


Cisco Aironet 1552WU Outdoor Access Point



Outdoor Access Point for Wireless Sensor Networks

- Integrated WirelessHART gateway for wireless sensor networks
- Designed for hazardous environments (Certified Class 1 Div 2/Zone 2 enclosure)
- Cisco CleanAir® technology provides integrated spectrum intelligence for a self-configuring and self-healing network
- Cisco® ClientLink technology improves reliability and coverage for legacy Wi-Fi clients
- Improved 802.11n range and performance with 2 x 3 multiple-input multiple-output (MIMO) technology
- Multiple IEEE radio support (802.11a/n, 802.11b/g/n)
- Multiple uplink options (Gigabit Ethernet-10/100/1000 BaseT)



High-Performance Outdoor Access Point for Wireless Sensor Networks

The Cisco Aironet® 1552WU Outdoor Access Point is the latest model in the Cisco® Aironet 1550 Series. It is ideal for mining, oil and gas, manufacturing, and process control applications. The 1552WU

merges the ruggedized outdoor [802.11n](#) access point with an integrated WirelessHART gateway to provide a seamless solution for wireless sensor networks. The WirelessHART radio has been designed specifically for mission-critical wireless connectivity to industrial sensor equipment. With a WirelessHART radio integrated into an 802.11n-based access point, a single solution addresses the growing need for wireless mobility while also providing mission-critical connectivity for industrial sensing and monitoring equipment, such as gauges for water treatment plants, sensors for chemical plants, and vibration monitoring solutions for oil rigs.

This allows customers to combine business use cases, such as:

- Monitoring a chemical treatment plant while providing onsite security through wireless video surveillance
- Monitoring the equipment and gauges on an oil rig while an onsite worker downloads schematics, blueprints, or work instructions to a handheld Wi-Fi tablet
- Providing real-time information to an onsite engineer about changes to processes and equipment so that abnormalities can be dealt with immediately

The Cisco Aironet 1552WU Access Point is also Class 1, Div 2/Zone 2 hazardous location-certified. This means it is designed specifically for hazardous environments like oil and gas refineries, chemical plants, mining pits, manufacturing facilities, and process control applications. The 1552WU offers a single-box solution rather than requiring two separate pieces of equipment - one for 802.11n and one for WirelessHART sensor networks.

By eliminating the extra power and network connections, which can be expensive to deploy and maintain in hazardous locations, the 1552WU saves costs by reducing deployment times while offering a flexible, highly secure, and scalable mesh network for high-performance wireless coverage for both Wi-Fi clients and WirelessHART field instruments across large facilities. With all these benefits, the Cisco Aironet 1552WU Outdoor Access Point can improve overall plant reliability, safety, and profitability.

The Cisco Aironet 1552WU Outdoor Access Point provides multiple device connectivity and network access options to support use cases such as real-time seamless mobility, distributed control system connectivity, video surveillance, 3G and 4G cellular data offload, and public and private Wi-Fi access. Designed to meet customer needs in a broad range of industries, the Cisco Aironet 1552WU Outdoor Access Point offers the following additional benefits:

- **Flexible deployment options** - Access or mesh network or extension of an Ethernet network, with 10/100/1000 Ethernet and wireless backhaul options
- **Cisco CleanAir® technology** - Integrated spectrum intelligence to detect, classify, and mitigate RF interference from unauthorized wireless bridges or malicious devices
- **High-bandwidth video surveillance** - Video surveillance over Wi-Fi without the high cost of installing cables over long distances
- **High-performance, multipurpose network** - Provides low capital and operating expenditures
- **Integrated wired and wireless** - The Cisco Enterprise Networks Architecture provides cost savings with end-to-end network access solutions that include wireless, switching, routing, and security

Flexible, High-Performance Mesh

The Cisco Aironet 1552WU Outdoor Access Point offers a flexible, highly secure, and scalable mesh platform that is part of the [Cisco Unified Wireless Network](#). It offers high-performance mobility across large oil and gas facilities, mining, manufacturing, and process control applications.

The 1552WU provides high-performance device access through improved radio sensitivity and range with 802.11a/b/g/n multiple-input multiple-output (MIMO) technology, including two spatial streams. Multiple uplink and power options are available. The 802.3af-compliant, Power-over-Ethernet (PoE) interface makes it easy to connect IP devices, such as IP video cameras. The housing is certified for Class 1, Div 2, and ATEX Zone 2 deployment areas and provides a robust system that can withstand demanding, hazardous environments.

Cisco CleanAir Technology

As part of the Cisco Aironet 1550 Series with Cisco CleanAir technology, the 1552WU provides the highest-performance 802.11n connectivity for mission-critical outdoor networks by detecting interference from unauthorized devices, as well as common outdoor interference sources such as WiMAX networks and wireless bridging products. The 1550 Series uses chip-level intelligence to create a spectrum-aware, self-healing, and self-optimizing wireless network that mitigates the impact of wireless interference. Cisco CleanAir technology is a system-wide feature of the Cisco Unified Wireless Network that improves wireless network quality by detecting RF interference other systems can't recognize, identifying the source, locating it, and then making automatic adjustments to optimize wireless coverage.

RF Excellence

Building on the Cisco Aironet heritage of RF excellence, the Cisco Aironet 1550 Series delivers industry-leading performance for highly secure and reliable wireless connections. Industrial-grade parts, enterprise-class silicon-level intelligence, and optimized radios deliver a robust mobility experience. The Cisco Aironet 1550 Series provides a set of tools that deliver the robust, scalable wireless foundation required to realize the true potential of outdoor wireless mobility:

- [Cisco ClientLink technology](#) raises the downlink performance to 802.11a/g clients, providing improved coverage and throughput to existing clients
- Radio resource management (RRM) provides automated channel selection and power setting management of access points
- Advanced capabilities allow users to select data rates, adjust power, and manage quality of service (QoS) for access points

Centrally Managed Mesh Network

Central management and troubleshooting of the Cisco outdoor wireless access points prevent costly maintenance service calls to outdoor locations. The Cisco Prime™ Network Control System (NCS) works in conjunction with the Cisco Aironet Access Points and Cisco Wireless LAN Controllers to configure and manage the wireless networks. With Cisco Prime NCS, network administrators have a single solution for RF prediction, policy provisioning, network optimization, troubleshooting, security monitoring, and wireless LAN systems management. Cisco CleanAir technology is integrated into Cisco Prime NCS to provide real-time information on your outdoor network. Wireless network security is also a part of a unified wired and wireless solution. Cisco [wireless network security](#) offers the highest level of network security, which helps ensure that data remains private and secure and that the network is protected from unauthorized access.

802.11n Outdoor Access Point

The 1552WU consists of weather-proof housing, a DC power supply, Cisco and Emerson radio modules, Ethernet modules, and external antennas. The access point contains a dual Wi-Fi radio system with radios that are compliant with IEEE 802.11a/n (5-GHz) and 802.11b/g/n (2.4-GHz) standards, respectively. The 1552WU has six external Wi-Fi antenna connections for three 2.4 GHz and three 5 GHz antennas, providing flexibility to select differing antenna gain patterns for each band. It has 5 GHz mesh Wi-Fi, Ethernet backhaul options. There is one antenna connector for a WirelessHART antenna. This access point also has a PoE-out port and can power a video surveillance camera. A highly flexible model, the Cisco Aironet 1552WU is designed for hazardous environments like oil and gas refineries, chemical plants, mining pits, and manufacturing factories. The Cisco Aironet 1552WU Outdoor Access Point is Class 1, Div 2/Zone 2 hazardous location-certified. Lightning arrestors for surge protection are also supported.

WirelessHART compliant Gateway

The Cisco Aironet 1552WU is a modularized outdoor mesh network access point with an integrated WirelessHART Gateway. It is configured for three simultaneous radio operations.

- 2.4 GHz 802.11b/g/n radio primarily for local Wi-Fi device access
- 5 GHz 802.11a/n radio for wireless backhaul in the mesh
- 2.4 GHz WirelessHART radio for communicating with sensor devices

An external Ethernet port provides a connection for a redundant WirelessHART access point or gateway.

External Antennas

The 1552WU has six external Type N connectors for Wi-Fi antennas: three for 2.4 GHz and three for 5 GHz. These IP66 rated antennas may be connected directly, or through an appropriate cable. The following Cisco antennas are supported:

- AIR-ANT2480V-N (2.4 GHz, 8 dBi, omni, 19.5 inches long)
- AIR-ANT5180V-N (5 GHz, 8 dBi, omni, 11 inches long)
- AIR-ANT5114P2M-N= (5 GHz, 14 dBi, dual polarized patch)

WirelessHart Antenna Connector

There is a single Type N connector for the WirelessHART 2.4 GHz antenna. This antenna is intended to be connected using a low-loss coaxial cable.

Product Specifications

Table 1 lists specifications for the Cisco Aironet 1552WU Outdoor Access Point.

Table 1. Cisco Aironet 1552WU Outdoor Access Point Product Specifications

Item	Specification
Part Numbers	<p>Cisco Aironet 1552WU Access Point with DC power supply</p> <ul style="list-style-type: none"> • AIR-CAP1552WU-A-K9 • AIR-CAP1552WU-B-K9 • AIR-CAP1552WUC-K9 • AIR-CAP1552WU-E-K9 • AIR-CAP1552WU-K-K9 • AIR-CAP1552WU-M-K9 • AIR-CAP1552WU-N-K9 • AIR-CAP1552WU-Q-K9 • AIR-CAP1552WU-R-K9 • AIR-CAP1552WU-S-K9 • AIR-CAP1552WU-T-K9 • AIR-CAP1552WU-D-K9 • AIR-CAP1552WU-Z-K9 <p>Not all regulatory domains have been approved. Refer to the Cisco WLAN compliance page for the latest information.</p>
802.11n Capabilities	<ul style="list-style-type: none"> • 2 x 3 multiple-input multiple-output (MIMO) with two spatial streams • 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
Emerson Smart WirelessHart Gateway	<ul style="list-style-type: none"> • WirelessHART gateway traffic can be configured to have the highest priority available on the backhaul and takes precedence over Wi-Fi traffic • Supports direct Ethernet connection between WirelessHART gateways residing in two co-located 1552WU access points for WirelessHART gateway redundancy

Item	Specification				
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 = 800 ns				
	GI = 400 ns				
	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: The above numbers represent the over-the-air supported rates. Actual usable throughput will be determined by factors such as protocol overhead, RF channel contention, and interference.					
Frequency Band and 20-MHz Operating Channels	<p>-A Domain:</p> <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 11 channels • 5.250 to 5.850 GHz; 14 channels <p>-B Domain:</p> <ul style="list-style-type: none"> • 2.400 to 2.4835 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 <p>-C Domain:</p> <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 13 channels • 5.725 to 5.850 GHz; 5 channels <p>-D Domain:</p> <ul style="list-style-type: none"> • 2.401 to 2.4835 GHz; 11 channels • 5.725 to 5.875 GHz; 7 channels <p>-E Domain:</p> <ul style="list-style-type: none"> • 2.401 to 2.4835 GHz; 13 channels • 5.470 to 5.725 GHz; 8 channels <p>-K Domain:</p> <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 11 channels • 5.250 to 5.825 GHz; 14 channels <p>-M Domain</p> <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 13 channels 				

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.

Item	Specification		
	<ul style="list-style-type: none"> • 5.470 to 5.850 GHz; 12 channels -N Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 11 channels • 5.725 to 5.850 GHz; 5 channels -Q Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 13 channels • 5.470 to 5.725 GHz; 11 channels -R Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 13 channels • 5.250 to 5.725 GHz; 11 channels -S Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 13 channels • 5.725 to 5.850 GHz; 5 channels -T Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 11 channels • 5.470 to 5.850 GHz; 13 channels -Z Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 11 channels • 5.470 to 5.850 GHz; 12 channels 		
Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.			
Maximum Number of Nonoverlapping Channels	<table border="0"> <tr> <td style="vertical-align: top;"> 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 </td> <td style="vertical-align: top;"> 5 GHz <ul style="list-style-type: none"> • 802.11a: <ul style="list-style-type: none"> ◦ 20 MHz: 19 • 802.11n: <ul style="list-style-type: none"> ◦ 20 MHz: 19 ◦ 40 MHz: 11 </td> </tr> </table>	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 	5 GHz <ul style="list-style-type: none"> • 802.11a: <ul style="list-style-type: none"> ◦ 20 MHz: 19 • 802.11n: <ul style="list-style-type: none"> ◦ 20 MHz: 19 ◦ 40 MHz: 11
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 	5 GHz <ul style="list-style-type: none"> • 802.11a: <ul style="list-style-type: none"> ◦ 20 MHz: 19 • 802.11n: <ul style="list-style-type: none"> ◦ 20 MHz: 19 ◦ 40 MHz: 11 		
Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.			
Maximum Transmit Power	<table border="0"> <tr> <td style="vertical-align: top;"> 2.4 GHz <ul style="list-style-type: none"> • 802.11b (Complementary Code Keying [CCK]) <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11g (non HT duplicate mode) <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11n (HT20) <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.15.4 <ul style="list-style-type: none"> ◦ 18 dBm with 1 antenna </td> <td style="vertical-align: top;"> 5 GHz <ul style="list-style-type: none"> • 802.11a <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11n non-HT duplicate (802.11a duplicate) mode <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11n (HT20) <ul style="list-style-type: none"> ◦ 27 dBm with 2 antennas • 802.11n (HT40) <ul style="list-style-type: none"> ◦ 27 dBm with 2 antennas </td> </tr> </table>	2.4 GHz <ul style="list-style-type: none"> • 802.11b (Complementary Code Keying [CCK]) <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11g (non HT duplicate mode) <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11n (HT20) <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.15.4 <ul style="list-style-type: none"> ◦ 18 dBm with 1 antenna 	5 GHz <ul style="list-style-type: none"> • 802.11a <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11n non-HT duplicate (802.11a duplicate) mode <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11n (HT20) <ul style="list-style-type: none"> ◦ 27 dBm with 2 antennas • 802.11n (HT40) <ul style="list-style-type: none"> ◦ 27 dBm with 2 antennas
2.4 GHz <ul style="list-style-type: none"> • 802.11b (Complementary Code Keying [CCK]) <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11g (non HT duplicate mode) <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11n (HT20) <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.15.4 <ul style="list-style-type: none"> ◦ 18 dBm with 1 antenna 	5 GHz <ul style="list-style-type: none"> • 802.11a <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11n non-HT duplicate (802.11a duplicate) mode <ul style="list-style-type: none"> ◦ 28 dBm with 2 antennas • 802.11n (HT20) <ul style="list-style-type: none"> ◦ 27 dBm with 2 antennas • 802.11n (HT40) <ul style="list-style-type: none"> ◦ 27 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.			
Network Interface	10/100/1000BASE-T Ethernet, autosensing (RJ-45)		
Dimensions (W x L x H)	12.0 in. x 7.8 in. x 6.4 in. (30.48 cm x 19.81 cm x 16.26 cm) (including antenna mount)		
Weight	1552WU: 17.6 lbs (8 kg) Pole mounting bracket: 6.1 lbs (2.8 kg)		
Environmental	Operating temperature: -40 to 55°C (-40 to 131°F) plus Solar Loading Storage temperature: -50 to 85°C (-58 to 185°F) Humidity: 0-100% (condensing) Wind resistance: <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 4 		
Antenna Gain	<ul style="list-style-type: none"> • 2.4 GHz Wi-Fi <ul style="list-style-type: none"> ◦ AIR-ANT2480V-N (8 dBi, omni) • 5 GHz Wi-Fi 		

Item	Specification
	<ul style="list-style-type: none"> ◦ AIR-ANT5180V-N (8 dBi, omni) ◦ AIR-ANT5114P2M-N= (14 dBi, dual polarized patch) • 2.4 GHz WirelessHART <ul style="list-style-type: none"> ◦ Included omnidirectional antenna (6 dBi, omni) with 50-foot cable
Warranty	1 year
Compliance	<p>Safety</p> <ul style="list-style-type: none"> • UL 60950-1, 2nd Edition • CAN/CSA-C22.2 No. 60950-1, 2nd Edition • IEC 60950-1, 2nd Edition • EN 60950-1, 2nd Edition • ANSI/ASA 12.12.01 • CSA C22.2 No 213 • IEC/EN 60079-0 • IEC/EN 60079-15 • CSA: Class I, Division 2, Groups A, B, C, and D • ATEX: Class I, Zone 2; Ex nA II, T5 <p>Immunity</p> <ul style="list-style-type: none"> • <= 5 mJ for 6kV/3kA at 8/20 ms wave form • 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 Over voltage 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 • 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 <ul style="list-style-type: none"> ◦ X.509 digital certificates ◦ MAC address authentication ◦ Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TLIP) • Wireless access <ul style="list-style-type: none"> ◦ 802.11i, 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 (TLIP) ◦ VPN passthrough ◦ IP Security (IPsec), Layer 2 Tunneling Protocol (L2TP) • MAC address filtering <p>Other</p> <ul style="list-style-type: none"> • NRTL/CSA: Class I, Division 2; Groups A, B, C, and D • ATEX: Class I, Zone 2; Ex nA IIC T5 Gc • IECEx: Class I, Zone 2, Ex nA IIC T5 Gc

Plan, Build, and Run Services for a Seamless Outdoor Experience

Professional services from Cisco and Cisco Advanced Wireless LAN Specialized Partners facilitate a smooth deployment of the next-generation wireless outdoor solution, while tightly integrating it with the wired and indoor wireless networks. Based on proven methodologies for planning and deploying end-to-end solutions with secure voice, video, and data technologies and years of experience designing and implementing some of the world's most complex, enterprise-class wireless networks, our specialists can help you optimize mobile connectivity to transform your business operations.

We work with your IT staff to see that your architecture, physical sites, and operational staff are ready to support Cisco's integrated, next-generation, outdoor wireless solution that combines the high performance of the 802.11n standard and Cisco CleanAir technology.

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For More Information

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

For more information about the Cisco Unified Wireless Network framework, visit:

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

For more information about the Cisco service provider Wi-Fi solution, visit:

<http://www.cisco.com/go/ap1550>

For more information about the Cisco Wireless LAN Services, visit:

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