

Cisco Aironet 1540 Series Outdoor Access Points

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Cisco® Aironet® 1540 Series outdoor access points offer the latest 802.11ac Wave 2 functions in a rugged, ultra-low-profile housing that service providers and enterprises can deploy easily.

The Cisco Aironet 1540 Series is ideal for applications requiring rugged outdoor Wi-Fi coverage and supports the latest 802.11ac Wave 2 radio standard. Housed in a compact, aesthetically pleasing, easy-to-deploy package, the 1540 Series offers flexible deployment options for service providers and enterprise networks that need the fastest links possible for mobile outdoor clients (smartphones, tablets, and laptops) and wireless backhaul. The 1540 Series access points give network operators the flexibility to balance their desired wireless coverage with their need for easy deployment.

Whether deployed as a traditional access point or a wireless mesh access point, the 1540 Series provides the throughput capacity needed for today’s bandwidth-hungry devices.

Features and benefits

By adhering to the 802.11ac Wave 2 standard, the 1540 Series provides a data rate of up to 867 Mbps on the 5-GHz radio. This exceeds the data rates offered by access points that support the 802.11n standard. It also enables a total aggregate dual-radio data rate of up to 1.1 Gbps. This provides the necessary foundation for enterprise and service provider networks to stay ahead of the performance expectations and needs of their wireless users.

In recent years corporate users have increasingly preferred wireless access as the form of network connectivity due to its convenience. With this shift, there is an expectation that wireless should not slow down users’ day-to-day work, but should enable a high-performance experience. The 1540 Series delivers this performance with highly secure and reliable wireless connections for mobile end users.

Table 1 lists the features and benefits of the 1540 Series.

Table 1. Features and benefits of Cisco Aironet 1540 Series

Feature	Benefit
Compact size	Enables deployment of the access point where it’s needed. The 1540 Series easily mounts to walls or light poles without disturbing the aesthetics of the area.
802.11ac Wave 2 radio	Provides up to 867-Mbps data rates with 2 x 2 Multiuser Multiple-Input, Multiple-Output (MU-MIMO) with up to two spatial streams.
Multiuser MIMO (MU-MIMO)	Allows transmission of data to multiple 802.11ac Wave 2-capable clients simultaneously to improve client experience. Prior to the 802.11ac Wave 2 standard, access points could transmit data to only one client at a time, typically referred to as single-user MIMO.

Feature	Benefit
Flexible deployment modes	Allows for deployment in a variety of ways, including as traditional access points and in mesh networks. The access points can also be deployed with the Cisco Mobility Express Solution. This deployment is ideal for small to medium-sized networks that that require 50 or fewer access points without a physical controller. All deployment modes are easy to set up and configure.

The Cisco Aironet 1540 Series offers the following features:

- Compact, lightweight size: At just over 2.5 pounds (1 kg) and with a small footprint, the 1540 Series is one of the smallest outdoor access points with internal antennas.
- Low power consumption: Achieves full operation on standard 802.3af power (13.9W).
- Integrated antenna options: The 1540 Series offers two models with different antenna patterns to address a variety of use cases.

Product specifications

Table 2 lists the specifications of the 1540 Series access points.

Table 2. Specifications

Item	Specifications
802.11ac Wave 1 and 2 capabilities	<ul style="list-style-type: none"> • 1542I/D: 2 x 2 MIMO with two spatial streams • Multiuser and single-user MIMO • Maximal Ratio Combining (MRC) • 802.11ac beamforming (transmit beamforming) • 20-, 40-, and 80-MHz channels • PHY data rates up to 867 Mbps (80 MHz in 5 GHz) • Packet aggregation: A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx) • 802.11 Dynamic Frequency Selection (DFS) • Cyclic-Shift-Diversity (CSD) support
802.11n (and related) capabilities	<ul style="list-style-type: none"> • 1542I/D: 2 x 2 MIMO with two spatial streams • MRC • 20- and 40-MHz channels (40 MHz in 5 GHz) • PHY data rates up to 300 Mbps • Packet aggregation: A-MPDU (Tx/Rx) and A-MSDU (Tx/Rx) • 802.11 DFS • CSD support

Item	Specifications								
Data rates supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps								
	802.11b/g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps								
	802.11n data rates on 2.4 and 5 GHz:								
	MCS Index	GI = 800 ns				GI = 400 ns			
		20-MHz Rates (Mbps)		40-MHz Rates (Mbps)		20-MHz Rates (Mbps)		40-MHz Rates (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	58.5		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	
	802.11ac Data Rates (5 GHz)								
	Spatial Streams	MCS	GI = 800 ns			GI = 400 ns			
		20 MHz	40 MHz	80 MHz	20 MHz	40 MHz	80 MHz		
1	0	6.5	13.5	29.3	7.2	15	32.5		
1	1	13	27	58.5	14.4	30	65		
1	2	19.5	40.5	87.8	21.7	45	97.5		
1	3	26	54	117	28.9	60	130		
1	4	39	81	175.5	43.3	90	195		
1	5	52	108	234	57.8	120	260		
1	6	58.5	121.5	263.3	65	135	292.5		
1	7	65	135	292.5	72.2	150	325		
1	8	78	162	351	86.7	180	390		
1	9	–	180	390	–	200	433.3		
2	0	13	27	58.5	14.4	30	65		

Item	Specifications							
	2	1	26	54	117	28.9	60	130
	2	2	39	81	175.5	43.3	90	195
	2	3	52	108	234	57.8	120	260
	2	4	78	162	351	86.7	180	390
	2	5	104	216	468	115.6	240	520
	2	6	117	243	526.5	130	270	585
	2	7	130	270	585	144.4	300	650
	2	8	156	324	702	173.3	360	780
	2	9	–	360	780	–	400	866.7
Frequency band and 20-MHz operating channels (regulatory domains)	<p>A:</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 5.580 GHz, 5 channels 5.660 to 5.700 GHz, 3 channels 5.745 to 5.825 GHz, 5 channels <p>B:</p> <ul style="list-style-type: none"> 2.412 to 2.462 GHz, 11 channels 5.180 to 5.240 GHz, 4 channels 5.260 to 5.320 GHz, 4 channels 5.500 to 5.720 GHz, 12 channels 5.745 to 5.825 GHz, 5 channels <p>C:</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz, 13 channels 5.745 to 5.825 GHz, 5 channels <p>D:</p> <ul style="list-style-type: none"> 2.412 to 2.462 GHz, 11 channels 5.745 to 5.865 GHz, 7 channels <p>E:</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz, 13 channels 5.500 to 5.580 GHz, 5 channels 5.660 to 5.700 GHz, 3 channels <p>F:</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz, 13 channels 5.745 to 5.805 GHz, 4 channels <p>G:</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz, 13 channels 5.745 to 5.825 GHz, 5 channels <p>H:</p> <ul style="list-style-type: none"> 2.412 to 2.472 GHz, 13 channels 5.745 to 5.825 GHz, 5 channels <p>I:</p>							

Item	Specifications
	<p>2.412 to 2.472 GHz, 13 channels</p> <p>K:</p> <p>2.412 to 2.462 GHz, 11 channels</p> <p>5.280 to 5.320 GHz, 3 channels</p> <p>5.500 to 5.620 GHz, 7 channels</p> <p>5.745 to 5.805 GHz, 4 channels</p> <p>L:</p> <p>2.412 to 2.472 GHz, 13 channels</p> <p>5.500 to 5.620 GHz, 7 channels</p> <p>5.745 to 5.865 GHz, 7 channels</p> <p>M:</p> <p>2.412 to 2.472 GHz, 13 channels</p> <p>5.500 to 5.580 GHz, 5 channels</p> <p>5.660 to 5.700 GHz, 3 channels</p> <p>5.745 to 5.805 GHz, 4 channels</p> <p>-N:</p> <p>2.412 to 2.462 GHz, 11 channels</p> <p>5.745 to 5.825 GHz, 5 channels</p> <p>-Q:</p> <p>2.412 to 2.472 GHz, 13 channels</p> <p>5.500 to 5.700 GHz, 11 channels</p> <p>-R:</p> <p>2.412 to 2.472 GHz, 13 channels</p> <p>5.260 to 5.320 GHz, 4 channels</p> <p>5.660 to 5.700 GHz, 3 channels</p> <p>5.745 to 5.825 GHz, 5 channels</p> <p>-S:</p> <p>2.412 to 2.472 GHz, 13 channels</p> <p>5.500 to 5.700 GHz, 11 channels</p> <p>5.745 to 5.825 GHz, 5 channels</p> <p>-T:</p> <p>2.412 to 2.462 GHz, 11 channels</p> <p>5.500 to 5.580 GHz, 5 channels</p> <p>5.660 to 5.700 GHz, 3 channels</p> <p>5.745 to 5.825 GHz, 5 channels</p> <p>-Z:</p> <p>2.412 to 2.462 GHz, 11 channels</p> <p>5.500 to 5.580 GHz, 5 channels</p> <p>5.660 to 5.700 GHz, 3 channels</p> <p>5.745 to 5.825 GHz, 5 channels</p>

Item	Specifications
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Note: Customers are responsible for verifying approval for use in their individual countries. To verify approval that corresponds to a particular country, please visit <https://www.cisco.com/go/aironet/compliance>.

Maximum number of nonoverlapping channels	2.4 GHz	5 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 	<ul style="list-style-type: none"> • 802.11a: <ul style="list-style-type: none"> ◦ 20 MHz: 27 • 802.11n: <ul style="list-style-type: none"> ◦ 20 MHz: 27 ◦ 40 MHz: 13 • 802.11ac: <ul style="list-style-type: none"> ◦ 20 MHz: 27 ◦ 40 MHz: 13 ◦ 80 MHz: 6

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

Clients Supported	200 per radio / 400 per access point
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Receive sensitivity	Transmit Power and Receive Sensitivity (1542I and 1542D)					
			2.4 GHz Radio		5 GHz Radio	
		Spatial Streams	Total TX Power (dBm)	RX Sensitivity (dBm)	Total TX Power (dBm)	RX Sensitivity (dBm)
	802.11/11b					
	1 Mbps	1	27	-100	NA	NA
	11 Mbps	1	27	-92	NA	NA
	802.11a/g					
	6 Mbps	1	27	-95	25	-93
	24 Mbps	1	27	-89	25	-87
	54 Mbps	1	25	-79	24	-77
	802.11n HT20					
	MCS0	1	27	-95	25	-92
	MCS4	1	27	-84	25	-82
	MCS7	1	25	-76	23	-74
	MCS8	2	27	-94	25	-91
	MCS12	2	27	-82	25	-80
	MCS15	2	25	-74	23	-72
	802.11n HT40					
	MCS0	1			25	-90
	MCS4	1			25	-79
MCS7	1			23	-72	
MCS8	2			25	-89	

Item	Specifications					
	MCS12	2			25	-77
	MCS15	2			23	-70
	802.11ac VHT20					
	MCS0	1			25	-92
	MCS4	1			24	-82
	MCS7	1			21	-74
	MCS8	1			20	-70
	MCS0	2			25	-91
	MCS4	2			24	-80
	MCS7	2			21	-72
	MCS8	2			20	-68
	802.11ac VHT40					
	MCS0	1			25	-90
	MCS4	1			23	-79
	MCS7	1			20	-72
	MCS8	1			19	-68
	MCS9	1			19	-66
	MCS0	2			25	-89
	MCS4	2			23	-77
	MCS7	2			20	-70
	MCS8	2			19	-66
	MCS9	2			19	-64
	802.11ac VHT80					
	MCS0	1			25	-87
	MCS4	1			23	-76
	MCS7	1			21	-69
	MCS8	1			19	-64
	MCS9	1			19	-62
	MCS0	2			25	-86
	MCS4	2			23	-74
	MCS7	2			21	-67
	MCS8	2			19	-62
	MCS9	2			19	-60

Item	Specifications	
<p>Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.</p>		
Maximum conducted transmit power	1542I <ul style="list-style-type: none"> • 2.4 GHz: 27 dBm with 2 antennas • 5 GHz: 25 dBm with 2 antennas 	1542D <ul style="list-style-type: none"> • 2.4 GHz: 27 dBm with 2 antennas • 5 GHz: 25 dBm with 2 antennas
<p>Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.</p>		
Interfaces	<ul style="list-style-type: none"> • WAN port 10/100/1000BASE-T Ethernet, autosensing (RJ-45), PoE in • Management console port (RJ-45) • Multicolor LED/Reset button 	
Uplink options	Ethernet and wireless mesh	
Dimensions (L x W x H)	1542I/D: 7.9 x 5.9 x 2.4 in.(20 x 15 x 6.1 cm)	
Weight	1542I/D: 2.75 lb (1.25 kg)	
Environmental	<p>Operating temperature:</p> <ul style="list-style-type: none"> • -40° to 65°C (-40° to 149°F) ambient air with no solar loading • -40° to 55°C (-40° to 131°F) ambient air with solar loading • Storage temperature: -40° to 85°C (-40° to 185°F) <p>Humidity:</p> <ul style="list-style-type: none"> • 5 – 95% non-condensing <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"> • IEC 60529 IP67 • Icing protection NEMA 250-2008 • Corrosion NEMA 250-2008 (600 hours) • Solar radiation EN 60068-2-5 (1200 W/m²) • Vibration MIL-STD-810 	
Antennas	<ul style="list-style-type: none"> • 1542I: Integrated dual-band, vertical polarization, omnidirectional antenna radome, 5 dBi (2.4 Ghz) and 5dBi (5.8 GHz)** • 1542D: Integrated dual-band, dual polarization, directional antenna radome, vertically polarized 8 dBi (2.4 GHz), 9 dBi (5 GHz) <p>** This model can be mounted horizontally on a wall or pole, to provide omni-directional coverage; or can be mounted vertically to provide semi-omni coverage.</p>	
Powering options	<ul style="list-style-type: none"> • 802.3af, 802.3at • Cisco power injectors: <ul style="list-style-type: none"> ◦ AIR-PWRINJ-6oRGD1= (outdoor rated, 60W, with NEMA 5-15 AC plug) ◦ AIR-PWRINJ-6oRGD2= (outdoor rated, 60W, unterminated AC cable) ◦ AIR-PWRINJ5= (indoor, 802.3af) ◦ AIR-PWRINJ6= (indoor, 802.3at) 	
Power consumption	Max power draw is 13.9W with 100 meters Category 5 cable	
Compliance	Safety	

Item	Specifications
	<ul style="list-style-type: none"> • UL60950, 2nd Edition • CAN/CSA-C22.2 No. 60950, 2nd Edition • IEC 60950, 2nd Edition • EN 60950, 2nd Edition <p>Immunity</p> <ul style="list-style-type: none"> • <= 5 mJ f or 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 2 ESD Immunity • EN60950 Overvoltage Category IV <p>Radio Approvals</p> <ul style="list-style-type: none"> • FCC Part 15.247, 15.407 • FCC Bulletin OET-65C • RSS-210 • RSS-102 • AS/NZS 4268.2003 • ARIB-STD 66 (Japan) • ARIB-STD T71 (Japan) • EN 300 328 • EN 301 893 <p>EMI and Susceptibility</p> <ul style="list-style-type: none"> • FCC part 15.107, 15.109 • ICES-003 • EN 301 489-1, -17 <p>Security</p> <ul style="list-style-type: none"> • Wireless bridging/mesh • X.509 digital certificates • MAC address authentication • Advanced Encryption Standard (AES) <p>Wireless Access</p> <ul style="list-style-type: none"> • 802.11i, Wi-Fi Protected Access 2 (WPA2), and WPA • 802.1X authentication, including Extensible Authentication Protocol (EAP) and Protected EAP (EAP -PEAP), EAP Transport Layer Security (EAP-TLS), EAP-Tunneled TLS (EAP-TTLS), EAP-Subscriber Identity Module (EAP-SIM), and Cisco LEAP • VPN pass-through • IP Security (IPsec) • Layer 2 Tunneling Protocol (L2TP) • MAC address filtering
Warranty	1-year limited hardware warranty

Ordering information

Table 3 gives ordering information for the Cisco Aironet 1540 Series.

Table 3. Ordering information

Part Number	Product Description
Aironet 1540 Series	<ul style="list-style-type: none"> • AIR-AP1542I-x-K9: Dual-band 802.11a/g/n/ac, Wave 2, internal omni antennas • AIR-AP1542D-x-K9: Dual-band 802.11a/g/n/ac, Wave 2, internal directional antennas <p>Regulatory domains: (x = regulatory domain).</p> <p>Customers are responsible for verifying approval for use in their individual countries. To verify approval that corresponds to a particular country or the regulatory domain used in a specific country, visit https://www.cisco.com/go/aironet/compliance.</p> <p>Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.</p> <p>Cisco Smart Net Total Care™ Service for the Cisco Aironet 1540 Series Access Points</p> <p>Refer to the service part numbers on Cisco Commerce Workspace for available service offerings.</p>

Warranty information

The Cisco Aironet 1540 Series access points come with a 1 -year limited warranty that provides full warranty coverage of the hardware. The warranty includes 10 -day advance hardware replacement and helps ensure that software media are defect-free for 90 days. For more details, visit <https://www.cisco.com/go/warranty>.

Cisco Wireless LAN Services

Realize the full business value of your technology investments faster with intelligent, customized services from Cisco. Backed by deep networking expertise, 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. We offer expert advisory, implementation and optimization services to accelerate your transition to advanced mobility services while continuously optimizing the performance, reliability, and security of that architecture after it is deployed. In addition, Smart Net Total Care service helps you protect your investment and derive maximum value from your Cisco products. Delivered by Cisco and backed by your trusted partner, this comprehensive service includes access to the Cisco Technical Assistance Center 24 hours a day, 365 days a year, IOS software updates, online resources, and expedited hardware replacement when needed. The Smart Net Total Care service helps you solve problems faster, improve operational efficiency, and reduce the risk of downtime. For more details, visit: <https://www.cisco.com/c/en/us/products/wireless/service-listing.html>.

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For more information

For more information about the Cisco Aironet 1540 Series, visit <https://www.cisco.com/go/wireless> or contact your local Cisco account representative.

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