	-84 dBm @ MCS4	-78 dBm @ MCS4	
-76 dBm @ MCS5	-72 dBm @ MCS5	-79 dBm @ MCS5	-75 dBm @ MCS5	
-74 dBm @ MCS6	-71 dBm @ MCS6	-77 dBm @ MCS6	-73 dBm @ MCS6	
-73 dBm @ MCS7	-70 dBm @ MCS7	-76 dBm @ MCS7	-72 dBm @ MCS7	
-87 dBm @ MCS8	-85 dBm @ MCS8	-90 dBm @ MCS8	-76 dBm @ MCS8	
-85 dBm @ MCS9	-82 dBm @ MCS9	-89 dBm @ MCS9	-76 dBm @ MCS9	
-83 dBm @ MCS10	-80 dBm @ MCS10	-86 dBm @ MCS10	-76 dBm @ MCS10	
-80 dBm @ MCS11	-76 dBm @ MCS11	-83 dBm @ MCS11	-76 dBm @ MCS11	
-77 dBm @ MCS12	-73 dBm @ MCS12	-80 dBm @ MCS12	-76 dBm @ MCS12	
-73 dBm @ MCS13	-69 dBm @ MCS13	-75 dBm @ MCS13	-71 dBm @ MCS13	
-71 dBm @ MCS14	-67 dBm @ MCS14	-74 dBm @ MCS14	-69 dBm @ MCS14	
-70 dBm @ MCS15	-66 dBm @ MCS15	-72 dBm @ MCS15	-68 dBm @ MCS15	

1. MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.
2. GI: A Guard Interval (GI) between symbols helps receivers overcome the effects of multipath delays.

Selected Part Number and Ordering Information

Cisco Aironet 1140 Series Access Point	
AIR-LAP1142N-A-K9	Cisco Aironet 1140 Series Access Points, 802.11a/g/n Fixed Unified AP; Int Ant; FCC Cfg (Dual Band)
AIR-LAP1141N-A-K9	Cisco Aironet 1140 Series Access Points, 802.11g/n Fixed Unified AP; Int Ant; FCC Cfg (Single Band)

Cisco Aironet 1140 Series Eco-Pack SKUs and Regulatory Domains

AIR-LAP1142-AK9-PR	Cisco Aironet 1140 Series Access Points, 802.11a/g/n LWAPP AP Integrated Antennas FCC Cnfg, 10 APs
AIR-LAP1142-EK9-PR	Cisco Aironet 1140 Series Access Points, 802.11a/g/n LWAPP AP Integrated Antennas ETSI Cnfg, 10 APs
AIR-LAP1142-PK9-PR	Cisco Aironet 1140 Series Access Points, 802.11a/g/n LWAPP AP Integrated Antennas JPN2 Cnfg, 10 APs
AIR-LAP1142-SK9-PR	Cisco Aironet 1140 Series Access Points, 802.11a/g/n LWAPP AP Integrated Antennas SG Cnfg, 10 APs
AIR-LAP1142-NK9-PR	Cisco Aironet 1140 Series Access Points, 802.11a/g/n LWAPP AP Integrated Antennas AU Cnfg, 10 APs
AIR-LAP1142-IK9-PR	Cisco Aironet 1140 Series Access Points, 802.11a/g/n LWAPP AP Integrated Antennas EU2 Cnfg, 10 APs
AIR-LAP1142-TK9-PR	Cisco Aironet 1140 Series Access Points, 802.11a/g/n LWAPP AP Integrated Antennas Taiwan Cnfg, 10 APs
AIR-LAP1142-CK9-PR	Cisco Aironet 1140 Series Access Points, 802.11a/g/n LWAPP AP Integrated Antennas China Cnfg, 10 APs
AIR-LAP1142-KK9-PR	Cisco Aironet 1140 Series Access Points, 802.11a/g/n LWAPP AP Integrated Antennas Korea Cnfg, 10 APs

For More Information

<http://www.cisco.com/go/802.11n>

Cisco Aironet 1260 Series Access Points

Cisco Aironet 1260 Series Access Points provide reliable and predictable 802.11n wireless coverage for indoor environments. These enterprise-class access points deliver up to nine times the throughput of 802.11a/g networks for rich-media applications. Designed specifically for challenging environments, the Cisco Aironet 1260 Series supports external antennas and a broad operating-temperature range.



Ideal for Companies That Need These Features

- Cisco Aironet 1260 Series**
 - High-capacity and high-security wireless LAN (WLAN) that provides network reliability for mission-critical applications
 - Rugged enterprise-class access point designed for indoor industrial deployments and installations that require antenna versatility
 - Cisco M-Drive technology for optimized client performance
 - Standard 802.11n performance with standard 802.3af Power over Ethernet (PoE)

Key Features and Benefits

- Cisco Aironet 1260 Series Access Points are 802.11n-certified.
- They provide reliable and predictable wireless LAN (WLAN) coverage to improve the end user's experience with both existing 802.11a/b/g clients and new 802.11n clients. The access points offer a rugged design.
 - Cisco ClientLink technology improves reliability and coverage for established clients.
 - BandSelect improves 5-GHz client connections in mixed client environments.
 - VideoStream uses multicast to improve multimedia applications.

Specifications

Feature	Cisco Aironet 1260 Series Access Point
Software	<ul style="list-style-type: none"> Cisco Unified Wireless Network Software Release 70 or later.
802.11n Version 2.0 (and Related) Capabilities	<ul style="list-style-type: none"> 2x3 MIMO with two spatial streams Maximal Ratio Combining (MRC) Legacy beam forming 20- and 40-MHz channels PHY data rates up to 300 Mbps Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) 802.11 DFS (Bin 5) Cyclic Shift Diversity (CSD) support
External Antenna (sold separately)	Cisco offers the industry's broadest selection of 802.11n antennas delivering optimal coverage for a variety of deployment scenarios.
Interfaces	10/100/1000 autosensing (RJ-45); Management console port (RJ45)
Indicators	Status LED indicates boot loader status, association status, operating status, boot loader warnings, and boot loader errors.

Frequency Band and 20-MHz Operating Channels	<ul style="list-style-type: none"> • A (A Regulatory Domain)—2.412 to 2.462 GHz; 11 channels; 5.180 to 5.320 GHz; 8 channels; 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz); 5.745 to 5.825 GHz; 5 channels • C (C Regulatory Domain)—2.412 to 2.472 GHz; 13 channels; 5.745 to 5.825 GHz; 5 channels • E (E Regulatory Domain)—2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels; 5.500 to 5.700 GHz; 11 channels • I (I Regulatory Domain)—2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels • K (K Regulatory Domain)—2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels; 5.500 to 5.620 GHz; 7 channels; 5.745 to 5.805 GHz; 4 channels 	<ul style="list-style-type: none"> • N (N Regulatory Domain)—2.412 to 2.462 GHz; 11 channels; 5.180 to 5.320 GHz; 8 channels; 5.745 to 5.825 GHz; 5 channels • Q (Q Regulatory Domain)—2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels; 5.500 to 5.700 GHz; 11 channels • S (S Regulatory Domain)—2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels; 5.745 to 5.825 GHz; 5 channels • T (T Regulatory Domain)—2.412 to 2.462 GHz; 11 channels; 5.280 to 5.320 GHz; 3 channels; 5.500 to 5.700 GHz; 11 channels; 5.745 to 5.825 GHz; 5 channels
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Note: Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit: <http://www.cisco.com/go/aironet/compliance>.

Maximum Number of Non-Overlapping Channels	<ul style="list-style-type: none"> • 2.4 GHz • 802.11b • 23 dBm with 2 antennas • 802.11g • 20 dBm with 2 antennas • 802.11n (non-HT duplicate mode) • 20 dBm with 2 antennas • 802.11n (HT20) • 20 dBm with 2 antennas • 802.11n (HT40) • 20 dBm with 2 antennas 	<ul style="list-style-type: none"> • 5 GHz • 802.11a • 20 dBm with 2 antennas • 802.11n non-HT duplicate mode • 20 dBm with 2 antennas • 802.11n (HT20) • 20 dBm with 2 antennas • 802.11n (HT40) • 20 dBm with 2 antennas
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NOTE: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Maximum Transmit Power	<ul style="list-style-type: none"> • 2.4 GHz • 802.11b • 23 dBm with 2 antennas • 802.11g • 20 dBm with 2 antennas • 802.11n (non-HT duplicate mode) • 20 dBm with 2 antennas • 802.11n (HT20) • 20 dBm with 2 antennas • 802.11n (HT40) • 20 dBm with 2 antennas 	<ul style="list-style-type: none"> • 5 GHz • 802.11a • 20 dBm with 2 antennas • 802.11n non-HT duplicate mode • 20 dBm with 2 antennas • 802.11n (HT20) • 20 dBm with 2 antennas • 802.11n (HT40) • 20 dBm with 2 antennas
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NOTE: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Available Transmit Power Settings	<ul style="list-style-type: none"> • 2.4 GHz • 23 dBm (200 mW) CCK Only • 20 dBm (100 mW) • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12.5 mW) • 8 dBm (6.25 mW) • 5 dBm (3.13 mW) • 2 dBm (1.56 mW) • -1 dBm (0.78 mW) 	<ul style="list-style-type: none"> • 5 GHz • 20 dBm (100 mW) • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12.5 mW) • 8 dBm (6.25 mW) • 5 dBm (3.13 mW) • 2 dBm (1.56 mW) • -1 dBm (0.78 mW)
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NOTE: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Dimensions (W x L x H)	Access point (without mounting bracket): 8.7 x 8.7 x 1.84 in. (221 x 221 x 4.7 cm)
Weight	2.3 lbs (1.04 kg)
Environmental	Non-operating (storage) temperature: -40 to 185°F (-40 to 85°C; Operating temperature: -4 to +131°F (-20 to +55°C; Operating humidity: 10 to 90 percent (non-condensing)
System Memory	128 MB DRAM; 32 MB flash
Input Power Requirements	AP1260: 44 to 57 VDC; Power Supply and Power Injector: 100 to 240 VAC; 50 to 60 Hz
Powering Options	<ul style="list-style-type: none"> • 802.3af Ethernet Switch • Cisco AP1260 Power Injectors (AIR-PWRINJ4=) • Cisco AP1260 Local Power Supply (AIR-PWR-B=)
Warranty	Limited Lifetime Hardware Warranty

Data Rates Supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps			
	802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps			
	802.11n data rates (2.4 GHz and 5 GHz):			
MCS Index¹	GI² = 800ns		GI = 400ns	
	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)
0	6.5	13.5	7.2	15
1	13	27	14.4	30
2	19.5	40.5	21.7	45
3	26	54	28.9	60
4	39	81	43.3	90
5	52	108	57.8	120
6	58.5	121.5	65	135
7	65	135	72.2	150
8	13	27	14.4	30
9	26	54	28.9	60
10	39	81	43.3	90
11	52	108	57.8	120
12	78	162	86.7	180
13	104	216	115.6	240
14	117	243	130	270
15	130	270	144.4	300

NOTE: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Power Draw	<ul style="list-style-type: none"> - AP1260: 12.95 W Note: When deployed using Power over Ethernet (PoE), the power drawn from the power sourcing equipment will be higher by some amount dependent on the length of the interconnecting cable. This additional power may be as high as 2.45W, bringing the total system power draw (access point + cabling) to 15.4W.
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Receive Sensitivity	<ul style="list-style-type: none"> - 802.11b (Complementary Code Keying [CCK]): -101 dBm @ 1 Mb/s; -98 dBm @ 2 Mb/s; -92 dBm @ 5.5 Mb/s; -89 dBm @ 11 Mb/s - 802.11g (non HT20): -92 dBm @ 6 Mb/s; -92 dBm @ 9 Mb/s; -92 dBm @ 12 Mb/s; -90 dBm @ 18 Mb/s; -86 dBm @ 24 Mb/s; -84 dBm @ 36 Mb/s; -79 dBm @ 48 Mb/s; -78 dBm @ 54 Mb/s - 802.11a (non HT20): -93 dBm @ 6 Mb/s; -93 dBm @ 9 Mb/s; -92 dBm @ 12 Mb/s; -90 dBm @ 18 Mb/s; -87 dBm @ 24 Mb/s; -84 dBm @ 36 Mb/s; -79 dBm @ 48 Mb/s; -79 dBm @ 54 Mb/s - 2.4-GHz: 802.11n (HT20): -92 dBm @ MCS0; -90 dBm @ MCS1; -88 dBm @ MCS2; -85 dBm @ MCS3; -82 dBm @ MCS4; -77 dBm @ MCS5; -76 dBm @ MCS6; -74 dBm @ MCS7; -92 dBm @ MCS8; -90 dBm @ MCS9; -87 dBm @ MCS10; -85 dBm @ MCS11; -82 dBm @ MCS12; -77 dBm @ MCS13; -75 dBm @ MCS14; -74 dBm @ MCS15 - 2.4-GHz: 802.11n (HT40): -89 dBm @ MCS0; -87 dBm @ MCS1; -85 dBm @ MCS2; -82 dBm @ MCS3; -79 dBm @ MCS4; -73 dBm @ MCS5; -72 dBm @ MCS6; -70 dBm @ MCS7; -90 dBm @ MCS8; -87 dBm @ MCS9; -85 dBm @ MCS10; -81 dBm @ MCS11; -78 dBm @ MCS12; -74 dBm @ MCS13; -72 dBm @ MCS14; -71 dBm @ MCS15 - 5-GHz: 802.11n (HT20): -93 dBm @ MCS0; -91 dBm @ MCS1; -89 dBm @ MCS2; -86 dBm @ MCS3; -83 dBm @ MCS4; -78 dBm @ MCS5; -77 dBm @ MCS6; -75 dBm @ MCS7; -87 dBm @ MCS8; -87 dBm @ MCS9; -85 dBm @ MCS10; -83 dBm @ MCS11; -79 dBm @ MCS12; -75 dBm @ MCS13; -73 dBm @ MCS14; -72 dBm @ MCS15 - 5-GHz: 802.11n (HT40): -91 dBm @ MCS0; -89 dBm @ MCS1; -87 dBm @ MCS2; -83 dBm @ MCS3; -80 dBm @ MCS4; -75 dBm @ MCS5; -74 dBm @ MCS6; -72 dBm @ MCS7; -86 dBm @ MCS8; -85 dBm @ MCS9; -84 dBm @ MCS10; -80 dBm @ MCS11; -77 dBm @ MCS12; -72 dBm @ MCS13; -71 dBm @ MCS14; -70 dBm @ MCS15
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Compliance	<ul style="list-style-type: none"> - Safety: UL 60950-1; CAN/CSA-C22.2 No. 60950-1; UL 2043; IEC 60950-1; EN 60950-1 - Radio approvals: FCC Part 15.247, 15.407; RSS-210 (Canada); EN 300.328, EN 301.893 (Europe); ARIB-STD 33 (Japan); ARIB-STD 66 (Japan); ARIB-STD T71 (Japan); AS/NZS 4268.2003 (Australia and New Zealand); EMI and susceptibility (Class B); FCC Part 15.107 and 15.109; ICES-003 (Canada); VCCI (Japan); EN 301.489-1 and -17 (Europe); EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC - IEEE Standard: IEEE 802.11a/b/g, IEEE 802.11n 2.0, IEEE 802.11h, IEEE 802.11d - Security: 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA; 802.1X; Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP) - EAP Type(s): Extensible Authentication Protocol-Transport Layer Security (EAP-TLS); EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2); Protected EAP (PEAP) v0 or EAP-MSCHAPv2; Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST); PEAPv1 or EAP-Generic Token Card (GTC); EAP-Subscriber Identity Module (SIM) - Multimedia: Wi-Fi Multimedia (WMM™) - Other: FCC Bulletin OET-65C; RSS-102
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1. MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.
2. GI: A Guard Interval (GI) between symbols helps receivers overcome the effects of multipath delays.

Selected Part Number and Ordering Information

Cisco Aironet 1260 Controller-Based Access Point	
Indoor, challenging environments, with external antennas	
AIR-LAP1262N-x-K9	Dual-band controller-based 802.11 a/g/n
AIR-LAP1261N-x-K9	Single-band controller-based 802.11 g/n (Available late 2010)
AIR-LAP1262N-xK910	Eco-pack (dual-band 802.11 a/g/n) 10 quantity access points
SMARTnet Services	
CON-SNT-LAP1262x	SMARTnet 8x5xNBD 1260 Series access point (dual-band 802.11 a/g/n)
CON-SNT-LAP1261x	SMARTnet 8x5xNBD 1260 Series access point (single-band 802.11 g/n)
CON-SNT-LAP1262x	SMARTnet 8x5xNBD 10 quantity eco-pack 1260 Series access point (dual-band 802.11 a/g/n)
Cisco Wireless LAN Services	
AS-WLAN-CNSLT	Cisco Wireless LAN Network Planning and Design Service
AS-WLAN-CNSLT	Cisco Wireless LAN 802.11n Migration Service
AS-WLAN-CNSLT	Cisco Wireless LAN Performance and Security Assessment Service

Regulatory domains: (x = regulatory domain)

Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit: <http://www.cisco.com/go/aironet/compliance>.

Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.

Limited Lifetime Hardware Warranty

This Cisco Aironet 1260 Series Access Point comes with a Limited Lifetime Warranty that provides full warranty coverage of the hardware for as long as the original end user continues to own or use the product. The warranty includes 10-day advance hardware replacement and ensures that software media is defect-free for 90 days. For more details, visit: <http://www.cisco.com/go/warranty>.

Service and Support

Cisco and Cisco Wireless LAN Specialized Partners offer a broad portfolio of end-to-end services based on proven methodologies for planning, designing, implementing, operating, and optimizing the performance of a variety of secure voice and data wireless network solutions, technologies, and strategies. Cisco Wireless LAN Specialized Partners bring application expertise to help deliver a secure enterprise mobility solution with a low total cost of ownership. For more information about Cisco 802.11n planning and deployment services, visit: <http://www.cisco.com/go/wirelesslanservices>.

For More Information

<http://www.cisco.com/go/wireless>

Cisco Aironet 1250 Series Access Points

The rugged indoor Cisco Aironet 1250 Series Access Point is designed for challenging RF environments that require the antenna versatility associated with connectorized antennas, a rugged metal enclosure, and a broad operating temperature range. It offers combined data rates of up to 600 Mbps to provide users with mobile access to high-bandwidth data, voice, and video applications. The 802.11n standard provides reliable and predictable WLAN coverage to improve the end-user experience for both existing 802.11a/b/g clients and new 802.11n clients.



Ideal for Companies That Need These Features

- Cisco Aironet 1250 Series**
 - High-capacity and high-security WLAN that provides network reliability for mission-critical applications
 - Rugged enterprise-class access point designed for indoor industrial deployments and installations that require antenna versatility
 - Cisco M-Drive technology for optimized client performance

Key Features and Benefits

- Cisco Aironet 1250 Series Access Points are 802.11n certified.
- They provide reliable and predictable WLAN coverage to improve the end user's experience with both existing 802.11a/b/g clients and new 802.11n clients. With these wireless access points, you can augment throughput for high-bandwidth wireless applications, protect your investment in wireless networking, and increase network reliability for mission-critical applications.
- This platform delivers data rates of 300 Mbps per radio; multiple-input, multiple-output technology for enhanced reliability; 2.4- and 5-GHz radio modules, and tested interoperability with leading 802.11n devices.

Specifications

Feature	Cisco Aironet 1250 Series Access Point	
Software	<ul style="list-style-type: none"> • Cisco IOS Software Release 12.4(10b)JA or later (Autonomous Mode). • Cisco IOS Software Release 12.4(10b)JX or later (Unified Mode). • Cisco Unified Wireless Network Software Release 70 or later. 	
Draft 802.11n Version 2.0 (and Related) Capabilities	<ul style="list-style-type: none"> • 2x3 MIMO with two spatial streams • Maximal Ratio Combining (MRC) • Legacy beam forming (hardware supports this capability; not yet enabled in software) • 20- and 40-MHz channels • PHY data rates up to 300 Mbps • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 DFS (Bin 5) • Cyclic Shift Diversity (CSD) support 	
Frequency Band and 20-MHz Operating Channels	<ul style="list-style-type: none"> • A (Americas (FCC))—2.412 to 2.462 GHz; 11 channels; 5.180 to 5.320 GHz; 8 channels; 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz); 5.745 to 5.825 GHz; 5 channels • C (China)—2.412 to 2.472 GHz; 13 channels; 5.745 to 5.825 GHz; 5 channels • E (ETSI)—2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels; 5.500 to 5.700 GHz; 11 channels • I (Israel)—2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels • K (Korea)—2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels; 5.500 to 5.620 GHz; 7 channels; 5.745 to 5.805 GHz; 4 channels 	<ul style="list-style-type: none"> • N (Non-FCC)—2.412 to 2.462 GHz; 11 channels; 5.180 to 5.320 GHz; 8 channels; 5.745 to 5.825 GHz; 5 channels • P (Japan2)—2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels • S (Singapore)—2.412 to 2.472 GHz; 13 channels; 5.180 to 5.320 GHz; 8 channels; 5.745 to 5.825 GHz; 5 channels • T (Taiwan)—2.412 to 2.462 GHz; 11 channels; 5.280 to 5.320 GHz; 3 channels; 5.500 to 5.700 GHz; 11 channels; 5.745 to 5.825 GHz; 5 channels
Maximum Number of Non-Overlapping Channels	2.4 GHz—802.11b/g; 20 MHz: 3; 802.11n: 20 MHz: 3, 40 MHz: 1	5 GHz—802.11a; 20 MHz: 21; 802.11n: 20 MHz: 21, 40 MHz: 9

NOTE: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Maximum Transmit Power	<ul style="list-style-type: none"> • 2.4GHz: 802.11b: 23 dBm with 1 antenna; 802.11g: 20 dBm with 1 antenna; 802.11n (HT20): 17 dBm with 1 antenna; 20 dBm with 2 antennas; 802.11n (HT40): 17 dBm with 1 antenna; 20 dBm with 2 antennas • 5GHz: 802.11a: 17 dBm with 1 antenna; 802.11n non-HT duplicate (802.11a duplicate) mode: 17 dBm with 1 antenna; 802.11n (HT20): 17 dBm with 1 antenna; 20 dBm with 2 antennas; 802.11n (HT40): 17 dBm with 1 antenna; 20 dBm with 2 antennas
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NOTE: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Data Rates Supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps			
	802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps			
	802.11n data rates (2.4 GHz and 5 GHz):			
MCS Index¹	GI² = 800ns		GI = 400ns	
	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)
0	6.5	13.5	7.2	15
1	13	27	14.4	30
2	19.5	40.5	21.7	45
3	26	54	28.9	60
4	39	81	43.3	90
5	52	108	57.8	120
6	58.5	121.5	65	135
7	65	135	72.2	157.5
8	13	27	14.4	30
9	26	54	28.9	60
10	39	81	43.3	90
11	52	108	57.8	120
12	78	162	86.7	180
13	104	216	115.6	240
14	117	243	130	270
15	130	270	144.4	300

NOTE: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Available Transmit Power Settings	<ul style="list-style-type: none"> 2.4 GHz: 23 dBm (200 mW); 20 dBm (100 mW); 17 dBm (50 mW); 14 dBm (25 mW); 11 dBm (12.5 mW); 8 dBm (6.25 mW); 5 dBm (3.13 mW); 2 dBm (1.56 mW); -1 dBm (0.78 mW) 5 GHz: 20 dBm (100 mW); 17 dBm (50 mW); 14 dBm (25 mW); 11 dBm (12.5 mW); 8 dBm (6.25 mW); 5 dBm (3.13 mW); 2 dBm (1.56 mW); -1 dBm (0.78 mW)
NOTE: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.	
Antenna Connectors	2.4-GHz: 3 RP-TNC connectors; 5-GHz: 3 RP-TNC connectors
Interfaces	10/100/1000 autosensing (RJ-45); Management console port (RJ45)
Indicators	Status LED indicates operating state, association status, error/warning condition, boot sequence, and maintenance status; Ethernet LED indicates activity over the Ethernet, status; Radio LED indicates activity over the radio, status.
Modularity	Number of radio module slots: 2; Available radio modules
Dimensions (W x L x H)	<ul style="list-style-type: none"> AP (without mounting bracket): 8.12 x 9.52 x 2.35 in. (20.62 x 24.18 x 5.97 cm) AP (with mounting bracket): 8.12 x 9.52 x 2.75 in. (20.62 x 24.18 x 6.99 cm)
Weight	AP with 2 radios installed: 5.1 lbs (2.31 kg); AP chassis: 2.1 lbs (0.95 kg); 2.4 GHz radio: 1.5 lbs (0.68 kg); 5 GHz radio: 1.5 lbs (0.68 kg)
Environmental	Non-operating (storage) temperature: -40 to 185°F (-40 to 85°C; Operating temperature: -4 to +131°F (-20 to +55°C; Operating humidity: 10 to 90 percent (non-condensing)
System Memory	64 MB DRAM; 32 MB flash
Input Power Requirements	AP1250: 36 to 57 VDC; Power Supply and Power Injector: 100 to 240 VAC; 50 to 60 Hz
Powering Options	Cisco Catalyst switch port capable of sourcing 18.5W or greater; Cisco AP1250 Power Injector (AIR-PWRINJ4); Cisco AP1250 Local Power Supply (AIR-PWR-SPLY1); 802.3af switch (AP1250 with single radio only)
Warranty	Limited Lifetime Hardware Warranty
Power Draw	<ul style="list-style-type: none"> AP1250 with two RM1252 radio modules installed: 16.9 W AP1250 with one RM1252 radio module installed: 12.95 W
NOTE: For an AP1250 with two radios, 16.9 W is the maximum power required at the access point (powered device). When deployed using PoE, the power drawn from the power sourcing equipment will be higher by some amount dependent on the length of the interconnecting cable. This additional power may be as high as 1.6W, bringing the total system power draw (access point + cabling) to 18.5 W. A similar consideration applies for an AP1250 with one radio.	
Wireless Network Standards and Wi-Fi Certification	<ul style="list-style-type: none"> IEEE Standard: IEEE 802.11a; IEEE 802.11b; IEEE 802.11g; IEEE 802.11n; IEEE 802.11h; IEEE 802.11d Security: WPA™; Enterprise, Personal; WPA2™; Enterprise, Personal EAP Type(s): EAP-Transport Layer Security (TLS); EAP-Tunneled TLS(TTLS)/Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2); Protected EAP (PEAP)v0/EAP-MSCHAPv2; PEAPv1/EAP-Generic Token Card (GTC); EAP-SIM Multimedia: WMM™
Receive Sensitivity	<ul style="list-style-type: none"> 802.11a: -86 dBm @ 6 Mb/s; -85 dBm @ 9 Mb/s; -82 dBm @ 12 Mb/s; -81 dBm @ 18 Mb/s; -80 dBm @ 24 Mb/s; -79 dBm @ 36 Mb/s; -74 dBm @ 48 Mb/s; -73 dBm @ 54 Mb/s 802.11b: -90 dBm @ 1 Mb/s; -89 dBm @ 2 Mb/s; -87 dBm @ 5.5 Mb/s; -85 dBm @ 11 Mb/s 802.11g: -87 dBm @ 6 Mb/s; -86 dBm @ 9 Mb/s; -83 dBm @ 12 Mb/s; -82 dBm @ 18 Mb/s; -81 dBm @ 24 Mb/s; -80 dBm @ 36 Mb/s; -75 dBm @ 48 Mb/s; -74 dBm @ 54 Mb/s 5-GHz: 802.11n (HT20): -85 dBm @ MC0; -84 dBm @ MC1; -83 dBm @ MC2; -82 dBm @ MC3; -79 dBm @ MC4; -74 dBm @ MC5; -73 dBm @ MC6; -72 dBm @ MC7; -85 dBm @ MC8; -84 dBm @ MC9; -83 dBm @ MC10; -82 dBm @ MC11; -79 dBm @ MC12; -74 dBm @ MC13; -73 dBm @ MC14; -72 dBm @ MC15 5-GHz: 802.11n (HT40): -85 dBm @ MC0; -84 dBm @ MC1; -83 dBm @ MC2; -79 dBm @ MC3; -76 dBm @ MC4; -71 dBm @ MC5; -70 dBm @ MC6; -69 dBm @ MC7; -85 dBm @ MC8; -84 dBm @ MC9; -83 dBm @ MC10; -79 dBm @ MC11; -76 dBm @ MC12; -71 dBm @ MC13; -70 dBm @ MC14; -69 dBm @ MC15 2.4-GHz: 802.11n (HT20): -86 dBm @ MC0; -85 dBm @ MC1; -84 dBm @ MC2; -83 dBm @ MC3; -80 dBm @ MC4; -75 dBm @ MC5; -74 dBm @ MC6; -73 dBm @ MC7; -86 dBm @ MC8; -85 dBm @ MC9; -84 dBm @ MC10; -83 dBm @ MC11; -80 dBm @ MC12; -75 dBm @ MC13; -74 dBm @ MC14; -73 dBm @ MC15 2.4-GHz: 802.11n (HT40): -86 dBm @ MC0; -85 dBm @ MC1; -84 dBm @ MC2; -80 dBm @ MC3; -77 dBm @ MC4; -72 dBm @ MC5; -71 dBm @ MC6; -70 dBm @ MC7; -86 dBm @ MC8; -85 dBm @ MC9; -84 dBm @ MC10; -80 dBm @ MC11; -77 dBm @ MC12; -72 dBm @ MC13; -71 dBm @ MC14; -70 dBm @ MC15
Compliance	<p>Standards</p> <ul style="list-style-type: none"> Safety: UL 60950-1; CAN/CSA-C22.2 No. 60950-1; UL 2043; IEC 60950-1; EN 60950-1 Radio approvals: FCC Part 15.247, 15.407; RSS-210 (Canada); EN 300.328, EN 301.893 (Europe); ARIB-STD 33 (Japan); ARIB-STD 66 (Japan); ARIB-STD T71 (Japan); AS/NZS 4268.2003 (Australia and New Zealand); EMI and susceptibility (Class B); FCC Part 15107 and 15109; ICES-003 (Canada); VCCI (Japan); EN 301.489-1 and -17 (Europe); EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC Security: 802.11i, WPA2, WPA; 802.1X; AES, TKIP Other: FCC Bulletin OET-65C; RSS-102

1. MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.
2. GI: A Guard Interval (GI) between symbols helps receivers overcome the effects of multipath delays.

Selected Part Numbers and Ordering Information

Cisco Aironet 1250 Series Access Point	
AIR-AP1252AG-A-K9	802.11a/g/n-draft 2.0 2.4/5-GHz Modular Autonomous AP; 6 RP-TNC; FCC configuration
AIR-AP1252G-A-K9	802.11g/n-draft 2.0 2.4-GHz Modular Autonomous AP; 3 RP-TNC; FCC configuration
AIR-LAP1252AG-A-K9	802.11a/g/n-draft 2.0 2.4/5-GHz Modular Unified AP; 6 RP-TNC FCC configuration
AIR-LAP1252G-A-K9	802.11g/n-draft 2.0 2.4-GHz Modular Unified AP; 3 RP-TNC; FCC configuration
Cisco Aironet 1250 Series Eco-Pack	
AIR-LAP1252-A-K9-5	802.11a/g/n 2.4/5 GHz Mod Unified AP, FCC, 5 APs
AIR-LAP1252-E-K9-5	802.11a/g/n 2.4/5 GHz Mod Unified AP, ETSI, 5 APs
AIR-LAP1252-N-K9-5	802.11a/g/n 2.4/5 GHz Mod Unified AP, Non-FCC, 5 APs
AIR-AP1252-N-K9-5	802.11a/g/n 2.4/5 GHz Mod Auto AP, Non-FCC, 5 APs

For More Information

<http://www.cisco.com/go/802.11n>

Cisco Aironet 1240 Series Access Points

Cisco Aironet 1240 Series IEEE 802.11a/b/g Access Points deliver the versatility, high capacity, security, and enterprise-class features demanded by wireless LAN (WLAN) customers. They are designed specifically for challenging RF environments such as factories, warehouses, and large retail establishments that require the antenna versatility associated with connectorized antennas, a rugged metal enclosure, and a broad operating temperature range. The Cisco Aironet 1240 Series provides local as well as inline power, including support for IEEE 802.3af Power over Ethernet (PoE). These access points are ideal for factories, warehouses and retailers.



Ideal for Companies That Need These Features

- **Cisco Aironet 1240 Series Access Point** - Rugged enterprise-class access point designed for indoor industrial deployments and installations that require antenna versatility
- Optional software allows the access point to be configured to support enterprise wireless mesh

Key Features and Benefits

- The Cisco Aironet 1240 Series Access Points have integrated 802.11a/b/g radios.
- They are available in an 802.11g-only version for countries that do not allow 5 GHz.
- Connectors offer a variety of both 2.4- and 5-GHz antennas.
- These access points are orderable as autonomous or lightweight access points.
- They can be configured to function as an access point or bridge, enabling a broad array of applications.
- Four power options offer deployment flexibility and cost savings: 802.3af, Cisco Power over Ethernet (PoE), Cisco Power Injector, or a local power supply.

Specifications

Feature	Cisco Aironet 1240 Series Access Point
Software	<ul style="list-style-type: none"> • Cisco IOS Software Release 12.4(10b)JA or later (Autonomous Mode) • Cisco IOS Software Release 12.4(10b)JX or later (Unified Mode) • Cisco Unified Wireless Network Software Release 4.2 or later
Data Rates Supported	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps; 802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps
Network Standards	IEEE 802.11a/b/g
Uplink	Autosensing 802.3 10/100BASE-T Ethernet
Frequency Band and Operating Channels	Americas (FCC): 2.412 to 2.462 GHz-11 channels, 5.15 to 5.35, 5.725 to 5.825 GHz-12 channels; China: 2.412 to 2.472 GHz-13 channels, 5.725 to 5.825 GHz-4 channels; ETSI: 2.412 to 2.472 GHz-13 channels, 5.15 to 5.725 GHz-19 channels; Japan (TELEC): 2.412 to 2.472 GHz-13 channels; Orthogonal Frequency Division Multiplexing (OFDM), 2.412 to 2.484 GHz-14 channels; Complementary Code Keying (CCK), 5.15 to 5.25 GHz-4 channels; North America: 2.412 to 2.462 GHz-11 channels, 5.15 to 5.35, 5.725 to 5.825 GHz-12 channels; Singapore: 2.412 to 2.472 GHz-13 channels, 5.15 to 5.25 GHz and 5.725 to 5.825 GHz-8 channels; Taiwan: 2.412 to 2.462 GHz-11 channels, 5.25 to 5.35 GHz and 5.725 to 5.825 GHz-8 channels

Non-Overlapping Channels	<ul style="list-style-type: none"> 802.11a: 12 channels (FCC; other regulatory domains support different numbers of 802.11a channels) FCC currently supports 12 non-overlapping channels, with potentially up to 23 channels via a future firmware release depending on FCC rules; 802.11b/g: 3 channels
Receive Sensitivity	<ul style="list-style-type: none"> 802.11a: 6 Mbps: -87 dBm; 9 Mbps: -87 dBm; 12 Mbps: -85 dBm; 18 Mbps: -84 dBm; 24 Mbps: -81 dBm; 36 Mbps: -78 dBm; 48 Mbps: -73 dBm; 54 Mbps: -72 dBm 802.11g: 6 Mbps: -90 dBm; 9 Mbps: -84 dBm; 12 Mbps: -82 dBm; 18 Mbps: -80 dBm; 24 Mbps: -77 dBm; 36 Mbps: -73 dBm; 48 Mbps: -72 dBm; 54 Mbps: -72 dBm
Antenna	2.4 GHz: Dual RP-TNC connectors; 5 GHz: Dual RP-TNC connectors
LEDs	Status LED indicates operating state, association status, error/warning condition, boot sequence, and maintenance status; Ethernet LED indicates activity over the Ethernet, status; Radio LED indicates activity over the radio, status
Dimensions (H x W x D)	6.6 x 8.5 x 1.1 in. (16.76 x 21.59 x 2.79 cm)
Weight	2.0 lbs
Environmental	<ul style="list-style-type: none"> Non operating (storage) temperature: 40 to 1850F (-40 to 850C); Operating temperature: -4 to +1310F (-20 to +550C) Operating/noncondensing humidity: 10 to 90 percent
System Memory	32 MB RAM; 16 MB flash
Input Power Requirements	100 to 240 VAC; 50 to 60Hz (power supply); 36 to 57 VDC (device)
Power Draw	12.95W ¹ maximum
Warranty	One year
Range²	<ul style="list-style-type: none"> Indoor-802.11a: 85 ft (26 m) @ 54 Mbps; 150 ft (46 m) @ 48 Mbps; 210 ft (64 m) @ 36 Mbps; 230 ft (70 m) @ 24 Mbps; 260 ft (79 m) @ 18 Mbps; 280 ft (85 m) @ 12 Mbps; 310 ft (94 m) @ 9 Mbps; 330 ft (100 m) @ 6 Mbps; 802.11g: 105 ft (32 m) @ 54 Mbps; 180 ft (55 m) @ 48 Mbps; 260 ft (79 m) @ 36 Mbps; 285 ft (87 m) @ 24 Mbps; 330 ft (100 m) @ 18 Mbps; 355 ft (108 m) @ 12 Mbps; 365 ft (111 m) @ 11 Mbps; 380 ft (116 m) @ 9 Mbps; 410 ft (125 m) @ 6 Mbps; 425 ft (130 m) @ 5.5 Mbps; 445 ft (136 m) @ 2 Mbps; 460 ft (140 m) @ 1 Mbps; Outdoor-802.11a: 100 ft (30 m) @ 54 Mbps; 300 ft (91 m) @ 48 Mbps; 425 ft (130 m) @ 36 Mbps; 500 ft (152 m) @ 24 Mbps; 550 ft (168 m) @ 18 Mbps; 600 ft (183 m) @ 12 Mbps; 625 ft (190 m) @ 9 Mbps; 650 ft (198 m) @ 6 Mbps; 802.11g: 120 ft (37 m) @ 54 Mbps; 350 ft (107 m) @ 48 Mbps; 550 ft (168 m) @ 36 Mbps; 650 ft (198 m) @ 24 Mbps; 750 ft (229 m) @ 18 Mbps; 800 ft (244 m) @ 12 Mbps; 820 ft (250 m) @ 11 Mbps; 875 ft (267 m) @ 9 Mbps; 900 ft (274 m) @ 6 Mbps; 910 ft (277 m) @ 5.5 Mbps; 940 ft (287 m) @ 2 Mbps; 950 ft (290 m) @ 1 Mbps;
Power Draw	Local power: 802.3 AF switches; Cisco legacy PoE switches; Cisco Aironet power Injectors (PWRINJ3 and PWRINJ-FIB); Third-party PoE devices (must meet input power and power draw requirements)

- The maximum power required at the powered device. If the access point is being used in a PoE configuration, the power drawn from the power sourcing equipment will be higher by some amount dependent on the length of the inter-connecting cable. This additional power may be as high as 2.45W, bringing the total system power draw (access point + cabling) to 15.4W.
- Ranges and actual throughput vary based upon numerous environmental factors so individual performance may differ

Selected Part Numbers and Ordering Information

Cisco Aironet 1240AG Series Access Point	
AIR-AP1242AG-A-K9	Cisco Aironet 1240AG 802.11a/g Non-modular Cisco IOS access point; RP-TNC; FCC configuration
AIR-LAP1242AG-A-K9	Cisco Aironet 1240AG 802.11ag Non-modular LWAPP access point; RP-TNC; FCC configuration
Cisco Aironet 1240G Series Access Point	
AIR-AP1242G-A-K9	Cisco Aironet 1240AG 802.11g non-modular Cisco IOS access point; RP-TNC; FCC configuration
Cisco Aironet 1240AG Series Eco-Pack SKUs and Regulatory Domains	
AIR-LAP1242-AK9-10	Cisco Aironet 1240AG 802.11ag LWAPP AP Dual 2.4,5GHz RP-TNC FCC Cnfg,10 APs
AIR-LAP1242-EK9-10	Cisco Aironet 1240AG 802.11a/g LWAPP AP Dual 2.4,5GHz RP-TNC ETSI Cnfg,10 APs
AIR-AP1242-A-K9-10	Cisco Aironet 1240AG 802.11a/g Non-modular IOS AP; RP-TNC; FCC Cnfg,10 APs
AIR-AP1242-E-K9-10	Cisco Aironet 1240AG 802.11a/g Non-modular IOS AP; RP-TNC; ETSI Cnfg,10 APs

For More Information

<http://www.cisco.com/go/wireless>

Cisco Aironet 1130 Series Access Points

The Cisco Aironet 1130 Access Points package high capacity, high security, and enterprise-class features to deliver wireless LAN (WLAN) access for a low total cost of ownership. Designed for WLAN coverage in offices and similar RF environments, these unobtrusive access points feature integrated antennas and dual IEEE 802.11a/g radios for robust and predictable coverage, delivering a combined capacity of 108 Mbps. These competitively priced access points are ready to install and easy to manage, reducing the cost of deployment and ongoing maintenance. Cisco Aironet 1130 Access Points are available in a lightweight version, an autonomous version that can be field-upgraded to lightweight operation, and a single-band 802.11g version for use in regulatory domains that do not allow 802.11a 5-GHz operation.



Ideal for Companies That Need These Features

- Cisco Aironet 1130 Series**
- High-capacity and high-security WLAN in the enterprise office
 - Low-profile access point that blends into the environment and is easy to deploy
 - Optional WirelessPLUS software allows the access point to be configured to support the OfficeExtend solution for wireless teleworking.
 - Optional software allows the access point to be configured to support enterprise wireless mesh

Key Features and Benefits

- 802.11a/g radios with simultaneous dual-band support provide 108-Mbps capacity.
- These access points are available in an 802.11g-only version for countries that do not allow 5 GHz.
- Optional WirelessPLUS software allows the access point to be configured to support the OfficeExtend solution for wireless teleworking.
- Optional software allows the access point to be configured to support enterprise wireless mesh.

Specifications

Feature	Cisco Aironet 1130 Series Access Point
Data rates supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps; 802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps
Software	<ul style="list-style-type: none"> • Cisco IOS Software Release 12.4(10b)JA or later (Autonomous Mode) • Cisco IOS Software Release 12.4(10b)JX or later (Unified Mode) • Cisco Unified Wireless Network Software Release 7.0 or later
Network standard	IEEE 802.11a, 802.11b and 802.11g
Uplink	Autosensing 802.3 10/100BaseT Ethernet
Non-overlapping channels	802.11a—Up to 19; 802.11b/g—3
SNMP compliance	MIB I and MIB II
Antennas	2.4 GHz: Gain 3.0 dBi, Horizontal Beamwidth 360°; 5 GHz: Gain 4.5 dBi, Horizontal Beamwidth 360°
Frequency band and Operating Channels	<ul style="list-style-type: none"> • Americas (FCC): 2.412 to 2.462 GHz: 11 channels, 5.15 to 5.35, 5.725 to 5.825 GHz: 12 channels • China: 2.412 to 2.472 GHz: 13 channels, 5.725 to 5.825 GHz: 4 channels • ETSI: 2.412 to 2.472 GHz: 13 channels, 5.15 to 5.725 GHz: 19 channels • Israel: 2.432 to 2.472 GHz: 9 channels, 5.15 to 5.35 GHz: 8 channels • Japan (TELEC): 2.412 to 2.472 GHz: 13 channels Orthogonal Frequency Division Multiplexing (OFDM), 2.412 to 2.484 GHz: 14 channels Complementary Code Keying (CCK), 5.15 to 5.25 GHz: 4 channels • Japan-P (TELEC 2 (Japan2) Config): 2.412 to 2.472 GHz: 13 channels Orthogonal Frequency Division Multiplexing (OFDM), 5.15 to 5.35 GHz: 8 channels • Korea: 2.412 to 2.472 GHz: 13 channels, 5.15 to 5.35, 5.46 to 5.72, 5.725 to 5.825, 19 channels • North America: 2.412 to 2.462 GHz: 11 channels, 5.15 to 5.35, 5.725 to 5.825 GHz: 12 channels • Singapore: 2.412 to 2.472 GHz, 13 channels, 5.15 to 5.35 GHz, 8 channels and 5.725 to 5.825 GHz, 12 channels • Taiwan: 2.412 to 2.462 GHz, 11 channels, 5.25-5.35 GHz, 5.725 to 5.825, 7 channels
Receive sensitivity	802.11a— 6 Mbps: -87 dBm, 9 Mbps: -86 dBm, 12 Mbps: -85 dBm, 18 Mbps: -84 dBm, 24 Mbps: -80 dBm, 36 Mbps: -78 dBm, 48 Mbps: -73 dBm, 54 Mbps: -71 dBm; 802.11g—1 Mbps: -93 dBm, 2 Mbps: -91 dBm, 5.5 Mbps: -88 dBm, 6 Mbps: -86 dBm, 9 Mbps: -85 dBm, 11 Mbps: -85 dBm, 12 Mbps: -84 dBm, 18 Mbps: -83 dBm, 24 Mbps: -79 dBm, 36 Mbps: -77 dBm, 48 Mbps: -72 dBm, 54 Mbps: -70 dBm
Available transmit power settings	<ul style="list-style-type: none"> • 802.11a: OFDM: 50 mW (17 dBm), 32 mW (15 dBm), 25 mW (14 dBm), 10 mW (11 dBm), 5 mW (8 dBm), 3 mW (5 dBm), 2 mW (2 dBm), 1 mW (-1 dBm); 802.11g: CCK—100 mW (20 dBm), 50 mW (17 dBm), 25 mW (14 dBm), 12 mW (11 dBm), 6 mW (8 dBm), 3 mW (5 dBm), 2 mW (2 dBm), 1 mW (-1 dBm); OFDM—50 mW (17 dBm), 25 mW (14 dBm), 10 mW (11 dBm), 5 mW (8 dBm), 3 mW (5 dBm), 1 mW (2 dBm), 1 mW (-1 dBm) • Maximum power setting will vary by channel and according to individual country regulations.

Status LEDs	<ul style="list-style-type: none"> External: Status LED indicates operating state, association status, error/warning condition, boot sequence and maintenance status Internal: Ethernet LED indicates activity over the Ethernet, status; Radio LED indicates activity over the radios, status
Dimensions (H x W x D)	75 x 75 x 1.3 in. (191 x 191 x 3.3 cm)
Weight	1.5 lbs. (0.67 kg)
Range	<ul style="list-style-type: none"> Indoor (Distance across open office environment): 802.11a: 80 ft (24 m) @ 54 Mbps, 150 ft (45 m) @ 48 Mbps, 200 ft (60 m) @ 36 Mbps, 225 ft (69 m) @ 24 Mbps, 250 ft (76 m) @ 18 Mbps, 275 ft (84 m) @ 12 Mbps, 300 ft (91 m) @ 9 Mbps, 325 ft (100 m) @ 6 Mbps; 802.11g: 1000 ft (30 m) @ 54 Mbps, 175 ft (53 m) @ 48 Mbps, 250 ft (76 m) @ 36 Mbps, 275 ft (84 m) @ 24 Mbps, 325 ft (100 m) @ 18 Mbps, 350 ft (107 m) @ 12 Mbps, 360 ft (110 m) @ 11 Mbps, 375 ft (114 m) @ 9 Mbps, 400 ft (122 m) @ 6 Mbps Outdoor: 802.11a: 100 ft (30 m) @ 54 Mbps, 300 ft (91 m) @ 48 Mbps, 425 ft (130 m) @ 36 Mbps, 500 ft (152 m) @ 24 Mbps, 550 ft (168 m) @ 18 Mbps, 600 ft (183 m) @ 12 Mbps, 625 ft (190 m) @ 9 Mbps, 650 ft (198 m) @ 6 Mbps; 802.11g: 120 ft (37 m) @ 54 Mbps; 350 ft (107 m) @ 48 Mbps; 550 ft (168 m) @ 36 Mbps; 650 ft (198 m) @ 24 Mbps; 750 ft (229 m) @ 18 Mbps; 800 ft (244 m) @ 12 Mbps; 820 ft (250 m) @ 11 Mbps; 875 ft (267 m) @ 9 Mbps; 900 ft (274 m) @ 6 Mbps; 910 ft (277 m) @ 5.5 Mbps; 940 ft (287 m) @ 2 Mbps; 950 ft (290 m) @ 1 Mbps Ranges and actual throughput vary based upon numerous environmental factors so individual performance may differ.
Compliance	Customers are responsible for verifying approval for use in their country; see http://www.cisco.com/go/aironet/compliance .
Security architecture client authentication and encryption (Cisco Wireless Security Suite supporting WPA and WPA2)	<ul style="list-style-type: none"> Security Standards: WPA, WPA2 (802.11i), Cisco TKIP, Cisco message integrity check (MIC), IEEE 802.11 WEP keys of 40 bits and 128 bits 802.1X EAP types: EAP-FAST, PEAP-GTC, PEAP-MSCHAP, EAP-TLS, EAP-TTLS, EAP-SIM, Cisco LEAP Encryption: AES-CCMP encryption (WPA2), TKIP (WPA), Cisco TKIP, WPA TKIP, IEEE 802.11 WEP keys of 40 bits and 128 bits
Environmental	32-104° F (0-40° C); 10-90% humidity (non-condensing)
System Memory	32 MB RAM, 16 MB FLASH
Input Power Req	100-240 VAC 50-60Hz (power supply); 36-57 VDC (device)
Power Draw	12.2 watts, max
Warranty	One year

Selected Part Numbers and Ordering Information

Cisco Aironet 1130AG Series Access Point	
AIR-AP1131AG-A-K9	802.11a/g Non-modular IOS AP; Integrated Antennas; Israel Cnfg
AIR-LAP1131AG-A-K9	802.11a/g Non-modular LWAPP AP; Integrated Antennas; FCC Cnfg
Cisco Aironet 1130G Series Access Point	
AIR-AP1131G-A-K9	802.11g Non-modular IOS AP; Integrated Antennas; Israel Cnfg
AIR-LAP1131G-A-K9	802.11g Non-modular LWAPP AP; Integrated Antennas; FCC Cnfg
Cisco Aironet 1130AG Series Access Point 10 Unit Eco Pack	
AIR-AP1130-A-K9-10	802.11g Non-modular IOS AP; Integrated Antennas; 10 APs FCC Cnfg
AIR-LAP1130-A-K9-10	802.11g Non-modular LWAPP AP; Integrated Antennas; 10 APs FCC Cnfg

For More Information

<http://www.cisco.com/go/wireless>

Cisco Aironet 1520 Series Lightweight Outdoor Wireless Mesh Access Point

The Cisco Aironet 1520 Series Lightweight Outdoor Access Points are a flexible, secure, and scalable mesh platform that is designed for deployments across large metropolitan-sized areas. As part of the Cisco Unified Network architecture, the wireless mesh can be seamlessly deployed as an extension of wired and wireless networks, with central management through controllers and the Cisco Wireless Control System. The unified architecture centralizes critical functions of the wireless LAN to provide scalable management, advanced security, seamless mobility, and proven reliability. With maximum ratio combining (MRC) technology, the access points provide greater access range for consumer-grade client devices throughout the wireless mesh network. Rugged enclosures allow deployment in extreme weather and hazardous environments, and can be painted to adapt to local aesthetics. The Cisco Aironet 1520 Series includes the Cisco Aironet 1522AG, 1522HZ, 1522CV, and the Cisco Aironet 1524SB, 1524PS, and 1523 CV Lightweight Outdoor Mesh Access Points.



Key Features and Benefits

- Self-configuring and self-healing in response to interference and outages
- Multiple-radio support (802.11a, 802.11b/g, licensed for 4.9-GHz public safety applications)
- Improved 802.11b/g radio sensitivity and range performance with maximal ratio combining (MRC)
- Multiple uplink options (Gigabit Ethernet-10/100/1000BaseT, Fiber SFP interface, cable modem backhaul in some models)
- Internal battery backup power
- 802.3af-compliant Power over Ethernet interface to connect IP devices
- NEMA Type 4X certified enclosure
- FIPS 140-2 certificate

Specifications

Feature	Cisco Aironet 1520 Series Lightweight Outdoor Wireless Access Point		
Wireless standards	<ul style="list-style-type: none"> • 802.11a • 802.11b/g • Public safety 4.9 GHz (5, 10, 20 MHz channels) 		
Data rates and modulation	<ul style="list-style-type: none"> • 802.11a: 54, 48, 36, 24, 18, 12, 9, 6 Mbps, Orthogonal Frequency Division Multiplexing (OFDM) • 802.11b: 11, 5.5, 2, 1 Mbps, Direct Sequence Spread Spectrum (DSSS) • 802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps, OFDM 4.9 GHz: <ul style="list-style-type: none"> • 5 MHz: 13.5, 12, 9, 6, 4.5, 3, 2.25, 1.5 Mbps • 10 MHz: 27, 24, 18, 12, 9, 6, 4.5, 3 Mbps • 20 MHz: 54, 48, 36, 24, 18, 12, 9, 6 Mbps 		
Maximum Transmit Power (Varies by channel and data rate)	2.4 GHz	5 GHz	4.9 GHz
	Cisco 1522AG		
	-A 28 dBm -C 14 dBm -E 14 dBm -K 14 dBm -N 28 dBm -P 16 dBm -S 14 dBm -T 28 dBm	-A 28 dBm -C 22 dBm -E 22 dBm -K 19 dBm -N 28 dBm -P 20 dBm -S 22 dBm -T 28 dBm	-A 20 dBm
	Cisco 1524SB		
	-A 28 dBm -C 14 dBm -N 28 dBm -E 14 dBm -M 14 dBm -K 14 dBm -S 14 dBm -T 28 dBm	-A 28 dBm -C 22 dBm -N 28 dBm -E 22 dBm -M 22 dBm -K 19 dBm -S 22 dBm -T 28 dBm	
Cisco 1524PS			
	-A 28 dBm	-A 28 dBm	-A 26 dBm
Network Interface	<ul style="list-style-type: none"> • 10/100/1000BASE-T Ethernet, autosensing (RJ-45) • Fiber SFP • Cable modem backhaul/interface (only available on 1522CV and 1523CV models) 		
Dimensions (W x L x H)	12.0 in. x 78 in. x 6.4 in. (30.48 cm x 19.81 cm x 16.26 cm) (including antenna mount)		
Weight	1522AG—17 lbs (7.9 kg) 1522CV—17 lbs (7.9 kg) 1522HZ—18 lbs (8.0 kg) 1524SB—18 lbs (8.4 kg) 15223CV—18 lbs (8.4 kg) Battery backup: 2 lbs (0.7kg) Mounting bracket: 6 lbs (2.8 Kg)		
Powering Options	<ul style="list-style-type: none"> • 90-480 VAC, 47-63 Hz • Power over Ethernet: 48 VDC, +/-10 percent • 12 VDC 		
Receive Sensitivity (typical)	<ul style="list-style-type: none"> • 802.11a 5.0 GHz: 6 Mbps: -91 dBm; 9 Mbps: -90 dBm; 12 Mbps: -89 dBm; 18 Mbps: -86 dBm; 24 Mbps: -84 dBm; 36 Mbps: -80 dBm; 48 Mbps: -76 dBm; 54 Mbps: -73 dBm • 802.11b: 1 Mbps: -96 dBm; 2 Mbps: -96 dBm; 5.5 Mbps: -95dBm; 11 Mbps: -92 dBm • 802.11g with MRC: 1 Mbps: -96 dBm; 2 Mbps: -96 dBm; 5.5 Mbps: -95 dBm; 6 Mbps: -91 dBm; 9 Mbps: -91 dBm; 11 Mbps: -92 dBm; 12 Mbps: -91 dBm; 18 Mbps: -90 dBm; 24 Mbps: -89 dBm; 36 Mbps: -86 dBm; 48 Mbps: -80 dBm; 54 Mbps: -80 dBm • 4.9 GHz, 5MHz: 1.5 Mbps: -93 dBm; 2.25 Mbps: -93 dBm; 3 Mbps: -93 dBm; 4.5 Mbps: -92 dBm; 6 Mbps: -88 dBm; 9 Mbps: -85 dBm; 12 Mbps: -80 dBm; 13.5 Mbps: -79 dBm • 4.9 GHz, 10 MHz: 3 Mbps: -92 dBm; 4.5 Mbps: -92 dBm; 6 Mbps: -91 dBm; 9 Mbps: -89 dBm; 12 Mbps: -86 dBm; 18 Mbps: -82 dBm; 24 Mbps: -78 dBm; 27 Mbps: -77 dBm • 4.9 GHz, 20 MHz: 6 Mbps: -89 dBm; 9 Mbps: -89 dBm; 12 Mbps: -88 dBm; 18 Mbps: -86 dBm; 24 Mbps: -83 dBm; 36 Mbps: -80 dBm; 48 Mbps: -75 dBm; 54 Mbps: -74 dBm 		

Frequency Band and Operating Channels	Cisco 1522	Cisco 1524SB and 1524HZ	Cisco 1524PS
	<p>A (Americas (FCC)):</p> <ul style="list-style-type: none"> • 2.401 to 2.473 GHz; 11 channels • 4.940 to 4.990 GHz; • 5MHz-10 channels • 10MHz-5 channels • 20MHz-2 channels • 5.250 to 5.850 GHz; 16 channels (excludes channel 120, 124, 128) <p>C (China):</p> <ul style="list-style-type: none"> • 2.401 to 2.483 GHz; 13 channels • 5.725 to 5.850 GHz; 5 channels <p>E (ETSI):</p> <ul style="list-style-type: none"> • 2.401 to 2.483 GHz; 13 channels • 5.470 to 5.725 GHz; 8 channels <p>K (Korea):</p> <ul style="list-style-type: none"> • 2.401 to 2.483 GHz; 13 channels • 5.250 to 5.560 GHz; 10 channels <p>N (Non-FCC):</p> <ul style="list-style-type: none"> • 2.401 to 2.473 GHz; 11 channels • 5.725 to 5.850 GHz; 5 channels <p>P (Japan2):</p> <ul style="list-style-type: none"> • 2.401 to 2.495 GHz; 14 channels • 4.910 to 5.090 GHz; 6 channels <p>S (Singapore):</p> <ul style="list-style-type: none"> • 2.401 to 2.483 GHz; 13 channels • 5.725 to 5.850 GHz; 5 channels <p>T (Taiwan):</p> <ul style="list-style-type: none"> • 2.401 to 2.473 GHz; 11 channels • 5.470 to 5.850 GHz; 16 channels 	<p>A (Americas (FCC)):</p> <ul style="list-style-type: none"> • 2.401 to 2.473 GHz; 11 channels • 5.250 to 5.850 GHz; 16 channels (excludes channel 120, 124, 128) <p>C (China):</p> <ul style="list-style-type: none"> • 2.401 to 2.473 GHz; 13 channels • 5.725 to 5.850 GHz; 5 channels <p>E (ETSI):</p> <ul style="list-style-type: none"> • 2.401 to 2.483 GHz; 13 channels • 5.470 to 5.725 GHz; 8 channels <p>K (Korea):</p> <ul style="list-style-type: none"> • 2.401 to 2.483 GHz; 13 channels • 5.250 to 5.560 GHz; 10 channels <p>N (Non-FCC):</p> <ul style="list-style-type: none"> • 2.401 to 2.473 GHz; 11 channels • 5.725 to 5.850 GHz; 5 channels <p>S (Singapore):</p> <ul style="list-style-type: none"> • 2.401 to 2.483 GHz; 13 channels • 5.725 to 5.850 GHz; 5 channels <p>T (Taiwan):</p> <ul style="list-style-type: none"> • 2.401 to 2.473 GHz; 11 channels • 5.470 to 5.850 GHz; 16 channels 	<p>A (Americas (FCC)):</p> <ul style="list-style-type: none"> • 2.401 to 2.473 GHz; 11 channels • 4.940 to 4.990 GHz; • 5MHz-10 channels • 10MHz-5 channels • 20MHz-2 channels • 5.725 to 5.850 GHz; 5 channels <p>Cisco 1523CV</p> <p>A (Americas (FCC)):</p> <ul style="list-style-type: none"> • 2.401 to 2.473 GHz; 11 channels • 5.250 to 5.850 GHz; 16 channels (excludes channel 120, 124, 128)
Warranty	90 days		
Compliance	<p>Safety</p> <ul style="list-style-type: none"> • UL 60950; CAN/CSA-C22.2 No. 60950; IEC 60950; EN 60950 <p>Immunity</p> <ul style="list-style-type: none"> • <= 5 mJ for 6kV/3kA @ 8/20 ms waveform; ANSI/IEEE C62.41; EN61000-4-5 Level 4 AC Surge Immunity; EN61000-4-4 Level 4 Electrical Fast Transient Burst Immunity; EN61000-4-3 Level 4 EMC Field Immunity; EN61000-4-2 Level 4 ESD Immunity; EN60950 Overvoltage Category IV <p>Radio approvals</p> <ul style="list-style-type: none"> • FCC Part 15.247, 90.210; FCC Bulletin OET-65C; RSS-210; RSS-102; AS/NZS 4268.2003 <p>EMI and susceptibility</p> <ul style="list-style-type: none"> • FCC part 15.107, 15.109; ICES-003 <p>Security</p> <ul style="list-style-type: none"> • Wireless bridging/mesh; X.509 digital certificates; MAC address authentication; Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP); Wireless access: 802.11, Wi-Fi Protected Access (WPA2), WPA; 802.1X authentication, including Extensible Authentication Protocol and Protected EAP (EAP-PEAP), EAP-Transport Lauer Security (EAP-TLS), EAP-Tunneled TLS (EAP-TTLS), and Cisco LEAP; Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP), VPN pass-through; IP Security (IPsec), Layer 2 Tunneling Protocol (L2TP); MAC address filtering <p>Other</p> <ul style="list-style-type: none"> • ATEX (AIR-LAP1522HZ-X-K9 only) 		
Environmental	<p>Operating temperature: -40 to 55°C (-40 to 131°F) plus Solar Loading</p> <p>Storage temperature: -50 to 85°C (-58 to 185°F)</p> <p>Wind resistance:</p> <ul style="list-style-type: none"> • Up to 100 MPH sustained winds • Up to 165 MPH wind gusts 		
Environmental ratings	<ul style="list-style-type: none"> • IP67 • NEMA Type 4X 		

Selected Part Numbers and Ordering Information

Cisco Aironet 1520 Series Access Point ¹	
AIR-LAP1522AG-x-K9	802.11a and 802.11b/g radios, AC Power
AIR-LAP1522HZ-x-K9	802.11a and 802.11b/g radios, AC Power, Class 1, Zone/Div 2 certified
AIR-LAP1522CV-A-K9	Designed for Service Providers, 802.11a and 802.11b/g mesh access point, cable modem backhaul (DOCSIS 2.0)
AIR-LAP1524SB-x-K9	Dual 802.11a backhaul and 802.11b/g mesh access point, AC Power
AIR-LAP1524PS-A-K9	802.11a, 802.11b and 4.9 Public Safety mesh access point, AC Power
AIR-LAP1523CV-A-K9	Designed for Service Providers, two 5GHz radios, cable modem backhaul (DOCSIS 2.0).

- For the specific regional part numbers please see the Cisco 1520 datasheet: http://www.cisco.com/en/US/prod/colateral/wireless/ps5679/ps8368/data_sheet_c78-532987.html.

For More Information

<http://www.cisco.com/go/1520>

Cisco Aironet 1400 Series Wireless Bridge

The Cisco Aironet 1400 Series Wireless Bridge is a 5GHz 802.11a bridge, which has been ruggedized for harsh outdoor environments. It features high power radios for long range point-to-point and point-to-multipoint connectivity. The Aironet 1400 is an autonomous bridge, and provides a cost-effective way to connect multiple LANs over a long distance.



Key Features and Benefits

- Cisco Aironet 1400 Series Wireless Bridges support both point-to-point and point-to-multipoint configurations.
- High power radios for long range connectivity.
- Autonomous bridge that provides cost-effective way to connect multiple LANs.
- The ruggedized enclosure, with an extended operating temperature range, is optimized for harsh outdoor environments.
- Integrated or optional external antennas offer flexibility in deployment.
- The bridges are designed specifically for ease of installation and operation.

Specifications

Feature	AIR-BR1410A-A-K9	AIR-BR1410A-A-K9-N	Power Injector LR
Frequency band	5.725 to 5.825 GHz (FCC UNII 3)		
Wireless modulation	Coded Orthogonal Frequency Division Multiplexing (COFDM)		
Media access protocol	Carrier Sense Multiple Access with Collision Avoidance (CSMA/CA)		
Modulation	BPSK @ 6 and 9 Mbps, QPSK @ 12 and 18 Mbps, 16-QAM @ 24 and 36 Mbps, 64-QAM @ 48 and 54 Mbps		
Non-overlapping channels	4		
Receive sensitivity (10% PER with 3200byte packets)	6 Mbps: -83 dBm, 9 Mbps: -83 dBm, 12 Mbps: -81 dBm, 18 Mbps: -80 dBm, 24 Mbps: -77 dBm, 36 Mbps: -74 dBm, 48 Mbps: -70 dBm, 54 Mbps: -68 dBm		
Maximum Operational Receive Level	-19 dBm		
Maximum Survivable Receive Level	0 dBm		
Available transmit power settings	250 mW (24 dBm), 200 mW (23 dBm), 155 mW (22 dBm), 125 mW (21 dBm), 60 mW (18 dBm), 30 mW (15 dBm), 15 mW (12 dBm) Maximum power setting will vary according to individual country regulations		
Point-to-point range¹	75 miles (13 km) @ 54 Mbps, 16 miles (26 km) @ 9 Mbps	12 miles (19 km) @ 54 Mbps, 23 miles (37 km) @ 9 Mbps, (Antennas are 28 dBi dish)	
Point-to-multipoint range (sector antenna at root)²	2 miles (3 km) @ 54 Mbps, 8 miles (13 km) @ 9 Mbps	4 miles (7 km) @ 54 Mbps, 11 miles (18 km) @ 9 Mbps, (Non-root antenna is 28 dBi dish)	
Antenna	Captured Linear Polarization; 22.5dBi gain; 10 E-plane by 12 H-plane beamwidth	One N-Type connector for professional installations (antennas sold separately)	
Security	Cisco Wireless Security Suite—Authentication: 802.1x support including LEAP to yield mutual authentication and dynamic per-user, per-session encryption keys; Encryption: Support for static and dynamic IEEE 802.11 WEP keys of 40 bits and 128 bits Pre-standard TKIP WEP enhancements: key hashing (per packet keying) and Message Integrity Check (MIC)		
SNMP compliance	v1 and v2		
Status LEDs	Four LEDs: Install, Radio, Status, Ethernet		Four LEDs: Power ON, Injector status, LAN Ethernet status, Bridge Ethernet status

RSSI port	BNC connector DC Voltage port (0VDC to 2.7 VDC)		NA
Uplink	100 Mbps over dual coaxial cables		10/100BaseT Ethernet
Configuration support	Telnet, HTTP, FTP, TFTP, SNMP	Telnet, HTTP, FTP, TFTP, SNMP	NA
Compliance	Customers are responsible for verifying approval for use in their country. Please see http://www.cisco.com/go/aironet/compliance to verify approval and to identify the regulatory domain that corresponds to a particular country. All regulatory domains may not have been approved. As they are approved, the part numbers will be available on the Global Price List. (individual country regulations)		
Dimensions (H x W x D)	11.4 x 11.4 x 4.2 in. (29 x 29 x 11 cm)	11.6 x 11.6 x 3.6 in. (29 x 29 x 9 cm)	6.7 x 6.3 x 1.3 in (17 x 16 x 3 cm)
Weight	11 lbs. (5 kg)	10 lbs. (5 kg)	14lbs. (0.6kg)
Operational temperature	-30 to +55°C (-22 to +131°F)	-30 to +55°C (-22 to +131°F)	0 to +50C (32 to 122F)
Storage temperature	-40 to +85°C (-40 to +185°F)	-40 to +85°C (-40 to +185°F)	-40 to +70C (-40 to +158F)
Operational altitude	4206 m (13,800 ft.)	4206 m (13,800 ft.)	4206 m (13,800 ft.)
Storage altitude	4877 m (16,000 ft.)	4877 m (16,000 ft.)	4877 m (16,000 ft.)
Humidity	0 to 100% (condensing)	0 to 100% (condensing)	0 to 90% (non-condensing)
Vibration	0.001 G2/Hz from 5 - 100 Hz	0.001 G2/Hz from 5 - 100 Hz	0.001 G2/Hz from 5 - 100 Hz
Storage vibration	0.01 G2/Hz from 5 - 100 Hz	0.01 G2/Hz from 5 - 100 Hz	0.01 G2/Hz from 5 - 100 Hz
Enclosure	Aluminum with environmentally sealed plastic radome	NEMA-4, aluminum	Metal case
AC power	Not Required as uses DC voltage from Power Injector		100 to 240 VAC, +/- 10% (power supply)
DC power	48 VDC +/-2V	48 VDC +/-2V	48 VDC +/-2V
Warranty	One year	One year	One year

Selected Part Numbers and Ordering Information

AIR-BR1410A-A-K9	Aironet 1410 Wireless Bridge with 22.5 dBi Antenna, FCC Config
AIR-BR1410A-A-K9-N	Aironet 1410 Wireless Bridge w/ N-Type Connector, FCC Config

For More Information

<http://www.cisco.com/go/wireless>

Cisco Aironet 1300 Series Access Points

The Cisco Aironet 1300 Series Outdoor Access Point or Bridge is an ruggedized 802.11g access point and bridge that provides high-speed and cost-effective wireless connectivity between multiple fixed or mobile networks and clients. The Aironet 1300 Series can be deployed as an autonomous access point or bridge, providing intelligent network services as a standalone device. Alternatively, the Cisco Aironet 1300 Series can be deployed as part of the Cisco Unified Wireless Network, managed centrally by a Cisco wireless LAN controller. The Aironet 1300 supports both, point-to-point or point-to-multipoint configurations.



Key Features and Benefits

- Network connections within a campus area; outdoor infrastructure for mobile networks and users; public access for outdoor areas
- Supports temporary networks for portable or military operations
- Supports the 802.11g standard providing 54-Mbps data rates with secure technology while maintaining full backward compatibility with legacy 802.11b devices
- Easy maintenance and installation by integrating it with your wired network via SWAN solution
- The Cisco Unified Wireless Network simplifies wireless LAN deployment and management by providing clear visibility and dynamic control of the RF environment
- Operates as a wireless bridge, access point, or a workgroup bridge
- Provides ongoing savings of leased-line expenses, a method to connect networks despite physical barriers such as lakes or highways, and rapid deployment of network connections
- Wi-Fi Certified in Access Point mode

Specifications

Feature	Cisco Aironet 1300 Series Access Point
Compatibility	<ul style="list-style-type: none"> Access Point—Compatible with any Wi-Fi Certified client device for basic capability. Compatible with Cisco Aironet clients and Cisco Compatible clients for extended capability Workgroup Bridge—Supports operation with Cisco Aironet access points and Cisco bridges
Air interface standard¹	IEEE 802.11b or IEEE 802.11g
Frequency band	2.412 to 2.462 GHz (FCC); 2.412 to 2.472 GHz (ETSI); 2.412 to 2.472 GHz (TELEC)
Wireless modulation	<ul style="list-style-type: none"> 802.11b—Direct Sequence Spread Spectrum (DSSS): Differential Binary Phase Shift Keying (DBPSK) at 1 Mbps; Differential Quadrature Phase Shift Keying (DQPSK) at 2 Mbps; Complementary Code Keying (CCK) at 5.5 and 11 Mbps 802.11g—Orthogonal Frequency Divisional Multiplexing (OFDM): BPSK at 6 and 9 Mbps; QPSK at 12 and 18 Mbps; 16-quadrature amplitude modulation (QAM) at 24 and 36 Mbps; 64-QAM at 48 and 54 Mbps
Media access protocol	Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA)
Operating channels	802.11b/g—ETSI: 13; Americas: 11; TELEC (Japan): 13
Lightweight Access Point Protocol	A network protocol for lightweight access points that also provides for centralized management.
Non-overlapping channels	3
Security	<ul style="list-style-type: none"> Bridge—Authentication: 802.1X support including LEAP to yield mutual authentication and dynamic per-user, per-session encryption keys; Encryption: Cisco TKIP, key hashing (per-packet keying) and message, Integrity Check (MIC), AES-ready Access Point: Authentication: 802.1X support including LEAP, PEAP, EAP Message Digest 5 (EAP MD5), EAP TLS, and EAP FAST to yield mutual authentication and dynamic per-user, per-session encryption keys; Encryption: Cisco TKIP and WPA TKIP, key hashing (per-packet keying) and MIC; AES-ready Workgroup-Bridge—Authentication: 802.1X support including LEAP to yield mutual authentication and dynamic per-user, per-session encryption keys; Encryption: Cisco TKIP, key hashing (per-packet keying) and MIC, AES-ready
SNMP compliance	Versions 1 and 2

1. Bridge mode has enhancements to the standard to allow longer-range bridging communication

Feature	AIR-BR1310G-x-K9	AIR-BR1310G-x-K9-R
Available transmit power settings¹	802.11b: 100 mW (20 dBm), 50 mW (17 dBm), 30 mW (15 dBm), 20 mW (13 dBm), 10 mW (10 dBm), 5 mW (7 dBm), 1 mW (0 dBm); 802.11g: 30 mW (15 dBm); 20 mW (13 dBm); 10 mW (10 dBm); 5 mW (7 dBm); 1 mW (0 dBm)	
Maximum operational receive level	-20 dBm	-20 dBm
Maximum survivable receive level	10 dBm	10 dBm
Receive sensitivity (10 percent with 3200-byte packets)	1 Mbps: -94 dBm, 2 Mbps: -91 dBm, 5.5 Mbps: -89 dBm, 11 Mbps: -85 dBm; 6 Mbps: -90 dBm, 9 Mbps: -89 dBm; 12 Mbps: -86 dBm, 18 Mbps: -84 dBm; 24 Mbps: -81 dBm, 36 Mbps: -77 dBm; 48 Mbps: -73 dBm, 54 Mbps: -72 dBm	
Access-point role (Outdoor range)	<ul style="list-style-type: none"> Americas: 865 feet (260 meters) at 54 Mbps, 3465 feet (1055 meters) at 11 Mbps; ETSI: 150 feet (45 meters) at 54 Mbps, 775 feet (235 meters) at 11 Mbps; TELEC: 485 feet (145 meters) at 54 Mbps, 1095 feet (330 meters) at 11 Mbps Note: Access Point with 13 dBi integrated antenna and Cisco clients 	<ul style="list-style-type: none"> Americas: 350 feet (105 meters) at 54 Mbps, 1410 feet (430 meters) at 11 Mbps; ETSI: 195 feet (60 meters) at 54 Mbps, 630 feet (190 meters) at 11 Mbps; TELEC: 195 feet (60 meters) at 54 Mbps, 445 feet (135 meters) at 11 Mbps Note: Access Point with 5.2dBi patch antenna and Cisco clients
Bridge role (Point-to-point range)²	<ul style="list-style-type: none"> Americas: 1.3 miles (2 km) at 54 Mbps, 9 miles (15 km) at 11 Mbps; EMEA: 0.2miles (0.36Km) at 54 Mbps, 2.3 miles (3.5 km) at 11 Mbps; TELEC: 0.7 miles (1.1Km) at 54 Mbps, 3.2 miles (5 km) at 11 Mbps Note: 13 dBi integrated antenna at root and non-root bridge 	<ul style="list-style-type: none"> Americas: 4.5 miles (7 km) at 54 Mbps, 14 miles (23 km) at 11 Mbps; EMEA 5.5 miles (9 km) at 11 Mbps; TELEC: 4.5 miles (7 km) at 54 Mbps, 12 miles (20 km) at 11 Mbps Note: 21-dBi dish antenna at root and non-root bridge
Bridge role (Point-to-multipoint range)	<ul style="list-style-type: none"> Americas: 11 miles (1.8 km) at 54 Mbps, 8 miles (13 km) at 11 Mbps; EMEA: 0.25 miles (0.4 km) at 54 Mbps, 1.1 miles (1.8 km) at 11 Mbps; TELEC: 0.8 miles (1.3Km) at 54 Mbps, 3.6 miles (5.8 km) at 11 Mbps Note: 14-dBi sector antenna at root and 13dBi integrated antenna at non-root 	<ul style="list-style-type: none"> Americas: 2.0 miles (3.3 km) at 54 Mbps, 10 miles (16 km) at 11 Mbps; EMEA: 2.5 miles (4 km) at 11 Mbps; TELEC: 2.0 miles (3.3 km) at 54 Mbps, 9.0 miles (14 km) at 11 Mbps Note: 14-dBi sector at root and 21-dBi dish at non-root
Feature	AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R	AIR-PWRINJ-BLR2 and AIR-PWRINJ-BLR2T

Dimensions (H x W x D)	8 x 8.1 x 3.12 in. (20.3 x 20.57 x 7.87 cm)	4.62 x 4.76 x 1.07 in. (11.73 x 12.09 x 2.71 cm)
Weight	2.5 lb (1.25 kg)	2 lb (1 kg)
Operational temperature	-22½ to 131½°F (-30½ to 55½°C)	Same as AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R
Storage temperature	-40½ to 185½°F (-40½ to 85½°C)	Same as AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R
Operational altitude	13,800 ft (4206 m)	Same as AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R
Storage altitude	16,000 ft (4877 m)	Same as AIR-BR1310G-x-K9 and AIR-BR1310G-x-K9-R
Humidity	0 to 100% at 100½°F (38½°C) (condensing)	0 to 90% at 100½°F (38½°C) (non-condensing)
Warranty	One Year	

1. Maximum power setting will vary according to individual country regulations
2. The distances referenced here are approximations and should be used for estimation purposes only.

Selected Part Numbers and Ordering Information

AIR-BR1310G-X-K9	Cisco Aironet 1300 2.4 GHz (802.11g) Outdoor Access Point /Bridge with integrated patch antenna
AIR-BR1310G-X-K9-R	Cisco Aironet 1300 2.4 GHz (802.11g) Outdoor Access Point /Bridge with RP-TNC type connector
AIR-LAP1310G-X-K9	Cisco Aironet 1300 2.4 GHz (802.11g) Outdoor Lightweight Access Point /Bridge with integrated patch antenna
AIR-LAP1310G-X-K9	Cisco Aironet 1300 2.4 GHz (802.11g) Outdoor Lightweight Access Point /Bridge with RP-TNC type connector

For More Information

<http://www.cisco.com/go/Wireless>

Cisco Aironet Wireless LAN Client Adapters

The Cisco Aironet Wireless LAN Client Adapters provide high-performance 54-Mbps connectivity in the 2.4- and 5-GHz bands that combines the freedom of wireless connectivity with the performance, security, and manageability that businesses require.



Ideal for Companies That Need These Features

- Cisco Aironet Wireless LAN Client Adapters**
- Ability to operate in a mixed-mode environment
 - Mobility within the enterprise to increase productivity, as an addition or alternative to wired networks, or the need for flexibility for frequent LAN wiring changes
 - Support for Cisco Compatible Extensions with a Cisco product

Key Features and Benefits

- The Cisco Aironet 802.11a/b/g CardBus Wireless LAN Client Adapters secure network communications using the Cisco Secure Wireless Solution.
- The tools include the Cisco Aironet Desktop Utility, Cisco Aironet System Tray Utility (STU), and Cisco Aironet Client Administration Utility (CAU).
- World mode is used for international roaming.
- The adapter tools offer exceptional range and throughput.
- The adapter tools support single 802.11b coverage, single 802.11g coverage, single 802.11a coverage, dual-mode 802.11a/g coverage, or tri-mode 802.11a/b/g coverage.
- The adapter tools are Wi-Fi Certified, and they support for the Wi-Fi Protected Access (WPA) protocol.
- PCI adapter that offers optimal placement for maximum performance using a dual-band 2.4- or 5-GHz 1-dBi effective gain antenna has a 2-meter cable.
- The PCI adapter provides a low-profile form factor and 2-meter cable length to provide flexibility for installation in low-profile devices, such as slim desktops and point-of-sale (POS) devices.
- The tools support Cisco Compatible Extensions Version 5 and earlier.

Specifications

Feature	Cisco Aironet 802.11a/b/g Wireless CardBus Adapter	Cisco Aironet 802.11a/b/g Wireless PCI Adapter
Form Factor	CardBus Type II	Standard and Low Profile Type II PCI

Interface	32-bit CardBus with standard 68-pin connector; PC-Card Rev. 7.0 compliant	Standard PCI Interface, PCI Rev. 2.3 compliant
Data Rates Supported	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps	
Network Standard	IEEE 802.11a/b/g	
Operating Voltage	3.3 V (± 0.3 V)	
Media Access Protocol	Carrier-Sense Multiple Access w/ Collision Avoidance (CSMA/CA)	
Wireless Medium	802.11g: Direct Sequence Spread Spectrum (DSSS) and Orthogonal Frequency Divisional Multiplexing (OFDM); 802.11a: OFDM	
Modulation	<ul style="list-style-type: none"> • 802.11b: DSSS--Differential Binary Phase Shift Keying (DBPSK) @ 1 Mbps; Differential Quadrature Phase Shift Keying (DQPSK) @ 2 Mbps; Complementary Code Keying (CCK) @ 5.5 and 11 Mbps • 802.11g and 802.11a: OFDM--BPSK @ 6 and 9 Mbps; QPSK @ 12 and 18 Mbps; 16-Quadrature Amplitude Modulation (QAM) @ 24 and 36 Mbps; 64-QAM @ 48 and 54 Mbps 	
Frequency Bands	2.40 to 2.4897 GHz; 5.15 to 5.35 GHz (FCC UNII 1 and UNII 2); 5.725 to 5.85 GHz (FCC UNII 3); 5.15 to 5.35 GHz (ETSI); 5.470 to 5.725 (ETSI); 5.15 to 5.25 GHz (Japan)	
Range (With 2.2 dBi dipole antenna for 802.11g and 802.11b and 6 dBi gain patch for 802.11a)	<ul style="list-style-type: none"> • 802.11a—Indoor: 45 ft (13 m) @ 54 Mbps, 110 ft (33 m) @ 18 Mbps, 165 ft (50 m) @ 6 Mbps; Outdoor: 100 ft (30 m) @ 54 Mbps, 600 ft (183 m) @ 18 Mbps, 1000 ft (304 m) @ 6 Mbps • 802.11b/g—Indoor: 90 ft (27 m) @ 54 Mbps, 180 ft (54m) @ 18 Mbps, 160 ft (48 m) @ 11 Mbps, 300 ft (91 m) @ 6 Mbps, @ 410 ft (124 m); Outdoor: 250 ft (76 m) @ 54 Mbps, 600 ft (183 m) @ 18 Mbps, 1000 ft (304 m) @ 11 Mbps, 1300 ft (396 m) @ 6 Mbps, 2000 ft (610 m) @ 1 Mbps 	
Antenna	Integrated diversity dual-band 2.4/5 GHz antenna	
Security Architecture Client Authentication (Cisco Wireless Security Suite)	<ul style="list-style-type: none"> • Authentication: WPA and 802.1X support for Cisco LEAP, PEAP-GTC, PEAP-MSCHAPv2, and EAP-TLS; MAC address and by standard 802.11 authentication mechanisms • Encryption: Support for static and dynamic IEEE 802.11 WEP keys of 40 bits and 128 bits; Cisco TKIP and WPA TKIP encryption enhancements: key hashing (per-packet keying), message integrity check (MIC) and broadcast key rotation 	
Drivers	Windows XP and Windows 2000	
Dimensions (H x W x D)	0.19 x 2.05 x 4.46 in. (4.80 x 52.08 x 113.35 mm.)	3.12205 x 4.72 in. (79.3 x 119.9 mm.)
Weight	1.6 oz (44.0g)	Standard (frame) PCI w/Antenna: 3.64 oz. (103.2 g), Standard (frame) PCI w/o Antenna: 1.92 oz. (54.7 g), Low Profile PCI w/Antenna: 3.43 oz. (97.5 g), Low Profile PCI w/o Antenna: 1.72 oz. (49.0 g)
Warranty	One Year	One Year

Selected Part Numbers and Ordering Information

AIR-CB21AG-A-K9	Cisco Aironet 802.11a/b/g Cardbus Adapter; FCC Cnfg
AIR-CB21AG-A-K9-40	Cisco Aironet 802.11a/b/g Cardbus Adapter; FCC Cnfg; 40PK
AIR-PI21AG-A-K9	Cisco Aironet 802.11a/b/g Low Profile PCI Adapter; FCC Cnfg
AIR-PI21AG-A-K9-10	Cisco Aironet 802.11a/b/g Low Profile PCI Adapter; FCC Cnfg; 10PK

For More Information

<http://www.cisco.com/go/wireless>

Cisco Secure Services Client

The Cisco Secure Services Client is a software application that allows businesses of all sizes to deploy a single authentication framework across endpoint devices to enable access to both wired and wireless networks. The solution delivers simplified management, robust security, and lower total cost of ownership. Through a simplified and scalable deployment mechanism, IT administrators can deploy and manage the Cisco Secure Services Client across the enterprise. The software client manages the user and device identity and the network access protocols required for secure access. The Cisco Secure Services Client uses the IEEE 802.1X authentication standard to provide a robust first line of defense against unauthorized network intrusions.

Ideal for Companies That Need These Features

Cisco Secure Services Client

- Secure Wi-Fi connections
- Control of users' access policies
- Identity-based access
- FIPS support
- Simple end-user experience (two-click connect, automated VPN, and automated access to network)

Key Features and Benefits

- Automatic VPN feature—Cisco IP Security (IPsec) VPN and Secure Computing Soft Token are integrated in the Cisco Secure Services Client.
- FIPS 140-2 Level 1-compliant solution—FIPS drivers (ordered separately) are available.
- Cisco enterprise deployment mechanism—A unified .xml file allows for client provisioning; the single provisioning schema is independent of hardware. The administrator can now easily create an .msi file containing the .xml and .exe files for installation, and then deploy the files using standard deployment tools such as Microsoft Active Directory, Microsoft Short Message Service (SMS), and Altiris.
- Filtering of unwanted Service Set Identifiers (SSIDs)—This feature decreases the number of available networks for users and enforces corporate security policies for end users.
- Enforcing wired over wireless—This feature allows you to disable the wireless interface when a wired connection is present, and it eliminates unwanted wireless bridging to a wired network.
- Policy Enforcement Manager—The Policy Enforcement Manager enforces an 802.1X identity-based network security framework and configures and enforces access policies to protect corporate resources and assets.
- Network Profile Manager—Using the administrator console, administrators can define preconfigurations, lock down client features, and deploy end-user profiles for enterprise, travel, and home connections. The Network Profile Manager provides network entitlement rights for employees, guests, and suppliers with different levels of security.
- Credential Manager—The Credential Manager facilitates Windows single sign-on (SSO) capabilities, including device and user authentication, user-based authentication sessions, and credential challenges.
- Secure network access—This feature allows for authenticated access to 802.1X wired and wireless LANs. Cisco Secure Services Client is compatible with Wi-Fi-certified devices; it supports all Wi-Fi encryption modes: Wired Equivalent Privacy (WEP), Wi-Fi Protected Access-personal mode (WPA-personal mode), WPA2-personal mode, WPA-enterprise mode, WPA2-enterprise mode, Dynamic WEP (802.1X), Advanced Encryption Standard (AES), and Temporal Key Integrity Protocol (TKIP). It also supports a wide selection of Extensible Authentication Protocol (EAP) types; and protects user privacy with EAP “anonymous” access. In addition, it is compatible with the Cisco Secure Access Control Server (ACS).
- Access management and automated configuration control—This enterprise deployment mechanism, available through a unified .xml file, delivers user-access policies to any port accessed by users. It supports Microsoft Active Directory machine and user group profiles, and facilitates automatic configuration of VLANs, in addition to offering comprehensive SSO support for the Windows login environment.
- Flexible Credential Selection—Machine and/or user credentials, Windows single sign-on, username/password, RSA SecurID tokens; one-time password (OTP) tokens; Smartcards (Axalto, Gemplus, SafeNet Key, and Alladin); and X.509 certificates.

Specifications

Feature	Cisco Secure Services Client
Operating systems	Windows XP, Windows 2000, Windows Vista
EAP protocols (XP/2000)	EAP-Message Digest 5 (MD5), EAP-Transport Layer Security (TLS), EAP-Tunneled TLS (TTLS), Cisco LEAP, EAP-Flexible Authentication via Secure Tunneling (FAST), Protected Extensible Authentication Protocol (PEAP)
EAP protocols (Vista)	Cisco LEAP, EAP-Flexible Authentication via Secure Tunneling (FAST), Protected Extensible Authentication Protocol (PEAP)
EAP-TTLS (XP/2000)	Password Authentication Protocol (PAP), Challenge Handshake Authentication Protocol (CHAP), Microsoft CHAP (MSCHAP), MSCHAPv2, EAP-MD5
EAP-PEAP (XP/2000)	EAP-MSCHAPv2, EAP-TLS, and EAP-Generic Token Card (GTC)
EAP-PEAP (Vista)	EAP-MSCHAPv2 and EAP-Generic Token Card (GTC)
Encryption support	WEP, WPA, WPA2, WPA-Pre-Shared Key (WPA-PSK), WPA2-PSK, Dynamic WEP (802.1X), AES, TKIP
Media support	Wired Ethernet 802.3 and Wi-Fi 802.11a, 802.11b, 802.11g, 802.11n
Switch interoperability	Any 802.1X-compatible Wi-Fi access point and wired Ethernet switch
Authentication, authorization, and accounting (AAA) interoperability	Supports standard RADIUS servers such as Cisco Secure Access Control Server (ACS) and Microsoft Internet Authentication Service (IAS)
Windows SSO	Active Directory machine and user authentication
Enterprise deployment	Export network profiles and lock user interface
Integrated VPN	Automatic VPN requires the following software to be preinstalled: <ul style="list-style-type: none"> • Cisco IPSec VPN version 4.8 or higher on Windows XP • Cisco IPSec VPN version 5.0.03.0560 or higher on Windows Vista
FIPS solution	Meets Federal Information Processing Standard 140-2 Level 1. Requires the purchase of separate drivers for a complete FIPS 140-2 Level 1 client solution. Driver part numbers are AIR-SSCFIPS-DRV (see ordering guide for more detail). Supports many popular Intel, Broadcom, and Atheros Wi-Fi chipsets. FIPS mode includes support for EAP-TLS, EAP-FAST, and PEAP association methods.

Integrated Software Token Applications (XP/2000)	Automatic software token generation requires the following software to be preinstalled: - Secure Computing SoftToken II (Version 2.1 or later)
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Selected Part Numbers and Ordering Information

Windows 2000 Windows XP	
AIR-SC5.0-XP2K	SW Client 5.0 for Win XP/2K for wired/wireless devices
AIR-SC5.0-XP2K-L1, L2, L3, L4, L5, L6, L7, L8	Specified seat count up to 250, 251–1000, 1001–2500, 2501–5000, 5001–10,000, 10,001–25,000, 25,001–50,000, 50,001–100,000
AIR-SSCFIPS-DRV	FIPS drivers
AIR-SSCFIPS-DRV-L1, L2, L3, L4, L5, L6, L7, L8	Specified seat count up to 250, 251–1000, 1001–2500, 2501–5000, 5001–10,000, 10,001–25,000, 25,001–50,000, 50,001–100,000
Windows Vista	
AIR-SSC-VISTA	Software Client 51 for Windows Vista for wired/wireless devices
AIR-SSC-VISTA-L1, L2, L3, L4, L5, L6, L7, L8	Specified seat count up to 250, 251–1000, 1001–2500, 2501–5000, 5001–10,000, 10,001–25,000, 25,001–50,000, 50,001–100,000

For More Information

<http://www.cisco.com/en/US/products/ps7034/index.html>

Cisco Aironet Antennas and Accessories

Cisco offers a complete range of 2.4- and 5-GHz antennas for access-point and bridge equipment that facilitate a customized wireless solution for almost any installation. Customers can select an antenna that will increase the overall efficiency and data rates of their wireless network, while accommodating specific deployment conditions, including physical layout, distance, and aesthetics.



Key Features and Benefits

- Access-point antennas are compatible with all Cisco RP-TNC-equipped access points; they are available with different gain and range capabilities, beam widths, and form factors.
- Bridge antennas are available in directional configurations for point-to-point transmission and in an omnidirectional configuration for point-to-multipoint implementations.
- 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.
- Cisco offers a complete range of antennas for 5-GHz bridging applications.

Specifications

Cisco Aironet 2.4 GHz Access Point Antennas with RP-TNC Connectors

Feature	AIR-ANT2450S-R	AIR-ANT2410Y-R	AIR-ANT2012	AIR-ANT3213
Description	5-dBi sector	10-dBi Yagi mast or wall mount	Diversity patch wall mount	5.2-dBi Pillar mount diversity omni
Application	Wall mount indoor/outdoor antenna with RP-TNC connector. Capable of covering large areas.	Indoor/Outdoor directional antenna for use with Access Points or Bridges	Indoor/Outdoor, unobtrusive medium range antenna	Indoor, unobtrusive medium-range antenna
Approximate Indoor Range¹	6 Mbps: 379 ft (116 m) 54 Mbps: 114 ft (35 m)	6 Mbps: 548 ft (167 m) 54 Mbps: 165 ft (50 m)	6 Mbps: 418 ft (127 m) 54 Mbps: 126 ft (38 m)	6 Mbps: 379 ft (121 m) 54 Mbps: 114 ft (35 m)
Cable Length	3 ft. (0.91m)	3 ft. (0.91 m)	3 ft. (0.91m)	3 ft. (0.91m)
Dimensions (H x W x D)	6 x 3 x 2 in. (1524 x 762 x 5.08 cm)	725 x 3 in. (18.4 x 762 cm)	4.78 x 6.66 x 0.82 in. (12.14 x 16.92 x 2.08 cm)	14 x 5 in. x 1 in. (35.5 x 12.7 x 2.5 cm)
Weight	7 oz. (.02 kg)	8 oz.	9.6 oz. (272g)	1 lb. (460g)
Feature	AIR-ANT1728	AIR-ANT4941	AIR-ANT2422DG-R	AIR-ANT2422DW-R
Description	5.2-dBi omnidirectional ceiling mount	2.2-dBi black dipole antenna	2.2-dBi gray non-articulating dipole antenna	2.2-dBi white dipole antenna
Application	Indoor medium-range antenna, typically hung from crossbars of drop ceilings	Indoor omnidirectional coverage	Indoor omnidirectional coverage	Indoor omnidirectional coverage

Approximate Indoor Range	6 Mbps: 379 ft (116 m) 54 Mbps: 114 ft (35 m)	6 Mbps: 300 ft (91 m) 54 Mbps: 90 ft (27 m)	6 Mbps: 300 ft (91 m) 54 Mbps: 90 ft (27 m)	6 Mbps: 300 ft (91 m) 54 Mbps: 90 ft (27 m)
Cable Length	3 ft. (0.91m)	N/A	N/A	N/A
Dimensions (H x W x D)	1.125 x 1 in. (28.5 x 2.5 cm)	5.5 in. (14 cm)	5.5 in. (14 cm)	5.5 in. (14 cm)
Weight	4.6 oz. (131g)	11 oz. (31 g)	11 oz. (31 g)	11 oz. (31 g)
Feature	AIR-ANT1729	AIR-ANT2485P-R	AIR-ANT2460P-R	AIR-ANT2465P-R
Description	6-dBi Patch wall mount	8.5-dBi patch wall mount	6-dBi patch wall mount	6.5-dBi diversity patch wall mount
Application	Indoor/outdoor, unobtrusive, midrange antenna (may also be used as a medium-range bridge antenna)	Indoor, unobtrusive, long-range antenna (may also be used as a midrange bridge antenna)	Indoor, unobtrusive, long-range antenna (may also be used as a midrange bridge antenna)	Indoor/outdoor, unobtrusive midrange antenna
Approximate Indoor Range	6 Mbps: 403 ft (123 m) 54 Mbps: 121 ft (37 m)	507 ft (155 m) 153 ft (47 m)	403 ft (123 m) 121 ft (37 m)	418 ft (127 m) 126 ft (38 m)
Cable Length	3 ft. (0.91m)	3 ft (0.91 m)	3 ft (0.91 m)	3 ft (0.91 m)
Dimensions (H x W x D)	4 x 5 in. (9.7 x 13 cm.)	5.3 x 5.3 x 90 in. (13.5 x 13.5 x 2.28 cm.)	4.1 x 3.9 x 7.5 in. (10.4 x 9.9 x 1.9 cm.)	5 x 6.7 x 0.90 in. (12.7 x 17 x 2.28 cm.)
Weight	4.9 oz. (139 g)	8.2 oz. (231.3 g.)	6 oz. (171.5 g.)	116 oz. (330.2 g.)

Cisco Aironet 5 GHz Access Point Antennas with RP-TNC Connectors

Feature	AIR-ANT5145V-R	AIR-ANT5160V-R	AIR-ANT5170P-R	AIR-ANT5195P-R
Description	4.5-dBi diversity omnidirectional ceiling mount	6-dBi omnidirectional antenna	70-dBi Diversity patch wall mount	9.5-dBi Patch wall or articulating mast mount
Application	Indoor midrange antenna	Indoor/outdoor midrange antenna	Indoor/outdoor directional wall mount antenna	Indoor/outdoor patch antenna provides different mounting options
Approximate Range[3]	6 Mbps: 732 ft (223 m) 54 Mbps: 82 ft (25 m)	6 Mbps: 822 ft (251 mm.) 54 Mbps: 92 ft (28 m)	6 Mbps: 880 ft (270 m) 54 Mbps: 140 ft (43 m)	6 Mbps: 1030 ft (313 m) 54 Mbps: 170 ft (52 m)
Beam Width	360° H 50° E	360° H 17° E	70° H, 50° V	50° H, 43° V
Cable Length	3 ft. (0.91 m)	3 ft. (0.91 m)	3 ft. (0.91 m)	3 ft. (0.91 m)
Dimensions (L x D)	6.75 x 4.1 in. (171 x 10.41 cm)	12 x 1 in. (30.5 x 2.5 cm)	5.7 in. (14.5 cm.) x 4.3 in. (10.9 cm.) x 0.7 in. (1.8 cm.)	5.1 in. (12.9 cm.) x 5.1 in. (12.9 cm.) x 1.0 in. (2.5 cm.)
Weight	11.5 oz.	5.3 oz.	8 oz (0.2 kg)	9 oz. (0.25 kg.)

Cisco Aironet 5 GHz Access Point Antennas with RP-TNC Connectors

Feature	AIR-ANT5135D-R	AIR-ANT5135DG-R	AIR-ANT5135DW-R
Description	3.5-dBi black dipole antenna	3.5-dBi gray non-articulating antenna	3.5-dBi white dipole antenna Indoor
Application	Indoor omnidirectional coverage	Indoor omnidirectional coverage	Indoor omnidirectional coverage
Approximate Range[3]	6 Mbps: 675 ft. (206 m) 54 Mbps: 75 ft (21 m)	6 Mbps: 675 ft. (206 m) 54 Mbps: 75 ft (21 m)	6 Mbps: 675 ft. (206 m) 54 Mbps: 75 ft (21 m)
Beam Width	60°H, 40°V	60°H, 40°V	60°H, 40°V
Dimensions (L x D)	5.3 x 0.6 in. (13.5 x 1.5 cm)	5.3 x 0.6 in. (13.5 x 1.5 cm)	5.3 x 0.6 in. (13.5 x 1.5 cm)
Weight	1 oz (28.3 g)	1 oz (28.3 g)	1 oz (28.3 g)

1. All range estimates 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 only.

Cisco offers antennas that can be used with the Cisco Aironet 1250 Series Access Points, which feature 802.11n technology. The antennas and access points use an RP-TNC type connector.

Cisco Aironet 2.4- and 5-GHz Access Point Antennas with RP-TNC Connectors for Cisco Aironet 802.11n Access Points

Feature	AIR-ANT2430V-R=	AIR-ANT2460NR-R=	AIR-ANT5140V-R=	AIR-ANT2451NV-R=
Description	Ceiling mount omnidirectional	Wall mount patch	Ceiling mount omnidirectional	Ceiling mount
Application	Indoor carpeted area type, unobtrusive omnidirectional antennas for Cisco Aironet 802.11n MIMO Radios	Indoor carpeted area type, unobtrusive omnidirectional antennas for Cisco Aironet 802.11n MIMO Radios	Indoor carpeted area type, unobtrusive omnidirectional antennas for Cisco Aironet 802.11n MIMO Radios	Indoor carpeted area type, unobtrusive omnidirectional antennas for Cisco Aironet 802.11n MIMO Radios
Gain	3.0 dBi	6.0 dBi	4.0 dBi	2.5 dBi (2.4 GHz) 3.5 dBi (5 GHz)
Frequency	2.4 GHz	2.4 GHz	5 GHz	2.4 GHz and 5 GHz
Approximate Indoor Range¹	(see note below)	(see note below)	(see note below)	(see note below)
Beam Width	360°H, 60°V	80°H, 75°V	360°H, 45°V	63°H, 55°V
Cable Length	3 ft (0.91 m) 3 cables with RP-TNC	3 ft (0.91 m) 3 cables with RP-TNC	3 ft (0.91 m) 6 cables with RP-TNC	3 ft (0.91 m) 6 cables with RP-TNC
Dimensions	12.1 x 4.2 x 1.6 in. (30.73 x 10.67 x 4.06 cm)	5.8 x 11.25 x 1.1 in. (14.7 x 28.6 x 2.9 cm)	6.9 x 3 x 0.9 in. (1.753 x 7.62 x 2.29 cm)	8.6 dia x 1.8 in. (21.8 x 4.6 cm)
Weight	27 oz (0.76 kg)	19.7 oz (0.56 kg)	14.1 oz (0.40 kg)	
Operating Temperature	0° to +55°C	-30° to +70°C	0° to +55°C	0° to +55°C

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

Cisco offers antennas for the Cisco Aironet 1500 Series Outdoor Mesh Access Points in various gains and antenna types.

Cisco Aironet 2.4- and 5-GHz Antennas with N-Type Connectors for the Cisco Aironet 1500 Series Lightweight Outdoor Mesh APs¹

Feature	AIR-ANT2450V-N	AIR-ANT2455V-N	AIR-ANT2480V-N	
Description	5 dBi, direct mount omnidirectional antenna for 2.4 GHz	5.5 dBi, direct mount omnidirectional antenna for 2.4 GHz	8 dBi direct mount omnidirectional antenna for 2.4 GHz	
Application	Omnidirectional antenna for outdoor mesh access points. Suitable for all access point deployments, specifically for cable strand mount applications.	Omnidirectional antenna suitable for use on Cisco Aironet 1500 Series Lightweight Outdoor Mesh Access Points in all deployments. Not suitable for use on Cisco Aironet 1500 Series Lightweight Outdoor Mesh Access Points in cable strand mount situations.	Extended range omnidirectional antenna for outdoor mesh access points. Suitable for pole or roof mounting deployments.	
Gain	5 dBi	5.5 dBi	8 dBi	
Frequency	2.4 GHz	2.4 GHz	2.4 GHz	
Beam width	30° V	25° V	10° V	
Cable Length	None	None	None	
Dimensions	11 in. x 1 in. (27.94 x 2.54 cm)	12.5 in. x 1 in. (31.75 x 2.54 cm)	19.5 in. x 7/8 in. diameter (49.5 cm x 2.22 cm)	
Weight	0.40 lbs. (0.18 kg)	0.31 lbs. (0.14 kg)	0.45 lbs. (0.20 kg)	
Operating Temperature	-30° to +70 C	-30° to 70°C	-30° to +70° C	
Feature	AIR-ANT5175V-N	AIR-ANT5180V-N	AIR-ANT5114P-N	AIR-ANT5117S-N
Description	7.5 dBi omnidirectional antenna for 5 GHz	8 dBi direct mount omnidirectional antenna for 5 GHz	14 dBi wall/mast mount articulating patch antenna for 5 GHz	17 dBi, 90 degree mast mount sector antenna for 5 GHz
Gain	5 GHz bands = 7.5 dBi 4.9 GHz bands = 6 dBi	8 dBi	14 dBi	17 dBi
Frequency	4.9-5.8 GHz	4.9-5.85 GHz	4.9-5.85 GHz	4.9-5.85 GHz

Application	Omnidirectional antenna suitable for use on Cisco Aironet 1500 Series Lightweight Outdoor Mesh Access Points in all deployments.	Omnidirectional antenna for Cisco Aironet 1520 series mesh access points. Suitable for all deployments, including cable strand mount applications.	Recommended for medium range point to point deployments	Recommended for point-to-multipoint deployments of medium to long range.
Beam width	16°V	16° V	25° H, 29° E	90° H, 8° E
Cable Length	1 ft (0.30 m)	None	1 ft. (0.30 m)	None
Dimensions	11.65 in. x 1 in. (29.41 x 2.54 cm)	11 in. x 1 in. (27.94 x 2.54 cm)	4 1/8 in. x 4 1/8 in. (10.48 cm x 10.48 cm)	24 1/2 in. x 2 1/2 in. (62.23 cm x 6.35 cm)
Weight	0.38 lbs. (0.17 kg)	0.4 lbs. (0.18 kg)	0.70 lbs. (0.32 kg)	1.95 lbs. (0.88 kg)
Operating Temperature	-30° to 70°C	-30° to +70 C	-30° to +70° C	-30° to +70° C

Cisco Aironet Accessories

Feature	AIR-ACC2537-060	AIR-ACC245LA-R	AIR-ACC2662
Description	60 in. (152 cm) bulkhead extender	Yagi articulating mount	Yagi articulating mount
Application	Flexible antenna cable that extends access point cabling typically within an enclosure	Helps prevent damage due to lightning-induced surges or static electricity. Helps prevent damage due to lightning-induced surges or static electricity	Adds swiveling capability to mast-mounted Yagi antennas

Cisco Aironet 5.8 GHz Bridge Antennas with N-Type Connectors

Feature	AIR-ANT58G9VOA-N	AIR-ANT58G10SSA-N	AIR-ANT58G28SDA-N
Description	9.0-dBi omnidirectional Mast mount	9.5-dBi sector antenna Mast mount	28.0-dBi dish antenna Mast mount
Application	Outdoor short-range point-to-multipoint applications	Outdoor medium-range point-to-point and point-to-multipoint applications	Outdoor long-range directional connections
Polarization	Vertical	Vertical or horizontal Field configurable	Vertical or horizontal Field configurable
Elevation adjustment	None	None	+/- 12.5 degrees
Approximate range at 9 Mbps	8 miles (13 km) (with 22.5 dBi captive antenna on the remote site)	Same as AIR-ANT58G9VOA-N	23 miles (37 km) (with 28 dBi antennas on each end)
Approximate range at 54 Mbps	2 miles (3 km) (with 22.5 dBi captive antenna on the remote site)	Same as AIR-ANT58G9VOA-N	12 miles (19 km) (with 28 dBi antennas on each end)
Beam width	360 H, 6 V	60 H, 60 V	4.75 H, 4.75 V
Supplied jumper cable length	4.9 ft. (1.5 m)	4.9 ft. (1.5 m)	4.9 ft. (1.5 m)
Dimensions (H x W x D)	20.25 x 6.4 in. (51.4 x 1.62 cm) (L x W)	2.5 x 2.5 x 1.75 in. (6.4 x 6.4 x 4.5 cm)	Diameter: 29 in. (74 cm) Depth: 14.5 in. (36.8 cm)
Weight	2.0 lb. (0.9 kg)	1.25 lb. (0.6 kg)	9.5 lb. (4.3 kg)

Cisco Aironet Bridge Accessory

Feature	AIR-ACCRWM1400	AIR-ACCRBG=	AIR-ACCMFM1400=
Description	Roof/Wall mount kit	Grounding block	Multifunction mount
Application	Allows mounting to flat surfaces Includes full elevation and azimuth adjustment	Helps prevent damage due to lightning-induced surges or static electricity	Allows mounting to poles with a diameter between 1.5 in. and 2.5 in. Includes both elevation and polarization adjustment

Cisco Aironet Power Injector Cables

Feature	AIR-CAB020DRG6-F=	AIR-CAB050DRG6-F=	AIR-CAB100DRG6-F
Cable length	20 ft. (6m)	50 ft. (15m)	100 ft. (30m)

- Cisco Aironet 1500 Series Access Points are available in single-band (2.4 GHz) and dual-band (2.4 GHz and 5 GHz) versions. Check your access point for proper antenna selection before placing an order.

Cisco Aironet 2.4 GHz Bridge Antennas

Feature	AIR-ANT2506	AIR-ANT24120	AIR-ANT2414S-R	AIR-ANT1949	AIR-ANT3338
Description	5.2 dBi Omnidirectional Mast mount	12 dBi High-gain omnidirectional Mast mount	14 dBi Vertically polarized sector	13.5 Yagi mast mount	21 dBi Solid dish
Application	Outdoor short-range point-to-multipoint applications	Outdoor medium-range point-to-multipoint applications	Outdoor long range point-to-multipoint applications	Outdoor medium-range directional connections	Outdoor long-range directional connections
Approximate Indoor Range[4]	2 Mbps: 3.3 miles (5.31 km) 11 Mbps: 1.66 miles (2.66 km) 54 Mbps: .21 miles (.34 km)	2 Mbps: 15.81 miles (25.43 km) 11 Mbps: 7.92 miles (12.75 km) 54 Mbps: 1.0 miles (1.6 km)	2 Mbps: 16.71 miles (26.89 km) 11 Mbps: 8.89 miles (14.30 km) 54 Mbps: 1.26 miles (2.02 km)	2 Mbps: 18.33 miles (29.49 km) 11 Mbps: 11.19 miles (18.01 km) 54 Mbps: 1.41 miles (2.27 km)	2 Mbps: 26.49 miles (42.62 km) 11 Mbps: 201 miles (32.33 km) 54 Mbps: 4.46 miles (7.17 km)
Cable Length	3 ft. (0.91m)	1 ft. (0.30m)	5 ft (1.5 m)	3 ft. (0.91m)	2 ft. (0.61m)
Dimensions (L x D)	13 x 1 in. (33 x 2.5 cm)	50 x 1.5 in. (127 x 3 cm)	36 x 6 x 1.25 in. (91 x 15 x 10 cm)	18 x 3 in. (46 x 76 cm)	24 in. d (61 cm)
Weight	5oz. (14 g)	1.5 lb. (0.68 kg)	6.5 lb. (3 kg)	12 oz. (34 kg)	11 lb. (5 kg)

Cisco offers a dual band antenna, or a radome, which has both 2.4 GHz and 5 GHz elements in one low profile package. The antenna has 4 cables, two for 2.4 GHz and 2 for 5 GHz, color coded to prevent any accidental connections. Easy to install and lightweight, this antenna is ideal for indoor wall or ceiling mount applications.

Cisco Dual Band Antenna for 2.4 GHz and 5 GHz Access Points

Feature	AIR-ANT2451V-R=
Description	Dual band: 2 dBi in 2.4 GHz and 3dBi in 5 GHz omnidirectional ceiling mount
Application	Indoor midrange antenna
Gain	2 dBi in 2.4 GHz; 3 dBi in 5 GHz
Frequency*	2.4 and 5 GHz
Approximate Indoor Range at 6 Mbps**	2.4 GHz: 295 ft (90 m); 5 GHz: 675 ft (206 m)
Approximate Indoor Range at 54 Mbps**	2.4 GHz: 88 ft (27 m); 5 GHz: 75 ft (21 m)
Beam Width	2.4GHz: 360°H, 80°E; 5 GHz: 360°H, 50°E
Cable Length	18 in (45.7 cm)
Dimensions	8.5 in. x 6 in. x.93 in (21.5 cm x 15.2 cm x 2.4cm)
Weight	1 lb (4.5 kg)
Operating Temperature	0° to +55°C

Selected Part Numbers and Ordering Information

Cisco Aironet Accessories	
AIR-ACC2662	Yagi Antenna Articulating Mount
AIR-ACC2537-060	60 in. (152 cm) bulkhead extender
AIR-ACC2545LA-R	2.4 GHz and 5 GHz lightning arrestor
AIR-CAB020LL-R	20 ft. (6m) low-loss antenna cable
AIR-CAB050LL-R	50 ft. (15m) low loss antenna cable
AIR-CAB100ULL-R	100 ft. (30m) low loss antenna cable
AIR-CAB150ULL-R	150 ft. (46m) low loss antenna cable
Cisco Aironet Antennas	

AIR-ANT1728	5.2 dBi Omni Ceiling Mount Antenna
AIR-ANT1729	6 dBi Patch Wall Mount Antenna
AIR-ANT1949	13.5 dBi Yagi Mast Mount Antenna
AIR-ANT2012	6.5 dBi Diversity Patch Wall Mount Antenna
AIR-ANT2506	5.2 dBi Omnidirectional Mast Mount Antenna
AIR-ANT3213	5.2 dBi Pillar-Mount Diversity Omni Antenna
AIR-ANT2410Y-R	10 dBi Yagi mast or wall mount
AIR-ANT3338	21 dBi Solid Dish Antenna
AIR-ANT2430V-R	Ceiling mount omnidirectional
AIR-ANT24120	12 dBi Omnidirectional Mast Mount Antenna
AIR-ANT4941	2.2 dBi Dipole Antenna (Standard Rubber Duck)
AIRANT5140V-R	Ceiling mount omnidirectional
AIR-ANT2450S-R	5dBi wall mount indoor/outdoor antenna with RP-TNC connector for use with any 2.4 GHz radio
AIR-ANT2414S-R	14dBi Sector Mast Mount Antenna
AIR-ANT5145V-R	4.5 dBi omni
AIR-ANT5160V-R	6 dBi omni
AIR-ANT5170P-R	70 dBi Diversity patch wall mount
AIR-ANT5195P-R	9.5 dBi Patch wall or articulating mast mount
AIR-ANT2422DG-R	2.2 dBi Gray non-articulating dipole
AIR-ANT2422DW-R	2.2 dBi White dipole
AIR-ANT2450V-N	5 dBi, direct mount omnidirectional antenna for 2.4 GHz
AIR-ANT2480V-N	8 dBi direct mount omnidirectional antenna for 2.4 GHz
AIR-ANT2485P-R	8.5 dBi Patch wall mount
AIR-ANT2460P-R	6 dBi Patch wall mount
AIR-ANT2465P-R	6.5 dBi Diversity patch wall mount
AIR-ANT5114P-N	14 dBi wall/mast mount articulating patch antenna for 5 GHz
AIR-ANT5117S-N	17 dBi, 90 degree mast mount sector antenna for 5 GHz
AIR-ANT5180V-N	8 dBi direct mount omnidirectional antenna for 5 GHz
AIR-ANT5135DG-R	3.5 dBi Gray non-articulating dipole
AIR-ANT5135DW-R	3.5 dBi White dipole
AIR-ANT5175V-N	7.5 dBi Omnidirectional
AIR-ANT2455V-N	5.5 dBi Omnidirectional
AIR-ANT58G9V0A-N	9.0 dBi Omnidirectional mast mount
AIR-ANT58G10SSA-N	9.5 dBi Sector antenna, mast mount
AIR-ANT58G28SDA-N	28.0 dBi Dish antenna, mast mount

For More Information

<http://www.cisco.com/go/antenna>

Cisco 5500 Series Wireless LAN Controller

The Cisco 5500 Series Wireless Controller is a highly scalable and flexible platform that enables systemwide services for mission-critical wireless in medium to large-sized enterprises and campus environments. Designed for 802.11n performance and maximum scalability, this controller offers enhanced uptime with the ability to simultaneously manage 500 access points; superior performance for reliable streaming video and toll quality voice; and improved fault recovery for a consistent mobility experience in the most demanding environments.



Ideal for Companies That Need These Features

Cisco 5500 Series

- Enhanced enterprise scalability with a larger mobility domain that supports more access points
- Flexible licensing that allows access point capacity to be added as the business grows
- Teleworking features for improved business continuity
- System level security including DTLS encryption between access points and the controller
- Integrated radio resource management (RRM)—An intelligent RF control plane for self-configuration, self-healing, and self-optimization
- Cross-network access to real-time and historic RF interference information for quick troubleshooting and resolution
- Enterprise reliability—Automated recovery from lightweight access point and WLAN controller failures to maximize the availability of the wireless network

Key Features and Benefits

- Optimized for next-generation wireless networking
- Offer nine times the performance of 802.11a/g networks
- Support up to 500 access points and 7000 clients
- Support a larger mobility domain for improved network scale
- Offer integrated RF intelligence with CleanAir technology as part of the Cisco Unified Wireless Network with Cisco Aironet 3500 Series Access Points
- Flexible software licensing to add additional access points as your business needs grow
- Support advanced features in the base software license including the Cisco OfficeExtend solution for secure, mobile teleworking, Enterprise Wireless Mesh that dynamically establishes wireless connections in hard to wire areas, and Control and Provisioning of Wireless Access Points (CAPWAP) encryption that helps ensure full-line-rate encryption between access points and controllers across remote WAN and LAN links

Specifications

Feature	Cisco 5500 Series Wireless LAN Controller
Wireless	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11n
Data RFCs	RFC 768 UDP; RFC 791 IP; RFC 2460 IPv6 (pass through Bridging mode only); RFC 792 ICMP; RFC 793 TCP; RFC 826 ARP; RFC 1122 Requirements for Internet Hosts; RFC 1519 CIDR; RFC 1542 BOOTP; RFC 2131 DHCP; CAPWAP RFC
Security Standards	WPA; IEEE 802.11i (WPA2, RSN); RFC 1321 MD5 Message-Digest Algorithm; RFC 1851 The ESP Triple DES Transform; RFC 2104 HMAC; Keyed Hashing for Message Authentication; RFC 2246 TLS Protocol Version 1.0; RFC 2401 Security Architecture for the Internet Protocol; RFC 2403 HMAC-MD5-96 within ESP and AH; RFC 2404 HMAC-SHA-1-96 within ESP and AH; RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV; RFC 2406 IPsec; RFC 2407 Interpretation for ISAKMP; RFC 2408 ISAKMP; RFC 2409 IKE; RFC 2451 ESP CBC-Mode Cipher Algorithms; RFC 3280 Internet X.509 PKI Certificate and CRL Profile; RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec; RFC 3686 Using AES Counter Mode with IPsec ESP; RFC 4347 Datagram Transport Layer Security; RFC 4346 TLS Protocol Version 1.1
Encryption	WEP and TKIP-MIC; RC4 40, 104 and 128 bits (both static and shared keys); SSL and TLS; RC4 128-bit and RSA 1024- and 2048-bit; AES: CCM, CCMP; IPsec: DES-CBC, 3DES, AES-CBC
AAA	IEEE 802.1X; RFC 2548 Microsoft Vendor-Specific RADIUS Attributes; RFC 2716 PPP EAP-TLS; RFC 2865 RADIUS Authentication; RFC 2866 RADIUS Accounting; RFC 2867 RADIUS Tunnel Accounting; RFC 2869 RADIUS Extensions; RFC 3576 Dynamic Authorization Extensions to RADIUS; RFC 3579 RADIUS Support for EAP; RFC 3580 IEEE 802.1X RADIUS Guidelines; RFC 3748 Extensible Authentication Protocol; Web-based authentication; TACACS support for management users
Management	SNMP v1, v2c, v3; RFC 854 Telnet; RFC 1155 Management Information for TCP/IP-Based Internets; RFC 1156 MIB; RFC 1157 SNMP; RFC 1213 SNMP MIB II; RFC 1350 TFTP; RFC 1643 Ethernet MIB; RFC 2030 SNMP; RFC 2616 HTTP; RFC 2665 Ethernet-Like Interface types MIB; RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual Extensions; RFC 2819 RMON MIB; RFC 2863 Interfaces Group MIB; RFC 3164 Syslog; RFC 3414 User-Based Security Model (USM) for SNMPv3; RFC 3418 MIB for SNMP; RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs; Cisco private MIBs
Management Interfaces	Web-based: HTTP/HTTPS; Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port; Cisco Wireless Control System (WCS)
Interfaces and Indicators	Uplink: 8 (5508) 1000Base-T, 1000Base-SX and 1000Base-LH transceiver slots; Small Form-Factor Pluggable (SFP) options (only Cisco SFPs supported); GLC-T, GLC-SX-MM; GLC-LH-SM; LED indicators: link; Service Port: 10/100/1000 Mbps Ethernet (RJ45); Service Port: 10/100/1000 Mbps Ethernet (RJ45) For High Availability for future use; LED indicators: link; Utility Port: 10/100/1000 Mbps Ethernet (RJ45); LED indicators: link; Expansion Slots: 1 (5508); Console Port: RS232 (DB-9 male/RJ-45 connector included), mini-USB; Other Indicators: Sys, ACT, Power Supply 1, Power Supply 2
Regulatory Compliance	CE Mark; Safety: UL 60950-1:2003; EN 60950:2000; EMI and susceptibility (Class A): U.S.: FCC Part 15.107 and 15.109; Canada: ICES-003; Japan: VCCI; Europe: EN 55022, EN 55024

Selected Part Numbers and Ordering Information

AIR-CT5508-12-K9	Cisco 5500 Series WLAN Controller with 12 Cisco Aironet access point licenses
AIR-CT5508-25-K9	Cisco 5500 Series WLAN Controller with 25 Cisco Aironet access point licenses
AIR-CT5508-50-K9	Cisco 5500 Series WLAN Controller with 50 Cisco Aironet access point licenses
AIR-CT5508-100-K9	Cisco 5500 Series WLAN Controller with 100 Cisco Aironet access point licenses
AIR-CT5508-250-K9	Cisco 5500 Series WLAN Controller with 250 Cisco Aironet access point licenses
AIR-CT5508-500-K9	Cisco 5500 Series WLAN Controller with 500 Cisco Aironet access point licenses

For More Information

<http://www.cisco.com/go/wireless>

Cisco 4400 Series Wireless LAN Controller

The Cisco 4400 Series Wireless LAN Controller provides system-wide WLAN functions for medium to large-sized facilities. By automating WLAN configuration and management functions, network managers have the control, security, redundancy, and reliability needed to cost-effectively scale and manage their wireless networks as easily as they scale and manage their traditional wired networks.



The Cisco 4400 Series Wireless LAN Controller works in conjunction with Cisco Aironet lightweight access points, the Cisco Wireless Control System (WCS), the Cisco Mobility Services Engine, and the Cisco Wireless Location Appliance to support business-critical wireless data, voice, and video applications. It provides real-time communication between lightweight access points and other WLAN controllers to deliver centralized security policies, wireless intrusion prevention system (IPS) capabilities, award-winning RF management, QoS, and mobility.

Ideal for Companies That Need These Features

Cisco 4400 Series

- Enterprise scalability—Provides business-critical wireless services for locations of all sizes
- Integrated radio resource management (RRM)—An intelligent RF control plane for self-configuration, self-healing, and self-optimization
- Enterprise reliability—Automated recovery from lightweight access point and WLAN controller failures to maximize the availability of the wireless network

Key Features and Benefits

- Component of Cisco Unified Wireless Network
- Multilayered security
- Enterprise scalability
- Rogue AP detection, location, and containment
- Zero-configuration deployment

Specifications

Feature	Cisco 4400 Series Wireless LAN Controller
Wireless	IEEE 802.11a, 802.11b, 802.11g, 802.11d, 802.11h, 802.11n
Data RFCs	RFC 768 UDP; RFC 791 IP; RFC 792 ICMP; RFC 793 TCP; RFC 826 ARP; RFC 1122 Requirements for Internet Hosts; RFC 1519 CIDR; RFC 1542 BOOTP; RFC 2131 DHCP
Security Standards	Wi-Fi Protected Access (WPA); IEEE 802.11i (WPA2, RSN); RFC 1321 MD5 Message-Digest Algorithm; RFC 2104 HMAC; Keyed Hashing for Message Authentication; RFC 2246 TLS Protocol Version 1.0; RFC 3280 X.509 PKI Certificate and CRL Profile
Encryption	WEP and TKIP-MIC; RC4 40, 104 and 128 bits (both static and shared keys); Secure Sockets Layer (SSL) and TLS; RC4 128-bit and RSA 1024- and 2048-bit; AES: CCM, CCMP
AAA	IEEE 802.1X; RFC 2548 Microsoft Vendor-Specific RADIUS Attributes; RFC 2716 PPP EAP-TLS; RFC 2865 RADIUS Authentication; RFC 2866 RADIUS Accounting; RFC 2867 RADIUS Tunnel Accounting; RFC 2869 RADIUS Extensions; RFC 3576 Dynamic Authorization Extensions to RADIUS; RFC 3579 RADIUS Support for EAP; RFC 3580 IEEE 802.1X RADIUS Guidelines; RFC 3748 Extensible Authentication Protocol; Web-based authentication
Management	SNMP v1, v2c, v3; RFC 854 Telnet; RFC 1155 Management Information for TCP/IP-Based Internets; RFC 1156 MIB; RFC 1157 SNMP; RFC 1213 SNMP MIB II; RFC 1350 TFTP; RFC 1643 Ethernet MIB; RFC 2030 SNMP; RFC 2616 HTTP; RFC 2665 Ethernet-Like Interface types MIB; RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual LAN Extensions; RFC 2819 RMON MIB; RFC 2863 Interfaces Group MIB; RFC 3164 Syslog; RFC 3414 User-Based Security Model (USM) for SNMPv3; RFC 3418 MIB for SNMP; RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs; Cisco private MIBs
Management Interfaces	Web-based: HTTP/HTTPS; Command-line interface: Telnet, SSH, serial port; Cisco Wireless Control System (WCS)

Interfaces and Indicators	Uplink: 2 (4402) or 4 (4404) 1000Base-X mini-GBIC transceiver slots (SFP); –LED indicators: link, activity; Service Port: 10/100 Mbps Ethernet (RJ45); LED indicators: link, activity; Utility Port: 10/100/1000 Mbps Ethernet (RJ45); LED indicators: link, activity; Expansion Slots: 1 (4402) or 2 (4404); Console Port: RS232 (DB-9 male, DTE interface); Other Indicators: Status, Alarm, Power Supply 1, Power Supply 2
Regulatory Compliance	CE Mark; Safety: UL 60950-1:2003, EN 60950:2000, EMI and susceptibility (Class A); U.S.: FCC Part 15.107 and 15.109, Canada: ICES-003, Japan: VCCI, Europe: EN 55022, EN 55024

Selected Part Numbers and Ordering Information

AIR-WLC4402-12-K9	Cisco 4400 Series WLAN Controller for up to twelve Cisco Aironet access points
AIR-WLC4402-25-K9	Cisco 4400 Series WLAN Controller for up to twenty-five Cisco Aironet access points
AIR-WLC4402-50-K9	Cisco 4400 Series WLAN Controller for up to fifty Cisco Aironet access points
AIR-WLC4404-100-K9	Cisco 4400 Series WLAN Controller for up to one-hundred Cisco Aironet access points

For More Information

<http://www.cisco.com/go/wireless>

Cisco 2100 Series Wireless LAN Controller

Cisco Wireless LAN (WLAN) controllers are responsible for systemwide WLAN functions such as security policies, intrusion prevention, RF management, and quality of service (QoS). They work in conjunction with Cisco lightweight access points and the Cisco Wireless Control System (WCS) to support business-critical wireless applications. From voice and data services to location tracking, Cisco WLAN controllers provide the control, scalability, and reliability that network managers need to build secure, enterprise-scale wireless networks, from branch offices to main campuses.



The Cisco 2100 Series Wireless LAN Controllers support up to six, twelve or twenty-five access points, making it a cost-effective solution for enterprise branches and small and medium businesses. These controllers come with eight Ethernet ports, two of which can provide power directly to Cisco lightweight access points.

Ideal for Companies That Need These Features

Cisco 2100 Series

- An enterprise scalable architecture that provides business-critical wireless services for small businesses and branch offices
- An intelligent RF control plane for self-configuration, self-healing, and self-optimization
- A system that can be deployed without modifying existing routing and switching infrastructures or touching access points

Key Features and Benefits

- Component of Cisco Unified Wireless Network
- Business-class RF security and WLAN security policy monitoring
- Simplified network deployment, operations, and management to help reduce overall operational expenses
- Integration with the Cisco PCI security-compliant reference design

Specifications

Feature	Cisco 2106 Series Wireless LAN Controller
Wireless	IEEE 802.11a, 802.11b, 802.11g, 802.11d, 802.11h, 802.11n
Wired/Switching	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, and IEEE 802.1Q VLAN tagging
Data RFCs	RFC 768 UDP, RFC 791 IP, RFC 792 ICMP, RFC 793 TCP, RFC 826 ARP, RFC 1122 Requirements for Internet Hosts, RFC 1519 CIDR, RFC 1542 BOOTP, RFC 2131 DHCP
Security Standards	Wi-Fi Protected Access (WPA), IEEE 802.11i (WPA2, RSN), RFC 1321 MD5 Message-Digest Algorithm, RFC 2104 HMAC: Keyed Hashing for Message Authentication, RFC 2246 TLS Protocol Version 1.0, RFC 3280 X.509 PKI Certificate and CRL Profile
Encryption	• WEP and TKIP-MIC: RC4 40, 104 and 128 bits (both static and shared keys), Secure Sockets Layer (SSL) and TLS: RC4 128-bit and RSA 1024- and 2048-bit, AES: CCM, CCMP
AAA	IEEE 802.1X, RFC 2548 Microsoft Vendor-Specific RADIUS Attributes, RFC 2716 PPP EAP-TLS, RFC 2865 RADIUS Authentication, RFC 2866 RADIUS Accounting, RFC 2867 RADIUS Tunnel Accounting, RFC 2869 RADIUS Extensions, RFC 3576 Dynamic Authorization Extensions to RADIUS, RFC 3579 RADIUS Support for EAP, RFC 3580 IEEE 802.1X RADIUS Guidelines, RFC 3748 Extensible Authentication Protocol, Web-based authentication
Management	SNMP v1, v2c, v3, RFC 854 Telnet, RFC 1155 Management Information for TCP/IP-Based Internets, RFC 1156 MIB, RFC 1157 SNMP, RFC 1213 SNMP MIB II, RFC 1350 TFTP, RFC 1643 Ethernet MIB, RFC 2030 SNMP, RFC 2616 HTTP, RFC 2665 Ethernet-Like Interface types MIB, RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual LAN Extensions, RFC 2819 RMON MIB, RFC 2863 Interfaces Group MIB, RFC 3164 Syslog, RFC 3414 User-Based Security Model (USM) for SNMPv3, RFC 3418 MIB for SNMP, RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs, Cisco private MIBs

Management Interfaces	Designed for use with Cisco Wireless Control System, Web-based: HTTP/HTTPS individual device manager, Command-line interface: Telnet, SSH, serial port
Interfaces and Indicators	Console port: RS-232 (DB-9 male/RJ-45 connector included); Network: Eight 10/100 Mbps Ethernet (RJ-45) including two 802.3af PoE ports rated for use with Cisco Aironet lightweight access points; LED indicators: Link Activity (each 10/100 port), Power, Status, Alarm, Access Point Joined
Regulatory Compliance	CE Mark, Safety: UL 60950-1:2003, EN 60950:2000, EMI and susceptibility (Class B): U.S.: FCC Part 15.107 and 15.109, Canada: ICES-003; Japan: VCCI, Europe: EN 55022, EN 55024
Temperature	<ul style="list-style-type: none"> • Temperature: Operating: 32 to 1040F (0 to 400C), Storage: -13 to 1580F (-25 to 700C) • Humidity: Operating humidity: 10 to 95 percent, noncondensing • Storage humidity: Up to 95 percent, Heat Dissipation: 92 BTU/hour
Dimensions (W x D x H)	1.75 x 7.89 x 6.87 in. (4.45 x 20.04 x 17.45 cm)
Weight	4.0 lb (1.81 kg) with power supply
Power	Input power: 100 to 240 VAC; 50/60 Hz

Selected Part Numbers and Ordering Information

AIR-WLC2106-K9	Cisco 2106 Series Wireless LAN Controller for up to six Cisco Aironet access points
AIR-WLC2112-K9	Cisco 2112 Series Wireless LAN Controller for up to twelve Cisco Aironet access points
AIR-WLC2125-K9	Cisco 2125 Series Wireless LAN Controller for up to twenty-five Cisco Aironet access points

For More Information

<http://www.cisco.com/go/wireless>

Cisco Wireless Control System

The Cisco Wireless Control System (WCS) is the industry's most comprehensive management platform for lifecycle management of 802.11n and 802.11a/b/g, enterprise-class wireless networks. This robust platform delivers a cost-effective management solution that enables IT administrators to successfully plan, deploy, monitor, troubleshoot, and report on indoor and outdoor wireless networks.

As the management platform for the Cisco Unified Wireless Network, Cisco WCS supports the delivery of high-performance applications and mission-critical solutions that simplify business operations and improve productivity. It also supports Cisco CleanAir technology, a system-wide capability of the Cisco Unified Wireless Network that uses silicon-level intelligence to create a self-healing, self-optimizing wireless network.

Cisco WCS is a comprehensive platform that scales to meet the needs of small, midsize, and large-scale wireless LANs across local, remote, national, and international locations. This award-winning solution gives IT managers immediate access to the tools they need, when they need them, to more efficiently implement and maintain secure wireless LANs—all from a centralized location requiring minimal IT staffing.

Operational costs are significantly reduced through the Cisco WCS intuitive GUI, simplified ease-of-use, and built-in tools that deliver improved IT efficiency, lowered IT training costs, and minimized IT staffing requirements, even as the network grows. Unlike overlay management tools, Cisco WCS lowers operational costs by incorporating the full breadth of management requirements from radio frequency to controllers to services into a single unified platform.

Ideal for Companies That Need These Features

Cisco Wireless Control System

- Centralized platform for comprehensive, wireless LAN lifecycle management of Cisco Wireless LAN controllers, Cisco Aironet access points, and mobility services delivered by the Cisco Mobility Services Engine (MSE)
- Easy-to-use tools, templates, and guides to more effectively plan, deploy, monitor, troubleshoot, and report on indoor and outdoor wireless networks
- Built-in security monitoring with intrusion detection systems (IDSs) and adaptive wireless intrusion prevention systems (WIPS)
- Secure, cost-effective wired and wireless guest access
- Cisco Energy-Wise power savings
- Protects the performance of 802.11n by mitigating RF interference with Cisco CleanAir technology

Key Features and Benefits

- WLAN lifecycle management—Comprehensive wireless LAN lifecycle management includes a full range of planning, deployment, monitoring, troubleshooting, and reporting capabilities.
- Simplified ease-of-use—Intuitive GUI and easy-to-use tools, guides, and templates deliver improved IT efficiency, and lowered IT training costs.
- Modularized interface—User-defined customization is supported to display only the most relevant information.
- Scalability—Manage hundreds of Cisco wireless LAN controllers and thousands of Cisco Aironet access points from a centralized location.

- RF interference detection and mitigation—Integration with Cisco CleanAir technology to find, classify, correlate, and mitigate sources of interference from Wi-Fi and non-Wi-Fi sources to improve air quality and create a self-healing, self-optimizing wireless network.
- Planning—Built-in planning and design tools simplify defining access point placement and coverage helping to reduce (and in many cases, eliminate) improper RF designs and coverage problems.
- Deployment—A broad array of integrated templates and tools deliver quick and cost-effective deployments and effective configuration management.
- Centralized security and network protection—Streamlined administration and monitoring of the WLAN's security status for all security-related events and network conditions is provided from a single, comprehensive view. Automated alarms enable rapid responses to mitigate risks.
- Robust wIPS—Quick detection, location, and containment of unauthorized (rogue) devices is supported by a robust wIPS.
- Monitoring—Centralized monitoring of the entire WLAN helps maintain robust WLAN performance and an optimal wireless experience.
- Hierarchical maps—Quick access to different geographies, campuses, buildings, floors, and regions supports better network visibility and control.
- Google Earth integration—Enhanced visibility and management of outdoor wireless mesh deployments is delivered through integration with Google Earth.
- Troubleshooting—Integrated workflows and tools help IT administrators quickly assess service disruptions, receive notices about performance degradation, research resolutions, and take action to remedy nonoptimal situations.
- Client troubleshooting tool—A client troubleshooting tool supports a step-by-step method to analyze problems for all client devices. Specialized diagnostic tools support enhanced analysis of connection problems and mis-configurations occurring with Cisco Compatible Extensions clients Version 5 or later.
- Reporting—Extensive on-demand and automated reports can be run to address inventory, performance, controllers, access points, clients, security, RF environment, and alarms. Reports are customizable.
- Reporting to third-party northbound receivers—Alarms and events can be forwarded to third-party northbound receivers and FCAPS applications that understand traps such as HP OpenView or IBM Tivoli Netcool.
- PCI compliance report—Event analysis and audit trails provide assistance in creating a PCI Assessment Report.
- Standalone access point migration tool—Easy migration of standalone (autonomous) access points to operate as lightweight access points with wireless LAN controllers reduces operational costs.
- Monitoring of standalone access points—Built-in monitoring of selected Cisco Aironet standalone access points is supported as well as monitoring of selected Cisco integrated services routers access points.
- Role-based access control—Virtual domains give IT organizations and managed service providers the ability to easily manage multiple WLANs directly from a single Cisco WCS platform.
- Context-Aware Mobility Solution—Detailed contextual information about items such as location, temperature, the availability of an asset, and applications used can be integrated into the network in conjunction with Cisco MSE and Cisco Context-Aware software.
- Secure guest access—Organizations can provide wired and wireless access to guests such as customers, vendors, and partners, while keeping their wireless network secure.
- Voice over wireless LAN—A variety of advanced tools are included to plan, deploy, monitor, and optimize the WLAN for voice over wireless LAN (VoWLAN).
- Cisco Energy-Wise—Power savings are delivered through adaptive WLAN power management features.
- Simplified software upgrades—One-click software upgrade simplifies the process for upgrading to the latest software release.
- Easy conversion of CiscoWorks Wireless LAN Solution Engine (WLSE)—Converting an existing CiscoWorks WLSE (models 1130-19 and 1133) to operate as a Cisco WCS is supported to reduce capital expenditures and improve operational efficiency.

Specifications

Feature	Cisco Wireless Control System (WCS)
Operating Systems (Customer Supplied Server)	<ul style="list-style-type: none"> Windows 2003 SP1 or subsequent service packs. Windows 2008 is not a supported platform Redhat Linux AS/ES v5.0 (Releases 4.2.x or 5.0 or later); Redhat Linux AS/ES v4.0 (Release 4.2 and later) VMware ESX Server 3.0.1 or later. (Minimum hardware requirements for a dedicated and guaranteed VMware server: Intel® Xeon Quad CPU; 3.15 GHz, 8 GB RAM, 200 GB HDD)
Minimum Server Requirements	<ul style="list-style-type: none"> Cisco WCS High-End Server: 3000 lightweight access points, 1250 standalone access points, 750 wireless LAN controllers, Two Intel Xeon Quad Core CPUs; 3.16 GHz, 8 GB RAM, 200 GB HDD (free space) Cisco WCS Standard Server: 2000 lightweight access points, 1000 standalone access points, 450 wireless LAN controllers, Intel® Dual Core CPU; 3.2 GHz, 4 GB RAM, 80 GB HDD (free space) Cisco WCS Low-End Server: 500 lightweight access points, 200 standalone access points, 125 wireless LAN controllers, Intel® CPU; 3.06 GHz, 2 GB RAM, 50 GB HDD (free space) CiscoWorks WLSE Models 1130-19 or 1133 running Cisco WCS: 1500 lightweight access points, 161 wireless LAN controllers, Intel Pentium 4 CPU; 3 GHz, 3 GB RAM, 38 GB HDD (free space)
Minimum Client Requirements	Internet Explorer 6.0/SP1 or later, and Mozilla Firefox 3.5 or later
Management and Security	SNMP v1, v2c, v3 and TACACS+ PNG, JPEG, PDF and AutoCAD (DXF and DWG) import file types supported

Managed Devices	<ul style="list-style-type: none"> • Cisco 2000, 2100, 4100, 4400, and 5500 Series Wireless LAN Controllers; Cisco Catalyst 6500 Series Wireless Services Module (WiSM), Cisco Catalyst 3750G Integrated Wireless LAN Controller, Cisco Wireless LAN Controller Module (WLCM and WLCM-E) for Integrated Services Routers; Cisco Aironet lightweight access points, Cisco Aironet access points with Cisco CleanAir technology, Cisco Aironet lightweight outdoor mesh access points, Cisco CleanAir (Cisco Spectrum Expert Wi-Fi), Cisco Wireless Location Appliance, Cisco 3300 Series Mobility Services Engine (MSE), Context-Aware Software, and Cisco wireless Intrusion Prevention System (wIPS) • Monitoring and migration of selected Cisco Aironet standalone (autonomous) access points. Monitoring of the standalone access points of Cisco 800, 1800, 2800, and 3800 Series Integrated Services Routers
Database	Integrated Solid Flow Engine SQL

Selected Part Numbers and Ordering Information

WCS-STANDARD-K9	Cisco WCS Base and Plus licenses for new and expanded Cisco WCS deployments. Supports deployment of Cisco WCS on a single server. Cisco WCS Plus license supports mobility services enablement, high availability, and location services for one Wi-Fi device or tag on demand. Cisco WCS Plus license backward-compatible with existing Cisco WCS location and enterprise licenses.
WCS-APBASE-50, 100, 500	Cisco WCS Base License. Windows/Linux (supports 50, 100, and 500 APs)
WCS-PLUS-50, 100, 500	Cisco WCS with Plus license for mobility services enablement and high availability. Windows/Linux (supports 50, 100, and 500 APs)
WCS-WLSE-UPG-K9	Converting Existing CiscoWorks WLSE to Cisco WCS (Only supported on Linux platform for CiscoWorks WLSE Models 1130-19 and 1133)
WCS-WLSE-APB-50, 100, 500, 1000	Cisco WCS Base License for WLSE conversion. Linux (supports 50, 100, 500, and 1000 APs)
WCS-WLSE-PLUS-50, 100, 500	Cisco WCS Plus license with mobility services enablement and high availability for WLSE conversion. Linux (supports 50, 100, 500, and 1000 APs)
WCS-PLUS-UPG-K9	Upgrading Cisco WCS Base to Cisco WCS Plus. Supports deployment of Cisco WCS on a single server. Supports upgrading a Cisco WCS base license to support mobility services enablement, high availability, and location services for one Wi-Fi device or tag on demand.
WCS-PLUS-UPG-50, 100, 500	Cisco WCS Plus Upgrade license with mobility services enablement and high availability. Windows/Linux (supports 50, 100, and 500 APs)
WCS-ENT-PLUS-K9	Enterprise licenses for large-scale deployments. Supports deployment of Cisco WCS on a single or multiple servers. Supports mobility services enablement, high availability and the ability to track the location of a single Wi-Fi device or tag on demand. Enterprises Plus licenses of 10,000 and 50,000 include a Cisco WCS Navigator license (WCS-NAV-20). Enterprise Plus licenses are operational with Cisco Unified Wireless Network Software Release 4.1 and later.
WCS-ENT-PLUS-1000, 2500, 10000, 50000	Cisco WCS Enterprise Plus license with mobility services enablement and high availability. Windows/Linux on multiple Cisco WCS servers (supports 1000, 2500, 10000, and 50000 APs)
AIR-WCS-DEMO-K9	Cisco WCS Demonstration License (This license is only available from https://tools.cisco.com/SWIFT/Licensing/PrivateRegistrationServlet?DemoKeys=Y . After requesting the license, go to Cisco Wireless Software Center (login required) to download Cisco WCS software. Free Cisco WCS full featured, location-enabled, 30 day-demonstration license supporting ten lightweight access points.

For More Information

<http://www.cisco.com/en/US/products/ps6305/index.html>

Cisco Wireless Control System Navigator

The Cisco Wireless Control System (WCS) Navigator delivers an aggregated platform for enhanced scalability, manageability, and visibility of large-scale implementations of the Cisco Unified Wireless Network. This solution gives network administrators cost-effective, easy access to information from multiple, geographically dispersed Cisco WCS management platforms.

The navigator supports partitioning of the unified wireless network at the management plane. It runs on a server platform with an embedded database.

Ideal for Companies That Need These Features

Cisco Wireless Control System Navigator

- Ability to manage up to 20 geographically dispersed Cisco WCS management platforms with up to 30,000 Cisco Aironet lightweight access points from a single management console
- Ability to partition the unified wireless network at the management plane
- Ability to conduct centralized and quick searches across the entire network, multiple Cisco WCS management platforms, and all devices
- Ability to partition Cisco WCS platforms to restrict selected users to a single Cisco WCS platform or group of Cisco WCS platforms to support access control based on a variety of criteria, including geography, departments, and managed services customers

Key Features and Benefits

- Intuitive GUI—Easy configuration and monitoring of multiple Cisco WCS management platforms with minimal training is supported.
- Monitoring—Centralized network monitoring is fully supported.
- Network summary screen—Outstanding alarms, fault summaries, client counts, and status counts of all connected Cisco WCS management platforms and devices are displayed on a network summary screen.
- Secure single sign-on—With a secure single sign-on feature, individual users do not need to be created on each Cisco WCS management platform.
- Automated browser redirect—Users are automatically redirected to the corresponding Cisco WCS management platform detail page on searches or displays.
- Searches—Centralized and quick searches across the entire network, multiple Cisco WCS management platforms, and all devices are easy to perform.
- Tracking—Client locations and Wi-Fi and rogue devices are easily tracked across the entire network.
- Ease-of-use—The solution offers simplified setup and configuration.
- Centralized management—Indoor and outdoor WLANs can be monitored from a single management console.
- Reports—Detailed inventory reports can be automatically generated, scheduled and exported by e-mail message or CSV file.

Specifications

Feature	Cisco Wireless Control System Navigator
Minimum server requirements	Windows 2003 SP1 or greater, or Redhat Linux AS/ES v4.0 High-End Server: Intel® Xeon Quad CPU: 3.15 GHz, 8-GB RAM, and 200-GB HDD
Minimum client requirements	Internet Explorer 6.0 with SP1 or later
Software release requirements	Cisco WCS management platforms must be running Cisco Unified Wireless Network Software Release 4.1 or later to interface with Cisco WCS Navigator
Management	SNMP v1, v2c, and v3
Managed devices	Up to 20 Cisco WCS management platforms with manageability of up to 30,000 Cisco Aironet lightweight access points
Database	Integrated Solid FlowEngine Structured Query Language (SQL)

Selected Part Numbers and Ordering Information

WCS-NAV-20	Cisco WCS Navigator License to support 20 Cisco WCS management platforms
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For More Information

<http://www.cisco.com/en/US/products/ps7305/index.html>

Cisco Spectrum Expert Wi-Fi

The Cisco Spectrum Expert Wi-Fi integrates with the Cisco Unified Wireless Network to deliver real-time spectrum intelligence for Wi-Fi networks. This industry-leading solution detects, classifies, and locates sources of RF interference in the unlicensed 2.4- and 5-GHz bands using a PCMCIA card.

The Cisco Wireless Control System (WCS) works in conjunction with Cisco Spectrum Expert Wi-Fi to provide visibility into non-Wi-Fi interference sources that may cause wireless performance degradation. You can determine the source of the interference with Cisco Spectrum Expert Wi-Fi, allowing your business to remove, move, shield, adjust, or replace the interference source. Your organization can troubleshoot its wireless networks to determine the root causes of interference problems and optimize network performance.

Note: For integrated RF detection and mitigation using system-level intelligence, please see the Cisco Aironet 3500 Series access point with Cisco CleanAir technology.

Ideal for Companies That Need These Features

- | | |
|------------------------------------|--|
| Cisco Spectrum Expert Wi-Fi | <ul style="list-style-type: none">• Ensure access points are providing reliable coverage with spectrum performance audits• Secure a network by locating non-Wi-Fi rogue devices• See hacked or rogue Wi-Fi devices that other intrusion detection systems/intrusion protection systems (IDSs/IPSs) do not detect• Locate unauthorized devices such as Bluetooth radios and video cameras• Determine whether neighbors are interfering with the Wi-Fi network |
|------------------------------------|--|

Key Features and Benefits

The Cisco Spectrum analysis tool monitors the airwaves in your wireless network and allows you to:

- Quickly and accurately determine Wi-Fi spectrum health and sources of interference
- Manage channel capacity and quality at the physical layer
- Quickly eliminate interference sources

Specifications

Cisco Spectrum Expert Wi-Fi Specifications	
Feature	Cisco Spectrum Expert Wi-Fi Specifications
Dimensions	Unit sizes: Cardbus Type II and Express Card 54 mm; Unit weight: 1.65 oz and 1.35 oz; Shipping weight: 1 lb; Operating temperature: 32F to 131F; Storage temperature: -4F to 149F
Analyzer Specification	Displayed average noise level: -124 dBm; Reference level: -150 (min) to +10 (max) dBm; 512 MB capture limit; Frequency stability: +/-20 ppm; Max safe input level: 0 dBm; Amplitude accuracy: +/- 2.5 dBm; Public safety: 4.9 GHz; Frequency span at 2.4 GHz: 0.03 (min) to 100 (max) MHz; Frequency span at 5 GHz: 0.03 (min) to 975 (max) MHz; Center frequency resolution: 10 kHz; Resolution bandwidth: 0.01 (min) to 5 (max) MHz; Sweep time RTFFT mode: 6.4 us; Sweep time PvT mode: 10 ms (max); Trigger delay (ms): -10 (min) to +10 (max); Power consumption: -3.3V @ 425 mA or 1.4 watts
Classifier Specification	802.11a/bg via onboard or external Wi-Fi chipset; Bluetooth SCO, ACL; DECT cordless phones TDD cordless phones; Analog cordless phones; Analog video (NTSC, PAL, SECAM); Microwave ovens; Generic classifiers; Radar
Application	
Minimum system requirements	Microsoft Vista or Windows XP SP2; Processor: 1 GHz or equivalent; 150 MB hard drive available storage space; 800 x 600 display
Interoperability	Cisco WCS 4.2 Later
Cisco Spectrum Expert Antenna	
Frequency Range	2.4-2.5 GHz, 4.9-5.9 GHz
Gain	5 dBi
Polarization	Linear

Selected Part Numbers and Ordering Information

Cisco Spectrum Expert Wi-Fi Product and Service	
AIR-CSCO-SE-WIFI-C	Cisco Spectrum Expert Wi-Fi (CardBus)—Includes CardBus adapter, omni antenna with clip, and quick start guide with software download instructions. A single Cisco Spectrum Expert Software seat can only be used with one Cisco Spectrum Expert Sensor Wi-Fi.
CON-SNT-SEWIFICB	Cisco Spectrum Expert Wi-Fi (CardBus)—SMARTnet next business day service ¹
Cisco Spectrum Expert Wi-Fi Antenna Spare	
AIR-ANT-SE-WIFI-D=	2.4-2.5 and 4.9-5.9 GHz Directional Antenna, Spare—Spare Directional antenna for Cisco Spectrum Expert Wi-Fi
AIR-ANT-SE-WIFI-O=	2.4-2.5 and 4.9-5.9 GHz Omni Antenna, Spare—Spare Omni antenna for Cisco Spectrum Expert Wi-Fi

1. Includes advanced replacements next business day, 24-hour Cisco Technical Assistance Center (TAC) access, and software downloads.

A Cisco WCS Spectrum Intelligence license is required to operate Cisco Spectrum Expert Wi-Fi with Cisco WCS. The following table provides the part numbers for the Cisco WCS Spectrum Intelligence license for Cisco Spectrum Expert Wi-Fi.

WCS-ADV-K9	Family SKU for WCS Advance License Products—Top-level SKU for Cisco WCS advance feature licenses
WCS-ADV-SI-SE-10	Cisco WCS Spectrum Intelligence License for 10 Sensors—License option compatible with Cisco WCS 4.2 or later configured with Base and/or Location license.
WCS-ADV-SI-SE-10=	Cisco WCS Spectrum Intelligence License for 10 Sensors, Spare—Spare license compatible with Cisco WCS 4.2 or later configured with Base and/or Location license.

License Pack Guidelines

Customers can purchase the Cisco Spectrum Intelligence license for Cisco Spectrum Expert Wi-Fi in two ways. Customers who wish to purchase all WCS advanced feature licenses, including the Cisco Spectrum Intelligence license, for use on a single WCS host should purchase the Cisco WCS advanced feature pack (WCS-ADV-K9) and then specify the option for the Cisco Spectrum Intelligence license (WCS-ADV-SI-SE-10). Customers who wish to purchase licenses that can be used across multiple WCS hosts should purchase Cisco Spectrum Intelligence license spares (WCS-ADV-SI-SE-10).

- WCS-ADV-K9—The Cisco WCS advanced feature license pack includes license keys for advanced features, including Cisco Spectrum Intelligence. The license pack may only be used on a single WCS host.
- WCS-ADV-SI-SE-10—This part number represents the option for the Cisco Spectrum Intelligence advanced feature as part of the Cisco WCS advanced feature license pack (WCS-ADV-K9). Customers must specify this part number when ordering Cisco Spectrum Intelligence as part of the combined WCS advanced feature license pack.
- WCS-ADV-SI-SE-10=—Users who wish to purchase multiple licenses to be deployed across numerous WCS hosts should purchase the Cisco Spectrum Intelligence license as a spare unit (WCS-ADV-SI-SE-10=). If a customer orders more than one spare, the system will generate a license pack for each spare ordered. In other words, the number of license packs equals the number of spares ordered.

Cisco customers can contact their local Cisco representatives for questions related to Cisco WCS licensing. Cisco employees or partners can contact wcs-customer-license@cisco.com.

For More Information

<http://www.cisco.com/en/US/products/ps9393/index.html>

Cisco 3300 Series Mobility Services Engine

The Cisco 3300 Series Mobility Services Engine is an open platform that provides a new approach for the delivery of mobility services to enable mobile business applications. A combination of hardware and software, the mobility services engine is an appliance-based solution that supports a suite of software services to provide centralized and scalable service delivery. It transforms the wireless LAN (WLAN) into a mobility network by abstracting the application layer from the network layer, effectively allowing for the delivery of mobile applications across different types of networks, including Wi-Fi, Ethernet, cellular, WiMAX, and RFID.



To deliver true business mobility, IT must take a practical approach focused on unifying networks, managing the wave of mobile devices, and enabling mobile application development. The Cisco 3300 Series Mobility Services Engine is at the heart of this mobility architecture evolution. It provides an open application programming interface (API) that allows a broader ecosystem of partners to access network intelligence to develop industry-relevant mobility solutions. An extension of the Cisco Unified Wireless Network, the mobility services engine integrates with Cisco Unified Communications and Cisco compatible devices to deliver a comprehensive approach to business mobility, an approach that extends applications to the right device at the right time, no matter which network is being used.

Ideal for Companies That Need These Features

- | | |
|--------------------------|---|
| Cisco 3300 Series | <ul style="list-style-type: none">• Rapid delivery of new services and applications• Unification of multiple access networks to help ensure more transparent application delivery• Central management, and scalable and flexible services delivery• Investment protection of their existing Cisco Unified Wireless Network |
|--------------------------|---|

Key Features and Benefits

- Extensible platform for rapid delivery of services and applications—Allows the abstraction of services and applications from the control and data planes so that each may evolve independently; a common framework for hosting multiple mobility services; An open application programming interface (API) supports third-party and partner application development.
- Ecosystem of application partners—Delivers new mobility services as well as applications targeted at various industries, including healthcare, retail, education, and manufacturing.
- Scalability—Multiple services can be deployed on a single Cisco 3300 Series Mobility Services Engine or a single service can span multiple mobility services engines.
- Manageability—The Cisco 3300 Series Mobility Services Engine serves as a single point of integration for the various value-added services; All mobility services are managed centrally through integration with the Cisco Wireless Control System.
- Flexibility—The Cisco 3300 Series Mobility Services Engine is an extensible platform capable of supporting a variety of services configurations to meet business requirements. The architecture facilitates the inclusion of newer technology standards as and when they become available.
- Return on investment—The Cisco 3300 Series Mobility Services Engine integrates with the Cisco Unified Wireless Network to provide network intelligence, including contextual information to optimize business applications. This architecture builds upon the existing investment in Cisco wireless and mobility solutions and provides a platform that is both flexible and scalable to meet evolving business mobility requirements.

Specifications

Feature	Cisco 3310 Mobility Services Engine	Cisco 3350 Mobility Services Engine
Supported Services	<ul style="list-style-type: none">• Context-aware software to track up to 2000 Wi-Fi Clients or Wi-Fi Tags• Adaptive Wireless Intrusion Prevention System software to support up to 2000 monitor mode access points	<ul style="list-style-type: none">• Context-aware software to track up to 18,000 Wi-Fi Clients or Wi-Fi Tags
Processor	(1) Dual-Core Intel Processor 1.8 GHz	(2) Quad-Core Intel Xeon Processors 2.33 GHz
Memory	4-GB PC2-5300 (4 x 1 GB)	8-GB PC2-5300 (4 x 2 GB)
Hard Disk	(2) Fixed 247-GB Serial ATA-150 / SATA-300 MBps	(2) Hot-swappable 137-GB SAS-300 MBps drives
Removable Media	DVD/CD-RW combo drive	DVD/CD-RW combo drive
Connectivity	Network: Two embedded Multifunction Gigabit Network Adapters	Network: Two embedded Multifunction Gigabit Network Adapters with TCP/IP Offload Engine
Management	SNMP v1, v2c, and v3	SNMP v1, v2c, and v3
Programming Interfaces	SOAP/XML APIs	SOAP/XML APIs
Management Interface	Cisco WCS Mobility Services v5.2 or greater running Internet Explorer 6.0/Service Pack 1 or later	Cisco WCS Mobility Services v5.2 or greater running Internet Explorer 6.0/Service Pack 1 or later
Cooling Fans	Total of three fans	Total of nine fans, N+1 fan redundancy

Ports	<ul style="list-style-type: none"> Serial: One 9-pin connector RJ-45: Two RJ-45 connectors for connection to two Gigabit Network Adapters 3 USB 2.0 ports: (1) front, and (2) rear accessible ports 2 PS2 ports: One mouse and one keyboard 1 VGA port 	<ul style="list-style-type: none"> Serial: One 9-pin connector RJ-45: Two RJ-45 connectors for connection to two Gigabit Network Adapters 4 USB 2.0 ports: (1) front, (1) internal, and (2) rear accessible ports 2 PS2 ports: One mouse and one keyboard 1 VGA port
Network Devices	Cisco 2100, 4400, 5500 (requires WCS Mobility Services v. 6.0) Series Wireless LAN Controllers; Cisco Catalyst 6500 Series Wireless Services Module, Cisco Catalyst 3750G Integrated Wireless LAN Controller, Cisco Wireless LAN Controller Module (WLCM and WLCM-E) for Integrated Services Routers; Cisco Aironet® lightweight access points	Cisco 2100 and 4400 Series Wireless LAN Controllers; Cisco Catalyst 6500 Series Wireless Services Module, Cisco Catalyst 3750G Integrated Wireless LAN Controller, Cisco Wireless LAN Controller Module (WLCM and WLCM-E) for Integrated Services Routers; Cisco Aironet lightweight access points
Form Factor	Height: 1.70 in. (4.32 cm) Width: 16.78 in. (42.62 cm) Depth: 20 in. Weight: 15 lbs maximum	Height: 1.70 in. (4.32 cm) Width: 16.78 in. (42.62 cm) Depth: 27.25 in. (69.22 cm) Weight: 39.5 lbs (1792 kg) maximum
Physical Dimensions	Height: 1.70 in. (4.32 cm) Width: 16.78 in. (42.62 cm) Depth: 20 in. Weight: 15 lbs maximum	Height: 1.70 in. (4.32 cm) Width: 16.78 in. (42.62 cm) Depth: 27.25 in. (69.22 cm) Weight: 39.5 lbs (1792 kg) maximum
Power	AC power supply wattage: 540W AC power supply voltage: 100–120V at 50–60 Hz; 200–240V at 50–60 Hz	AC power supply wattage: 852W AC power supply voltage: 100–120V at 50–60 Hz; 200–240V at 50–60 Hz Redundant Power Supplies
Environmental	Operating temperature: 50 to 95°F (10–35°C) at sea level Nonoperating: –40 to 158°F (–40 to 70°C) Maximum rate of change is 20°C/hr (36°F/hr)	Operating temperature: 50 to 95°F (10–35°C) at sea level Nonoperating: –40 to 158°F (–40 to 70°C) Maximum rate of change is 20°C/hr (36°F/hr)
Approvals and Compliance	Safety UL 60950 CAN/CSA -C22.2 No. 60950 EN60950 IEC 60950: EMC FCC Part 15 (CFR 47) Class A ICES-003 Class A EN 55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI Class A EN 55024 EN 50082-1	Safety UL 60950 CAN/CSA -C22.2 No. 60950 EN60950 IEC 60950: EMC FCC Part 15 (CFR 47) Class A ICES-003 Class A EN 55022 Class A CISPR22 Class A AS/NZS 3548 Class A VCCI Class A EN 55024 EN 50082-1
Software Compatibility	<ul style="list-style-type: none"> Available with Cisco Mobility Services Engine (MSE) Software Release 5.1.xxx or later Requires WLC software version 4.2.1.30 or later and Wireless Control System (WCS) Version 5.2 or later Supported services may have different software requirements 	<ul style="list-style-type: none"> Available with Cisco Mobility Services Engine (MSE) Software Release 5.2.xxx or later Requires WLC software Version 4.2.1.30 or later and WCS Version 5.1 or later Supported services may have different software requirements

Selected Part Numbers and Ordering Information

AIR-MSE-3310-K9	Cisco 3310 Mobility Services Engine
AIR-MSE-3350-K9	Cisco 3350 Mobility Services Engine

For More Information

<http://www.cisco.com/go/mse>

Cisco Context-Aware Software

The Cisco Context-Aware Mobility Solution provides the ability to capture and integrate into business processes detailed contextual information about parameters such as location, temperature, and the availability of an asset. The integration of contextual information with business-process applications is fast becoming the next level of true enterprise mobility. With the Cisco Context-Aware Mobility Solution, mobile users can go beyond anytime, anywhere connectivity to automatically having the right device, the right application, and the right environment while on the go. They can now answer business-critical questions about both mobile assets and the users of those assets, to improve their organization's profitability.

Ideal for Companies That Need These Features

Cisco Context-Aware Software

- Advanced and scalable context-aware mobility service that simultaneously tracks thousands of Wi-Fi clients and Wi-Fi tags
- Context-aware information integrated into business processes (Cisco Context-Aware Software supports integration with customizable business applications through tight and transparent integration with the open API).
- Context-aware services are available in indoor, high-ceiling indoor, and outdoor environments.
- Integrated context-aware services using existing Cisco Unified wireless-enabled infrastructure, to minimize capital expenditures and help ensure better wireless LAN (WLAN) visibility

Key Features and Benefits

- Scalability—Cisco Context-Aware Software can track up to 18,000 assets simultaneously, including Wi-Fi clients and assets with Wi-Fi tags.
- Multiple context-aware engines—The modular design of the software allows for the use of the context-aware engine for clients and the context-aware engine for tags simultaneously or separately for the estimation of location.
- Multiple location technologies—Clients and tags can be tracked in indoor, indoor high-ceiling, and outdoor environments. Tracking is done using the Received Strength Signal Indicator (RSSI)-based RF fingerprinting technology for indoor environments and Time Difference of Arrival (TDOA) technology for outdoor and high-ceiling environments. The Cisco Context-Aware Mobility Service Module also supports the use of chokepoints for applications requiring high fidelity and deterministic context-aware information.
- Open platform for business applications—To facilitate the deployment of context-aware based applications in the enterprise, the context-aware mobility software allows for the integration of business applications through a rich and open Simple Object Access Protocol (SOAP)- or Extensible Markup Language (XML)-based application programming interface (API).
- Alerts and notifications—Alerts and notifications can be customized by the user based on business policy requirements.
- Deployment planning optimization—The process of planning and deployment of data, voice, and context-aware services is made simpler by the identification of coverage holes for the particular deployment scenario.
- Enhanced security—Detection of rogue access points and devices is made simpler by providing the location of these devices.
- Information-exchange configuration—Information-exchange configuration allows for control of which layer of information gets forwarded from the Cisco Unified Network controller to the Cisco Context-Aware Mobility Service Module. This control helps reduce the amount of contextual information gathered and transmitted across the network.
- Historical data—Historical data on the elements being tracked is collected and stored. This information can be used for drawing up trends and troubleshooting, among other uses.
- Scalable license management—The license management of the Cisco Context-Aware Software allows for flexibility in the type and quantity of licenses purchased to match the various scenarios. The licenses are additive (up to 2000 assets tracked on MSE 3310 and up to 18,000 assets tracked on MSE 3350) and thus provide for growth of the system.

Specifications

Feature	Cisco Context-Aware Software
Hardware requirements	Cisco Mobility Services Engine 3310 or Cisco Mobility Services Engine 3350
Number of Assets Tracked	Track up to 2000 Wi-Fi clients or Wi-Fi tags on MSE 3310 and up to 18,000 Wi-Fi clients or Wi-Fi tags on MSE 3350
Network Management	Cisco WCS v5.1 or greater running Internet Explorer 6.0/Service Pack 1 or later
Programming Interfaces	SOAP/XML APIs
Database	Integrated Solid Flow Engine Structured Query Language (SQL)

Selected Part Numbers and Ordering Information

AIR-CAS-1KC-K9	Cisco Context-Aware Engine for Clients License for 1K Clients
AIR-CAS-3KC-K9	Cisco Context-Aware Engine for Clients License for 3K Clients
AIR-CAS-6KC-K9	Cisco Context-Aware Engine for Clients License for 6K Clients
AIR-CAS-12KC-K9	Cisco Context-Aware Engine for Clients License for 12K Clients
AIR-CAS-1KT-K9	Cisco Context-Aware Engine for Tags License for 1K Tags
AIR-CAS-3KT-K9	Cisco Context-Aware Engine for Tags License for 3K Tags
AIR-CAS-6KT-K9	Cisco Context-Aware Engine for Tags License for 6K Tags
AIR-CAS-12KT-K9	Cisco Context-Aware Engine for Tags License for 12K Tags
AIR-MSE-3310-K9	Cisco 3310 Mobility Services Engine
AIR-MSE-3350-K9	Cisco 3350 Mobility Services Engine

For More Information

<http://www.cisco.com/go/wireless>

Cisco Adaptive Wireless Intrusion Prevention System (IPS)

The Cisco Adaptive Wireless IPS solution protects against attacks and proactively prevents threats. It scales to meet the robust demands of even the largest networks, and delivers visibility and control across the network without the need for additional scanning equipment.

Ideal for Companies That Need These Features

Cisco Adaptive Wireless Intrusion Prevention System (IPS)

- A system to mitigate unauthorized wireless access and attacks against the wireless network and rogue access points
- A system to assist with regulatory compliance, particularly Payment Card Industry (PCI) compliance
- Integration with Cisco wired security infrastructure
- Investment protection of existing Cisco Unified Wireless Network

Key Features and Benefits

- Detects, analyzes, and mitigates RF-based attacks using signature- and network-based methods for protection against known and unknown wireless threats
- Integrates into the Cisco Unified Wireless Network infrastructure using the same access points and wireless LAN controllers for simplified administration and lower capital expenditures and total cost of ownership
- Offers advanced reporting for increased regulatory compliance and forensic analysis
- Provides increased visibility and ease of administration through wired and wireless network security integration
- Uses the Cisco 3300 Series Mobility Services Engine for performance and centralized processing of wireless network threat analysis

Specifications

Feature	Cisco Adaptive Wireless IPS Software
Hardware requirements	Cisco Mobility Services Engine 3310
Number of Supported Monitor Mode APs	Support for up to 2000 monitor mode APs on MSE 3310 and support for up to 3000 monitor mode APs on MSE 3350
Management Interface	Cisco Wireless Control System version 5.2 or later

Selected Part Numbers and Ordering Information

AIR-WIPS-AP-25, 100, 500, 2000	License for Access Points (supports 25,100, 500, and 2000 APs)
AIR-MSE-3310-K9	Cisco 3310 Mobility Services Engine
AIR-MSE-3350-K9	Cisco 3350 Mobility Services Engine

Ordering Multiple Services on the Mobility Services Engine

The following are possible combinations when ordering multiple services (Context-Aware software licences and Adaptive Wireless Intrusion Prevention licences for Monitor Mode Access Points).

Context-Aware	18,000	17,000	16,000	15,000	14,000	13,000	12,000	11,000	10,000	9,000
WIPs	0	165	330	500	665	830	1,000	1,165	1,330	1,500
Context-Aware	8,000	7,000	6,000	5,000	4,000	3,000	2,000	1,000	0	
WIPs	1,665	1,830	2,000	2,165	2,330	2,500	2,665	2,830	3,000	

For More Information

<http://www.cisco.com/go/wips>

Cisco Wireless Services

Services from Cisco and our partners help you plan, build, and run a network that enables you to expand geographically, embrace new business models, and promote business innovation. We can help you get the most from your infrastructure investment by creating a secure wired and wireless network platform that supports real-time mobile collaborative applications such as voice, video, and context aware. Through a discovery process, we work with you to understand your business, identify critical issues, and create new solutions to improve operations, increase productivity, and lower your total cost of ownership. Whether you are looking to transition to a Cisco Borderless Network Architecture or to solve a specific business problem, we have the services that can help you get the most from your IT environment.

For more information about Cisco Wireless LAN Services, visit <http://www.cisco.com/go/wirelesslanservices>.