

# Cisco Aironet 3600 Series Access Point



#### Cisco Aironet® 3600i Access Point

- · Sleek design with internal antennas
- · Ideal for office environments

#### Cisco Aironet 3600e Access Point

- Rugged metal housing and extended operating temperature
- Ideal for factories, warehouses, and other indoor industrial environments
- Versatile RF coverage with external antennas
- UL 2043 plenum-rated for above-ceiling installation options or suspended from drop ceilings
- Classify over 20 different types of interference, including non-Wi-Fi interference within 5 to 30 seconds
- Automatic remedial action and less manual intervention

# Investment Protection with Modular Architecture Design

- Flexible add-on Wireless Security & Spectrum Intelligence Module
- IEEE 802.11ac Wave 1 Module (Available Q1CY13)
- Cisco 3G Small Cell Module (Available 2HCY13)

### Troubleshooting Forensics for Faster Interference Resolution and Proactive Action

- Historic interference information for back-in-time analysis and faster problem solving
- 24/7 monitoring with remote access reduces travel and speeds resolution
- Cisco® Spectrum Expert Connect provides realtime, raw spectrum data to help with difficult-todiagnose interference problems
- The Air Quality Index in Cisco CleanAir<sup>™</sup> technology provides a snapshot of network performance and the impact of interference

## **Robust Security and Policy Enforcement**

- Industry's first access point with non-Wi-Fi detection for off-channel rogues
- Supports rogue access point detection and detection of denial-of-service attacks
- Management frame protection detects malicious users and alerts network administrators
- Set policies to prohibit devices that interfere with the Wi-Fi network or jeopardize network security

### Secure Interoperability

Controller-based deployment only



Delivering up to three times more coverage versus competition for tablets, smartphones, and highperformance laptops, the industry's only 4x4 MIMO, three-spatial-stream access point delivers missioncritical reliability. Current solutions struggle to scale to meet demands on the wireless networks from the influx of diverse mobile devices and mobile applications. The new Cisco Aironet® 3600 Series sustains reliable connections at higher speeds further from the access point than competing solutions, resulting in up to three times more availability of 450 Mbps rates, and optimizing the performance of more mobile devices. Cisco® Aironet 3600 Series is an innovative, modular platform that offers unparalleled investment protection with future module expansion to support incoming 802.11ac clients with 870 Mbps rates, or offer comprehensive security and spectrum monitoring and control.

Cisco Aironet 3600 Series includes Cisco ClientLink 2.0 to boost performance and range for clients and includes Cisco CleanAir spectrum intelligence for a self-healing, self-optimizing network.

## RF Excellence

Building on the Cisco Aironet heritage of RF excellence, the 3600 Series is a flagship access point, delivering industry-leading performance for secure and reliable wireless connections.

Enterprise-class silicon and optimized radios deliver a robust mobility experience which includes:

- 802.11n with 4x4 multiple-input multiple-output (MIMO) technology with three spatial streams, which sustains 450-Mbps rates over a greater range for more capacity and reliability than competing access points.
- Cisco ClientLink 2.0 technology to improve downlink performance to all mobile devices including one-, two-, and three-spatial-stream devices on 802.11n while improving battery life on mobile devices such as smartphones and tablets.
- Cisco CleanAir<sup>™</sup> technology, which provides proactive, high-speed spectrum intelligence to combat performance problems due to wireless interference.
- Modular architecture design, enabling flexible add-on options in the form of a Wireless Security &
  Spectrum Intelligence Module, a Cisco 3G Small Cell Module or an IEEE 802.11ac Module that is tightly
  integrated with the Cisco Aironet 3600 Series Access Point platform, and is completely field-upgradable.
- MIMO equalization optimized uplink performance and reliability by minimizing the impact of signal fade.

All of these features help ensure the best possible end-user experience on the wireless network.

Cisco also offers the industry's broadest selection of <u>802.11n antennas</u> delivering optimal coverage for a variety of deployment scenarios.

# Scalability

The Cisco Aironet 3600 Series is a component of the Cisco Unified Wireless Network, which can scale to up to 18,000 access points with full Layer 3 mobility across central or remote locations on the enterprise campus, in branch offices, and at remote sites. The Cisco Unified Wireless Network is the industry's most flexible, resilient, and scalable architecture, delivering secure access to mobility services and applications and offering the lowest total cost of ownership and investment protection by integrating seamlessly with the existing wired network.

## **Product Specifications**

Table 1 lists the product specifications for Cisco Aironet 3600 Series Access Points.

 Table 1.
 Product Specifications for Cisco Aironet 3600 Series Access Points

Item	Specification
Part Numbers	The Cisco Aironet 3600i Access Point: Indoor environments, with internal antennas
	AIR-CAP3602I-x-K9 - Dual-band controller-based 802.11a/g/n
	AIR-CAP3602I-xK910 - Eco-pack (dual-band 802.11a/g/n) 10 quantity access points
	The Cisco Aironet 3600e Access Point: Indoor, challenging environments, with external antennas
	AIR-CAP3602E-x-K9 - Dual-band controller-based 802.11a/g/n
	AIR-CAP3602E-xK910 - Eco-pack (dual-band 802.11a/g/n) 10 quantity access points
	Cisco SMARTnet® Service for the Cisco Aironet 3600i Access Point with internal antennas CON-SNT-CAP362lx - SMARTnet 8x5xNBD 3600i access point (dual-band 802.11 a/g/n)
	• Qty(10) CON-SNT-CAP362lx - SMARTnet 8x5xNBD 10 quantity eco-pack 3600i access point (dual-band 802.11a/g/n)
	Cisco SMARTnet Service for the Cisco Aironet 3600e Access Point with external antennas
	• CON-SNT-CAP3602x - SMARTnet 8x5xNBD 3600e access point (dual-band 802.11 a/g/n)
	• Qty(10) CON-SNT-CAP3602x - SMARTnet 8x5xNBD 10 quantity eco-pack 3600e access point (dual-band 802.11a/g/n)
	Cisco Wireless LAN Services

Item	Specification					
	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: <a href="http://www.cisco.com/go/aironet/compliance">http://www.cisco.com/go/aironet/compliance</a> .			npliance.		
	Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.					
Software	Cisco Unified Wireless N	etwork Software Release	7.2 or later			
Supported Wireless LAN Controllers	<ul> <li>Cisco 2500 Series Wireless Controllers, Cisco Wireless LAN Controller Module (WLCM) on Cisco Services-Ready Engine (SRE) for Cisco Integrated Services Router Generation 2 (ISR G2), Cisco Wireless Services Module 2 (WiSM2), Cisco 5500 Series Wireless Controller, Cisco Flex 7500 Series Wireless Controllers</li> </ul>					
<b>Module Options</b>	Wireless Security and Spectrum Intelligence module					
	<ul> <li>Provides full-spectrum, off-channel scanning for comprehensive wIPS, including Cisco CleanAir technology, rogue detection, context awareness, and radio resource management (RRM) solutions. Scans 2.4- and 5-GHz channels while serving data clients on the base dual-band access point platform</li> <li>IEEE 802.11ac Wave 1 module (Available Q2CY13)</li> <li>Supports 3x3:3SS (spatial streams), 80-MHz wide channels, 256 quadrature amplitude modulation (QAM), and data rates up to 1.3 Gbps (as part of IEEE 802.11ac Wave 1)</li> <li>Wi-Fi Alliance certification expected in Q2 2013</li> <li>Cisco 3G Small Cell Module (Available 2HCY13)</li> <li>3GPP Band 1 (2100 MHz), 16 users, Voice (R99), Packet Data (HSPA/HSDPA+)</li> </ul>					
802.11n Version 2.0 (and Related) Capabilities	<ul> <li>4x4 multiple-input multiple-output (MIMO) with three spatial streams</li> <li>Maximal ratio combining (MRC)</li> <li>802.11n and 802.11a/g beamforming</li> <li>20- and 40-MHz channels</li> <li>PHY data rates up to 450 Mbps (40-MHz with 5 Ghz)</li> <li>Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx)</li> <li>802.11 dynamic frequency selection (DFS)</li> <li>Cyclic shift diversity (CSD) support</li> </ul>					
Data Rates	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps					
Supported	·					
	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 <sup>1</sup>	Gl <sup>2</sup> = 800ns	ı	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	
	'-		102	00.1	100	

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

Item	Specification						
	13	104	216		115.6	240	
	14	117	243		130	270	
	15	130	270		144.4	300	
	16	19.5	40.5		21.7	45	
	17	39	81		43.3	90	
	18	58.5	121.5		65	135	
	19	78	162		86.7	180	
	20	117	243		130	270	
	21	156	324		173.3	360	
	22	175.5	364.5		195	405	
	23	195	405		216.7	450	
Eraguanay Band			403	N /N rogul		430	
Frequency Band and 20-MHz	<ul> <li>A (A regulatory domain)</li> <li>● 2.412 to 2.462 GHz; 1</li> </ul>			, ,	atory domain): o 2.462 GHz; 11 channel:	S	
Operating Channels	• 5.180 to 5.320 GHz: 8				5.320 GHz; 8 channels		
	• 5.500 to 5.700 GHz, 8				5.825 GHz; 5 channels		
	(excludes 5.600 to 5.6	640 GHz)		Q (Q regul	atory domain):		
	• 5.745 to 5.825 GHz; 5		' -		2.472 GHz; 13 channels		
	C (C regulatory domain)				o 5.320 GHz; 8 channels		
	• 2.412 to 2.472 GHz; 1	,			• 5.500 to 5.700 GHz; 11 channels		
	• 5.745 to 5.825 GHz; 5			R (R regulatory domain):			
	E (E regulatory domain):  ■ 2.412 to 2.472 GHz; 13 channels			• 2.412 to 2.472 GHz; 13 channels			
		5.180 to 5.320 GHz; 8 channels			• 5.180 to 5.320 GHz; 8 channels		
• 5.500 to 5.700 GHz, 8 channels			• 5,660 to 5,805 GHz, 7 channels  S (S regulatory domain):				
	(excludes 5.600 to 5.640 GHz)		• 2.412 to 2.472 GHz; 13 channels				
I (I regulatory domain):				• 5.180 to 5.320 GHz; 8 channels			
	<ul> <li>2.412 to 2.472 GHz, 13 channels</li> <li>5.180 to 5.320 GHz; 8 channels</li> <li>K (K regulatory domain):</li> <li>2.412 to 2.472 GHz; 13 channels</li> <li>5.180 to 5.320 GHz; 8 channels</li> <li>5.500 to 5.620 GHz, 7 channels</li> <li>5.745 to 5.805 GHz, 4 channels</li> </ul>		• 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, 8 channels (excludes 5.600 to 5.640 GHz)				
			• 5.745 to 5.825 GHz; 5 channels				
	responsible for verifying apporticular country, visit: http				y approval and to identify	the regulatory domain	
Maximum Number	2.4 GHz	, , , , , , , , , , , , , , , , , , ,		5 GHz			
of Nonoverlapping	• 802.11b/g:			• 802.11	a:		
Channels	∘ 20 MHz: 3			。 20 M			
	• 802.11n:			• 802.11	n:		
	。 20 MHz: 3			。 20 M	Hz: 21		
				。 40 M	Hz: 9		
Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.							
Receive Sensitivity	• 802.11b (CCK)	• 802.11g (non	HT20)	• 802.118	a (non HT20)		
	• -101 dBm @ 1 Mb/s			∘ -90 d	Bm @ 6 Mb/s		
	• -98 dBm @ 2 Mb/s	• -91 dBm @			Bm @ 9 Mb/s		
	• -92 dBm @ 5.5 Mb				Bm @ 12 Mb/s		
	• -89 dBm @ 11 Mb/s				Bm @ 18 Mb/s		
		• -87 dBm @			Bm @ 24 Mb/s		
		• -85 dBm @ • -80 dBm @			Bm @ 36 Mb/s Bm @ 48 Mb/s		
		-ov ubili @	40 IVID/5	· -/80	DIII @ 40 IVID/S		

-79 dBm @ 54 Mb/s

-77 dBm @ 54 Mb/s

Item	Specification		
	2.4-GHz	5-GHz	5-GHz
	•	5-GHz  • 802.11n (HT20)  • -91 dBm @ MCS0  • -90 dBm @ MCS1  • -89 dBm @ MCS2  • -86 dBm @ MCS3  • -83 dBm @ MCS4  • -78 dBm @ MCS5  • -77 dBm @ MCS6  • -75 dBm @ MCS7  • -91 dBm @ MCS9  • -87 dBm @ MCS10  • -84 dBm @ MCS11  • -80 dBm @ MCS12  • -76 dBm @ MCS13  • -75 dBm @ MCS15  • -75 dBm @ MCS15  • -80 dBm @ MCS15  • -80 dBm @ MCS15  • -80 dBm @ MCS15  • -75 dBm @ MCS15  • -76 dBm @ MCS15  • -76 dBm @ MCS15  • -75 dBm @ MCS15  • -88 dBm @ MCS16  • -88 dBm @ MCS17  • -85 dBm @ MCS18  • -82 dBm @ MCS19  • -79 dBm @ MCS20	5-GHz  • 802.11n (HT40)  • -88 dBm @ MCS0  • -87 dBm @ MCS1  • -86 dBm @ MCS2  • -82 dBm @ MCS4  • -75 dBm @ MCS5  • -73 dBm @ MCS6  • -72 dBm @ MCS7  • -88 dBm @ MCS7  • -86 dBm @ MCS1  • -86 dBm @ MCS10  • -80 dBm @ MCS11  • -77 dBm @ MCS12  • -73 dBm @ MCS15  • -80 dBm @ MCS15  • -81 dBm @ MCS15  • -82 dBm @ MCS16  • -84 dBm @ MCS18  • -78 dBm @ MCS19  • -75 dBm @ MCS20
Maximum Transmit Power	<ul> <li>-87 dBm @ MCS18</li> <li>-84 dBm @ MCS19</li> <li>-81 dBm @ MCS20</li> <li>-76 dBm @ MCS21</li> <li>-75 dBm @ MCS22</li> <li>-74 dBm @ MCS23</li> </ul> 2.4 GHz <ul> <li>802.11b</li> <li>23 dBm: 4 antennas</li> <li>802.11g</li> </ul>	<ul> <li>-85 dBm @ MCS18</li> <li>-82 dBm @ MCS19</li> <li>-79 dBm @ MCS20</li> <li>-74 dBm @ MCS21</li> <li>-73 dBm @ MCS22</li> <li>-72 dBm @ MCS23</li> </ul> 5 GHz <ul> <li>802.11a</li> <li>23 dBm: 4 antennas</li> <li>802.11n (HT20)</li> </ul>	<ul><li>-82 dBm @ MCS18</li><li>-78 dBm @ MCS19</li></ul>
<b>Note:</b> The maximum specific details.	23 dBm: 4 antennas     802.11n (HT20)     23 dBm: 4 antennas  power setting will vary by channel and according to individual co	<ul> <li>23 dBm: 4 antennas</li> <li>802.11n (HT40)</li> <li>23 dBm: 4 antennas</li> </ul> puntry regulations. Refer to the p	roduct documentation for
Available Transmit Power Settings	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)	5 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)	
Note: The maximum specific details.  Integrated Antenna	power setting will vary by channel and according to individual co  • 2.4 GHz, Gain 2 dBi, internal omni, horizontal beamwidth		roduct documentation for
ogratos Antonna	5 GHz, Gain 5 dBi, internal omni, horizontal beamwidth 36		

Item	Specification
External Antenna	Certified for use with antenna gains up to 6 dBi (2.4 GHz and 5 GHz)
(Sold Separately)	Cisco offers the industry's broadest selection of <u>802.11n antennas</u> delivering optimal coverage for a variety of deployment scenarios
Interfaces	<ul> <li>10/100/1000BASE-T autosensing (RJ-45)</li> <li>Management console port (RJ-45)</li> </ul>
Indicators	Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors
Dimensions (W x L x H)	• Access point (without mounting bracket): 8.7 x 8.7 x 2.11 in. (22.1 x 22.1 x 5.4 cm)
Weight	• 2.5 lbs (1.13 kg)
Environmental	Cisco Aironet 3600i  Nonoperating (storage) temperature: -22 to 158♥ (-30 to 70℃)  Nonoperating (storage) Altitude Test -25˚C, 15,000 ft.  Operating temperature: 32 to 104♥ (0 to 40℃)  Operating humidity: 10 to 90% percent (noncondensing)  Operating Altitude Test -40˚C, 9843 ft.  Cisco Aironet 3600e  Nonoperating (storage) temperature: -22 to 158♥ (-30 to 70℃)  Nonoperating (storage) Altitude Test - 25˚C, 15,000 ft.  Operating temperature: -4 to 131♥ (-20 to 55℃)  Operating humidity: 10 to 90 percent (noncondensing)
System Memory	<ul> <li>Operating Altitude Test -40°C, 9843 ft.</li> <li>256-MB DRAM</li> <li>32-MB flash</li> </ul>
Input Power Requirements	<ul> <li>AP3600: 44 to 57 VDC</li> <li>Power Supply and Power Injector: 100 to 240 VAC; 50 to 60 Hz</li> </ul>
Powering Options	AP3600 without add-on module  • 802.3af Ethernet  • Cisco AP3600 Power Injectors (AIR-PWRINJ4=)  • Cisco AP3600 Local Power Supply (AIR-PWR-B=)  AP3600 with an add-on module  • Enhanced Power over Ethernet (PoE), 802.3at PoE+  • Cisco AP3600 Power Injectors (AIR-PWRINJ4=)  • Cisco AP3600 Local Power Supply (AIR-PWR-B=)
Power Draw	AP3600: 12.95 W  Note: When deployed using a PoE specification, 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 with PoE 802.3af as an example.
Warranty	Limited Lifetime Hardware Warranty
Compliance Standards	<ul> <li>UL 60950-1</li> <li>CAN/CSA-C22.2 No. 60950-1</li> <li>UL 2043</li> <li>IEC 60950-1</li> <li>EN 60950-1</li> <li>EN 50155</li> <li>Radio approvals:</li> <li>FCC Part 15.247, 15.407</li> <li>RSS-210 (Canada)</li> <li>EN 300.328, EN 301.893 (Europe)</li> <li>ARIB-STD 66 (Japan)</li> <li>ARIB-STD T71 (Japan)</li> <li>EMI and susceptibility (Class B)</li> <li>FCC Part 15.107 and 15.109</li> <li>ICES-003 (Canada)</li> <li>VCCI (Japan)</li> </ul>

Item	Specification
	∘ EN 301.489-1 and -17 (Europe)
	<ul> <li>EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC</li> </ul>
	IEEE Standard:
	<ul> <li>IEEE 802.11a/b/g, IEEE 802.11n, IEEE 802.11h, IEEE 802.11d</li> </ul>
	Security:
	802.11i, Wi-Fi Protected Access 2 (WPA2), WPA
	。 802.1X
	<ul> <li>Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP)</li> </ul>
	• EAP Type(s):
	<ul> <li>Extensible Authentication Protocol-Transport Layer Security (EAP-TLS)</li> </ul>
	<ul> <li>EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2)</li> </ul>
	Protected EAP (PEAP) v0 or EAP-MSCHAPv2
	<ul> <li>Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST)</li> </ul>
	PEAPv1 or EAP-Generic Token Card (GTC)
	EAP-Subscriber Identity Module (SIM)
	Multimedia:
	∘ Wi-Fi Multimedia (WMM <sup>™</sup> )
	Other:
	FCC Bulletin OET-65C
	∘ RSS-102

# Limited Lifetime Hardware Warranty

The Cisco Aironet 3600 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: <a href="http://www.cisco.com/go/warranty">http://www.cisco.com/go/warranty</a>.

## Cisco Wireless LAN Services

Realize the full business value of your technology investments faster with intelligent, customized services from Cisco and our partners. Backed by deep networking expertise and a broad ecosystem of partners, Cisco Wireless LAN Services enable you to deploy a sound, scalable mobility network that enables rich media collaboration while improving the operational efficiency gained from a converged wired and wireless network infrastructure based on the Cisco Unified Wireless Network. Together with partners, we offer expert plan, build, and run services to accelerate your transition to advanced mobility services while continuously optimizing the performance, reliability, and security of that architecture after it is deployed. For more details, visit: <a href="http://www.cisco.com/go/wirelesslanservices">http://www.cisco.com/go/wirelesslanservices</a>.

## For More Information

For more information about the Cisco Aironet 3600 Series, visit <a href="http://www.cisco.com/go/wireless">http://www.cisco.com/go/wireless</a> or contact your local account representative.



Americas Headquarters Cisco Systems, Inc. San Jose, CA Asia Pacific Headquarters Cisco Systems (USA) Pte. Ltd. Singapore Europe Headquarters Cisco Systems International BV Amsterdam, The Netherlands

 $Cisco\ has\ more\ than\ 200\ offices\ worldwide.\ Addresses,\ phone\ numbers,\ and\ fax\ numbers\ are\ listed\ on\ the\ Cisco\ Website\ at\ www.cisco.com/go/offices.$ 

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

Printed in USA C78-686782-06 02/13