

Cisco Catalyst 9166 Series Access Points

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The Cisco Catalyst 9166 Series Access Points (AP) allows you to choose between on-premises and cloud management. They are the next-generation APs perfect for mission-critical deployments and support the new 6-GHz band for Wi-Fi. It is resilient, secure, and intelligent.



Figure 1.
Catalyst 9166 access point

With the flexibility to choose between cloud- and on-premises management, the Catalyst 9166 Series Access Point ensures network investment protection and unlocks the power of hybrid work. The Wi-Fi 6E-compliant access point takes advantage of the 6-GHz band expansion to produce a network that is more reliable and secure, with higher throughput, more capacity, and less device interference. The access points come with three 4x4 radios and provide a host of cutting-edge features.

With the industry’s leading on-premises network platform (Catalyst) joining the industry’s leading cloud IT platform (Meraki), this access point provides an unparalleled network experience. For organizations that need solutions to power hybrid work, and that allow their people to work anywhere at any given time with elevated, secure, and connected experiences, the Cisco Catalyst 9166 Series Access Points are the best choice.

Operational management is not static, as customers are able to change their network management whenever they want. If a network with Cisco Catalyst 9166 Series Access Points was originally an on-premises deployment, it can be changed to cloud-based management without the need to purchase and redistribute additional hardware.

Table 1. Catalyst 9166 Series features and benefits

Feature	Benefits
Wi-Fi 6 and Wi-Fi 6E (802.11ax)	The IEEE 802.11ax standard, also known as High-Efficiency Wireless (HEW) or Wi-Fi 6, builds on 802.11ac. It delivers a better experience in typical environments with more predictable performance for advanced applications such as 4K or 8K video; high-density, high-definition collaboration apps; all-wireless offices; and the Internet of Things (IoT). Wi-Fi 6E is Wi-Fi 6 “extended” into the 6-GHz frequency band.
XOR radio	The dual-band XOR radio in the Catalyst 9166 Series enables shifting capacity between 6 GHz and a secondary 5-GHz radio.
Environmental sensors	These built-in sensors measure air quality (Total Volatile Organic Compounds [TVOC]), temperature, and humidity, and help ensure a safe working environment, avoiding the need to install an overlay of difficult-to-manage independent sensors.
Zero Wait DFS	Allows for continuous monitoring of DFS channels for radar events thus enabling faster channel changes when needed. This enables RRM to minimize client distribution and maximize operational readiness. (Available fall 2022)
AP power optimizations (AP Power Save Mode)	AP Power optimizations (AP Power save mode) allows the access point to reduce its power consumption by e.g. shutting off radios during off-hours and weekends – whilst still being smart enough to re-engage all features should they be needed. This both saves power and reduces the carbon footprint of running a wireless network.
CleanAir Pro	CleanAir Pro extends Cisco’s industry leading RF Interference detection and classification into the 6 GHz band.
Band steering	Enhanced to help clients that are 6-GHz capable to leave the 5-GHz radio and connect to the 6-GHz one. Wi-Fi 6E clients are automatically directed to connect to the 6-GHz radio to take advantage of the benefits it offers and free up the 2.4- and 5-GHz radios for legacy clients.
Uplink/downlink OFDMA	Orthogonal Frequency-Division Multiple Access (OFDMA)-based scheduling splits the bandwidth into smaller frequency allocations called Resource Units (RUs), which can be assigned to individual clients in both the downlink and uplink directions to reduce overhead and latency.
Uplink/downlink MU-MIMO technology	Supporting the highest number with 12 spatial streams, MultiUser Multiple Input, Multiple Output (MU-MIMO) enables the access points to split spatial streams between client devices to maximize throughput.
BSS coloring	Spatial reuse (also known as Basic Service Set [BSS] coloring) allows the access points and their clients to differentiate between BSSs, thus permitting more simultaneous transmissions.
Target Wake Time	Target Wake Time (TWT) allows the client to stay asleep and to wake up only at prescheduled (target) times to exchange data with the access point. This offers significant energy savings for battery-operated devices, up to three to four times the savings achieved by 802.11n and 802.11ac.
Intelligent Capture	Intelligent Capture probes the network and provides Cisco DNA Center with deep analysis. The software can track more than 240 anomalies and instantaneously review all packets on demand, emulating the onsite network administrator. Intelligent Capture allows for more informed decisions on your wireless networks.

Feature	Benefits
Application hosting	Application hosting helps simplify IoT deployments and ready them for the future by eliminating the need to install and manage overlay networks. Using the USB interface, containerized applications and hardware modules can be deployed to reduce cost and complexity. Adding Cisco DNA Center provides workflows and deployment-wide application lifecycle management.
Bluetooth 5.1	The integrated Bluetooth Low Energy (BLE) 5.1 radio enables location-based use cases such as asset tracking, wayfinding, and analytics.
Container support for applications	Container support enables edge computing capabilities for IoT applications on the host access point.
Choice of management mode	Cisco Catalyst 9166 Series Access Points can be managed either on-premises with Catalyst 9800 Wireless Lan Controllers (WLC) or cloud-managed through the Meraki dashboard. Customers have the flexibility to deploy these access points in one management mode and shift to a different management mode in the future.

For more details about Catalyst 9166 Series feature support, see [Cisco's Feature Matrix](#)

Secure infrastructure

Trustworthy systems built with Cisco Trust Anchor Technologies provide a highly secure foundation for Cisco products. With the Cisco Catalyst 9166 Access Points, these technologies enable assurance of hardware and software authenticity for supply chain trust and strong defense against man-in-the-middle attacks that compromise software and firmware. Trust Anchor capabilities include:

- Image signing
- Secure Boot
- Cisco Trust Anchor module

Cisco DNA and Catalyst 9800 support

Pairing the Cisco Catalyst 9166 Series Access Points with Catalyst 9800 WLC and Cisco DNA allows for a total network transformation. Cisco DNA allows you to truly understand your network with real-time analytics, quickly detect and contain security threats, and easily provide networkwide consistency through automation and virtualization. The Cisco Catalyst 9166 Series supports Software-Defined Access (SD-Access), Cisco's leading enterprise architecture.

Working together, the Catalyst 9166 Series and Cisco DNA offer such features as:

- Cisco Spaces
- Cisco Identity Services Engine
- Cisco DNA Analytics and Assurance along with Intelligence Capture (iCAP)

The result? Your network stays relevant, becomes digital ready, and is the lifeblood of your organization.

Note: For information about Cisco DNA, refer to the [Cisco DNA Solution Overview](#).

Cisco Meraki Cloud Management

Pairing the Cisco Catalyst 9166 Series Access Points with the Meraki cloud platform gives organizations a unified IT experience for network monitoring and management. The Meraki dashboard provides an intuitive and interactive web interface connecting your network to the industry's leading cloud IT platform.

Through the dashboard, Meraki provides sophisticated and scalable tools to automate network optimization, deploy policy and segmentation configurations across thousands of sites and devices, and manage a full-stack network from SD-WAN to Access to IoT technologies. The platform supports over 3.5 million active networks around the world.

Working together, the Catalyst 9166 Series and Cisco Meraki offer such features as:

- Cisco Spaces
- Cisco Identity Services Engine
- Meraki Health intelligent optimization and assurance
- Meraki Vision, smart cameras, and sensors for network closet monitoring

Note: For information about Cisco Meraki, refer to <https://meraki.cisco.com/products/>

Product specifications

Table 2. Specifications

Item	Specification
Part numbers	<p>Cisco Catalyst access points</p> <ul style="list-style-type: none">• CW9166I-x: Cisco Catalyst 9166 Series <p>Regulatory domains: (x = regulatory domain)</p> <p>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 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 and/or regional price lists.</p> <ul style="list-style-type: none">• CW9166I-MR: Cisco Catalyst 9166 Series, w/Meraki <p>Cloud-managed version using Meraki Dashboard</p> <p>Cisco wireless LAN services</p> <ul style="list-style-type: none">• For details on optional WLAN Services, visit Services for Wireless and Mobility
Software	<p>Catalyst 9166I</p> <ul style="list-style-type: none">• Cisco IOS XE Software Release 17.9.1 or later
Supported wireless LAN controllers	<ul style="list-style-type: none">• Cisco Catalyst 9800 Series Wireless Controllers (physical or virtual)
802.11n version 2.0 (and related) capabilities	<ul style="list-style-type: none">• 4x4 MIMO with four spatial streams• Maximal Ratio Combining (MRC)• 802.11n and 802.11a/g• 20- and 40-MHz channels• PHY data rates up to 1.5 Gbps (40 MHz with 5 GHz and 20 MHz with 2.4 GHz)

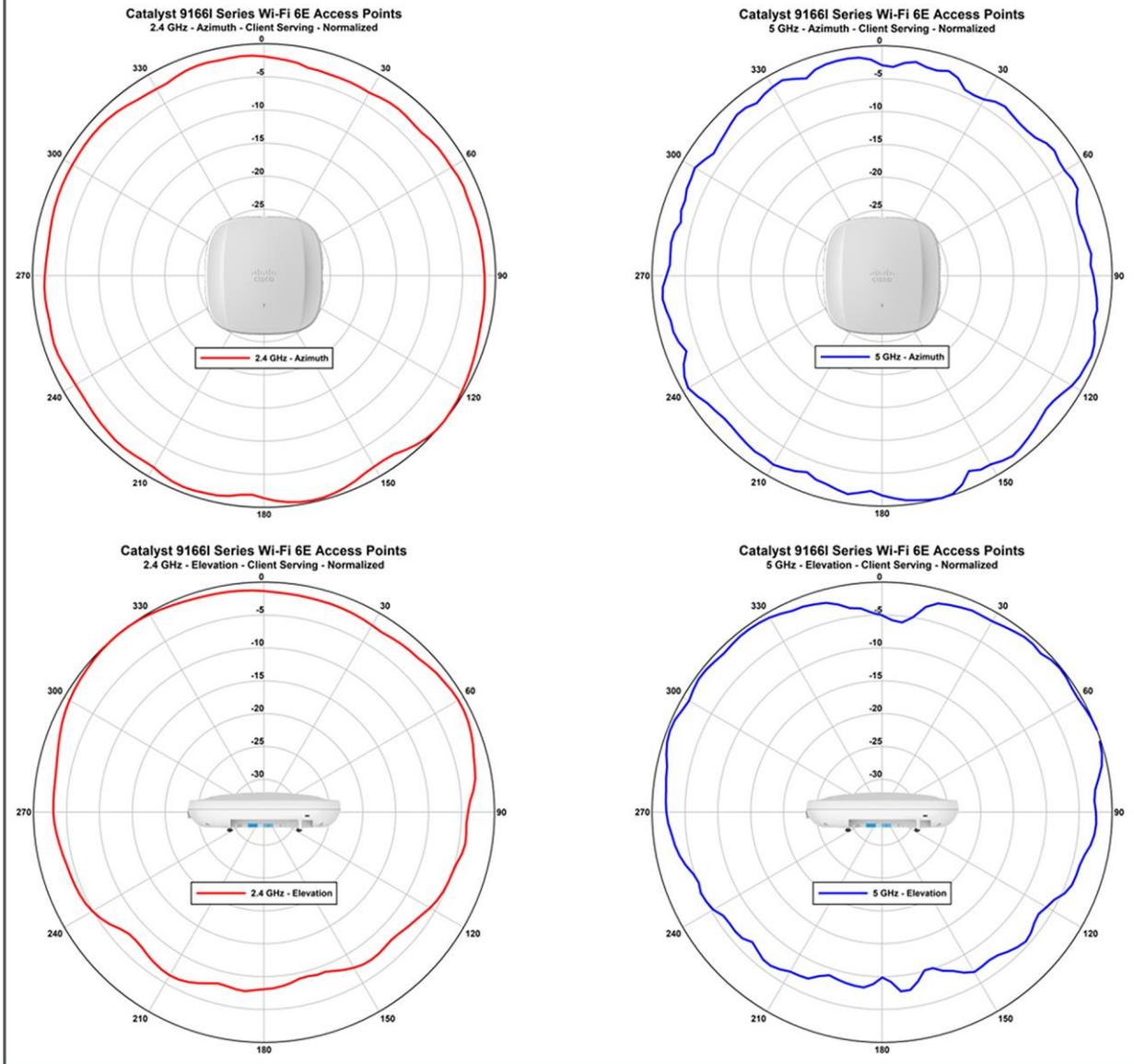
Item	Specification
	<ul style="list-style-type: none"> • Packet aggregation: Aggregate MAC Protocol Data Unit (A-MPDU) (transmit and receive), Aggregate MAC Service Data Unit (A-MSDU) (transmit and receive) • 802.11 Dynamic Frequency Selection (DFS) • Cyclic Shift Diversity (CSD) support
802.11ac	<ul style="list-style-type: none"> • 4x4 downlink MU-MIMO with four spatial streams • MRC • 802.11ac beamforming • 20-, 40-, 80-, and 160-MHz channels • PHY data rates up to 3.4 Gbps (Dual 4x4 80+80 MHz on 5-GHz) • Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive) • 802.11 DFS • CSD support • Wi-Fi Protected Access (WPA) 3 support
802.11ax	<ul style="list-style-type: none"> • 1024 QAM • 4x4 uplink/downlink MU-MIMO with four spatial streams (2.4 GHz, 5 GHz and 6 GHz) • Uplink/downlink OFDMA • TWT • BSS coloring • MRC • 802.11ax beamforming • 20-, 40-, 80-, and 160-MHz channels (6-GHz) • 20-, 40-, 80-, and 80+80-MHz channels (5-GHz) • 20-MHz channels (2.4-GHz) • PHY data rates up to 7.78 Gbps (4x4 160 MHz on 6 GHz, 4x4 80 MHz on 5 GHz, and 4x4 20 MHz on 2.4 GHz) • Packet aggregation: A-MPDU (transmit and receive), A-MSDU (transmit and receive) • 802.11 DFS • CSD support • WPA3 support
Integrated antenna	<ul style="list-style-type: none"> • 2.4 GHz: Peak gain 3 dBi, internal antenna, omnidirectional in azimuth • 5 GHz: Peak gain 5 dBi, internal antenna, omnidirectional in azimuth • 5 GHz (XOR): Peak gain 5 dBi, internal antenna, omnidirectional in azimuth • 6 GHz: Peak gain 4 dBi, internal antenna, omnidirectional in azimuth
Interfaces	<ul style="list-style-type: none"> • Catalyst 9166 Series: 1x 100M/1000M/2.5G/5G Multigigabit Ethernet (RJ-45) • Management console port (RJ-45) • USB 2.0 at 4.5W
Indicators	<ul style="list-style-type: none"> • Status LED indicates boot loader status, association status, operating status, boot loader warnings, and boot loader errors
Dimensions (W x L x H)	<ul style="list-style-type: none"> • Access point (without mounting brackets): <ul style="list-style-type: none"> ◦ Catalyst 9166 Series: 9.5 x 9.5 x 2.2 in. (241.3 x 241.3 x 56.9 mm)
Weight	<p>Catalyst 9166 Series</p> <ul style="list-style-type: none"> • 3.54 lb. (1.60 kg)

Item	Specification						
Input power requirements	<ul style="list-style-type: none"> • 802.3bt, Cisco Universal PoE (Cisco UPOE), 802.3at Power over Ethernet Plus (PoE+) • Cisco power injectors: AIR-PWRINJ7=, AIR-PWRINJ6=, MA-INJ-6 • 802.3af PoE (only for configuration staging, all radios off) • DC power input (54V/MA-PWR-50WAC) 						
	Catalyst 9166						
	PoE power consumption	2.4-GHz radio	5-GHz radio	6-GHz radio (LPI)	Link speed	USB	Link Layer Discovery Protocol (LLDP)
	802.3bt (UPOE)	4x4	4x4	4x4	5 Gbps	Y (4.5W)	30.5.W
	802.3at (PoE+)	4x4	4x4	4x4	5 Gbps	N	25.5 W
	802.3af (PoE)	-	-	-	1Gbps	N	14.0 W
DC power	4x4	4x4	4x4	5Gbps	Y(4.5W)	-	
Note: Power required at the power source equipment (PSE) will depend on the cable length and other environmental issues.							
Environmental	Catalyst 9166 Series <ul style="list-style-type: none"> • Nonoperating (storage) temperature: -22° to 158°F (-30° to 70°C) • Nonoperating (storage) altitude test: 25°C (77°F) at 15,000 ft (4600 m) • Operating temperature: 32° to 122°F (0° to 50°C) • Operating humidity: 10% to 90% (noncondensing) • Operating altitude test: 40° C (104°F) at 9843 ft (3000 m) 						
System memory	<ul style="list-style-type: none"> • 2048 MB DRAM • 1024 MB flash 						
Warranty	Limited lifetime hardware warranty (WARR-CW-LIFE-LTD)						
Available transmit power settings	2.4 GHz <ul style="list-style-type: none"> • 23 dBm (200 mW) • -4 dBm (0.39 mW) 		5 GHz <ul style="list-style-type: none"> • 23 dBm (200 mW) • -4 dBm (0.39 mW) 		6 GHz <ul style="list-style-type: none"> • 23 dBm (200 mW) • -4 dBm (0.39 mW) Note: In countries where use of the 6-GHz band is not allowed or there is no current software support, the 6-GHz radio will be disabled. The radio may be enabled with future software, once the product is certified to operate at 6 GHz for that country.		
Regulatory domains	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 https://www.cisco.com/go/aironet/compliance .						

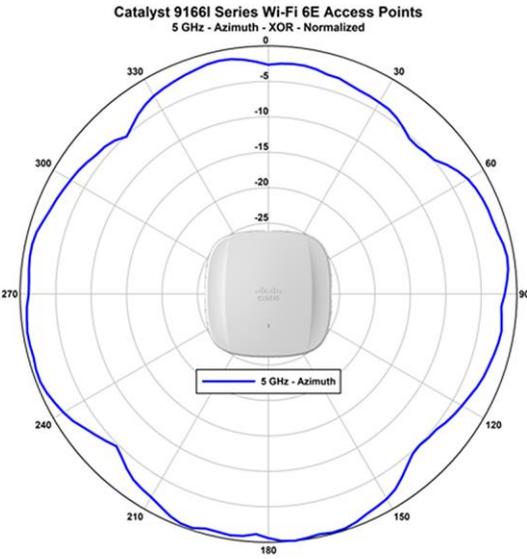
Item	Specification	
Compliance standards	<ul style="list-style-type: none"> • Safety: <ul style="list-style-type: none"> ◦ IEC 60950-1 / IEC 62368-1 Ed.3 (with Ed.2 Deviation annex) ◦ EN 60950-1 / EN 62368-1 Ed.3 (with Ed.2 Deviation annex) ◦ UL 60950-1 / UL62368-1 3rd (with Ed.2 Deviation annex) ◦ CAN/CSA-C22.2 No. 60950-1 / CAN/CSA-C22.2 No. 62368-1 3rd (with Ed.2 Deviation annex) ◦ AS/NZS60950.1 / AS/NZS62368.1 Ed.3 (with Ed.2 Deviation annex) ◦ UL 2043 ◦ Class III equipment • Emissions: <ul style="list-style-type: none"> ◦ CISPR 32 (rev. 2015) +AMD1:2019 ◦ EN 55032:2015/A11:2020 ◦ EN IEC 61000-3-2:2019/A1:2021 ◦ EN61000-3-3:2013+A1:2019 ◦ AS/NZS CISPR32: 2015+AMD1:2020 ◦ 47 CFR FCC Part 15B ◦ ICES-003 (Issue 7, Class B) ◦ VCCI-CISPR 32:2016 ◦ CNS 13438:2006 (95) ◦ KS C 9832:2019 • Immunity: <ul style="list-style-type: none"> ◦ EN 55035: 2017+A11:2020 ◦ KS C 9835:2019 ◦ Emissions and immunity: <ul style="list-style-type: none"> ◦ EN 301 489-1 V2.2.3 (2019-11) ◦ EN 301 489-17 V3.2.4 (2020-09) ◦ QCVN 112:2017/BTTTT ◦ KS X 3124:2020 ◦ KS X 3126:2020 ◦ EN 61000-6-1: 2019 	<ul style="list-style-type: none"> • Radio: <ul style="list-style-type: none"> ◦ EN 300 328 (v2.2.2) ◦ EN 301 893 (v2.1.1) ◦ EN 303 687 (v0.0.14, draft) ◦ AS/NZS 4268 (rev. 2017) ◦ 47 CFR FCC Part 15C, 15.247, 15.407 ◦ RSP-100 ◦ RSS-GEN ◦ RSS-247 ◦ LP002 ◦ Japan Std. 66, and Std. 71 • RF safety: <ul style="list-style-type: none"> ◦ EN 50385:2017 ◦ EN 62311:2020 ◦ AS/NZS 2772.2 (rev. 2016) ◦ 47 CFR Part 2.1091 ◦ RSS-102 • IEEE standards: <ul style="list-style-type: none"> ◦ IEEE 802.3 ◦ IEEE 802.3ab ◦ IEEE 802.3af/at/bt? ◦ IEEE 802.11a/b/g/n/ac/ax ◦ IEEE 802.11h, 802.11d • Security <ul style="list-style-type: none"> ◦ WPA2-Personal (802.11i) ◦ WPA2-Enterprise with 802.1X ◦ WPA3-Personal, WPA3-Enterprise ◦ WPA3-Enhanced Open (OWE) ◦ Advanced Encryption Standard (AES) • Extensible Authentication Protocol (EAP) types: <ul style="list-style-type: none"> ◦ EAP-Transport Layer Security (TLS) ◦ EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol (MSCHAP) v2 ◦ Protected EAP (PEAP) v0 or EAP-MSCHAP v2 ◦ EAP-Flexible Authentication via Secure Tunneling (EAP-FAST) ◦ PEAP v1 or EAP-Generic Token Card (GTC) ◦ EAP-Subscriber Identity Module (SIM)
Certifications	<ul style="list-style-type: none"> • Wi-Fi Alliance: Wi-Fi 6 (R2), Wi-Fi 6E, WPA3-R3, WPA3-Suite B, Enhanced Open Security • Bluetooth SIG: Bluetooth Low Energy 	

Catalyst 9166 2.4-GHz client serving radio

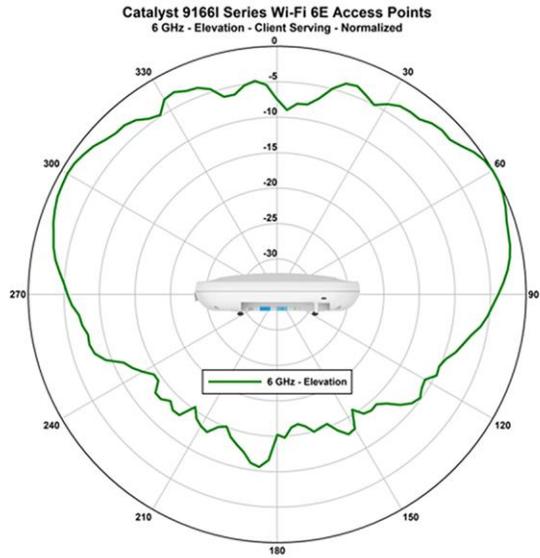
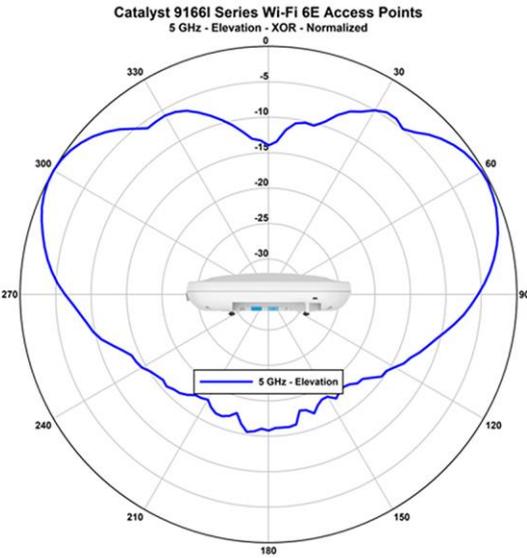
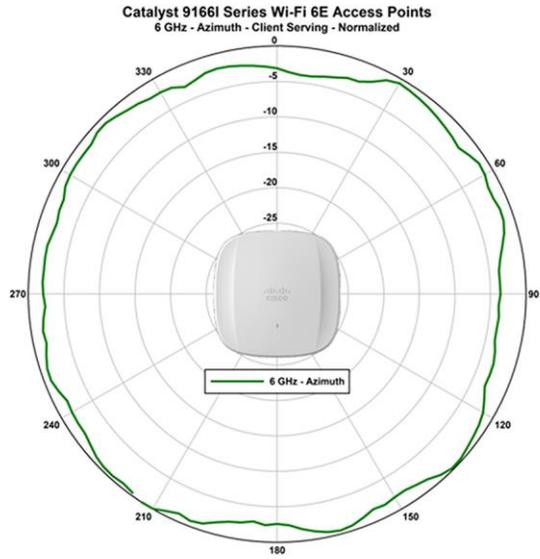
Catalyst 9166 5-GHz client serving radio



Catalyst 9166 (XOR) 5-GHz client serving radio

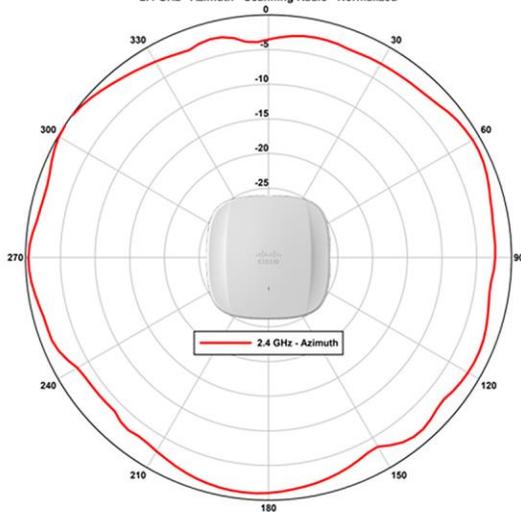


Catalyst 9166 6-GHz client serving radio



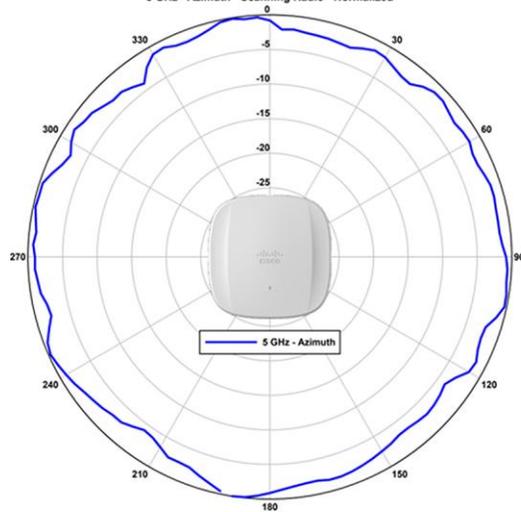
Catalyst 9166 2.4-GHz scanning radio

Catalyst 9166I Series Wi-Fi 6E Access Points
2.4 GHz - Azimuth - Scanning Radio - Normalized

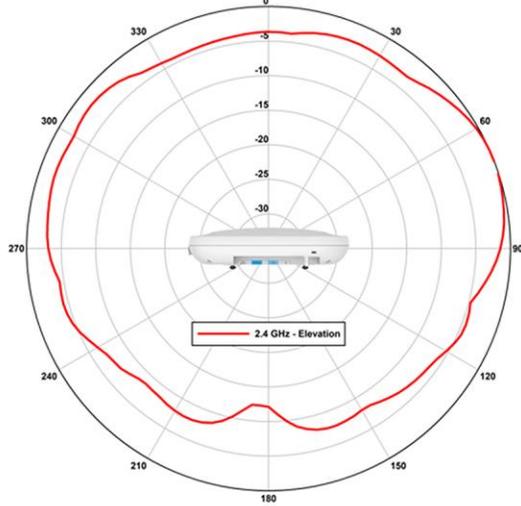


Catalyst 9166 5-GHz scanning radio

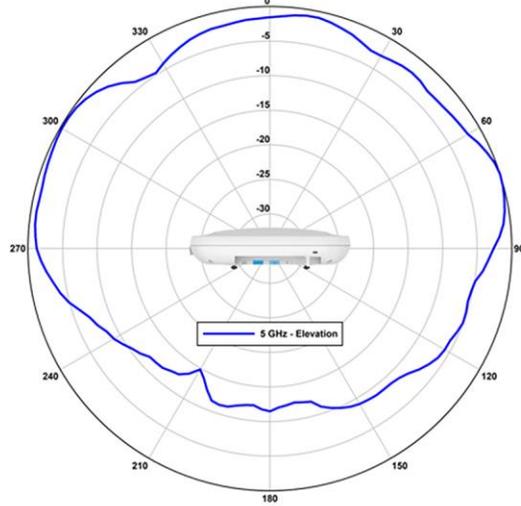
Catalyst 9166I Series Wi-Fi 6E Access Points
5 GHz - Azimuth - Scanning Radio - Normalized



Catalyst 9166I Series Wi-Fi 6E Access Points
2.4 GHz - Elevation - Scanning Radio - Normalized



Catalyst 9166I Series Wi-Fi 6E Access Points
5 GHz - Elevation - Scanning Radio - Normalized



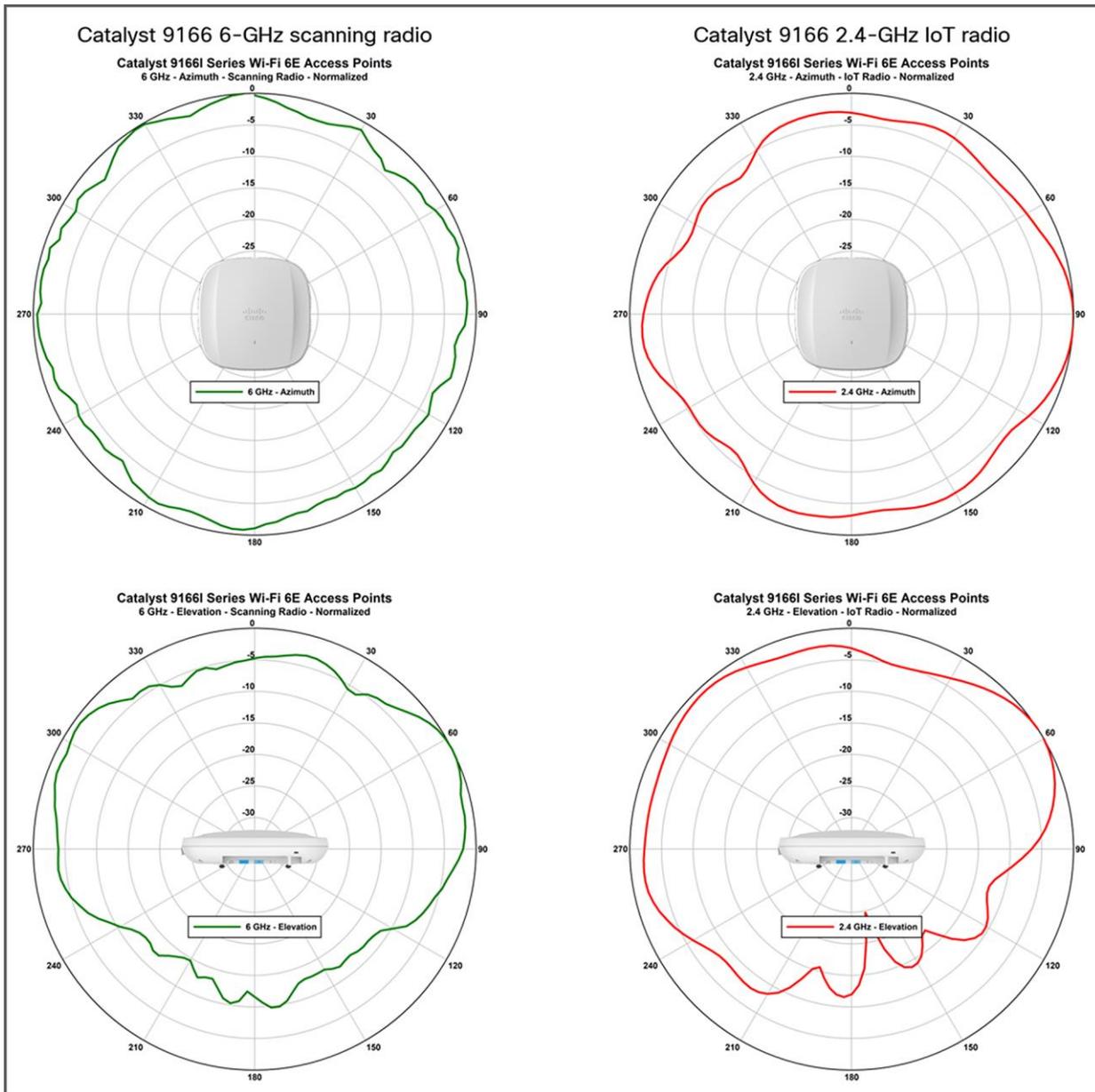


Figure 2.
Antenna profiles

Licensing

For information about licensing and packaging, refer to [Cisco Licensing](#).

Warranty information

The Cisco Catalyst 9166 Series Access Points come 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 5-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 environmental sustainability

Information about Cisco’s environmental sustainability policies and initiatives for our products, solutions, operations, and extended operations or supply chain is provided in the “Environment Sustainability” section of Cisco’s [Corporate Social Responsibility](#) (CSR) Report.

Reference links to information about key environmental sustainability topics (mentioned in the “Environment Sustainability” section of the CSR Report) are provided in the following table:

Sustainability topic	Reference
Information on product material content laws and regulations	Materials
Information on electronic waste laws and regulations, including products, batteries, and packaging	WEEE compliance

Cisco makes the packaging data available for informational purposes only. It may not reflect the most current legal developments, and Cisco does not represent, warrant, or guarantee that it is complete, accurate, or up to date. This information is subject to change without notice.

Cisco Services

With Cisco Services, you can achieve infrastructure excellence faster with less risk. From an initial WLAN readiness assessment to implementation, full solution support, and in-depth training, our services for the Cisco Catalyst 9166 Series provide expert guidance to help you successfully plan, deploy, manage, and support your new access points. With unmatched networking expertise, best practices, and innovative tools, Cisco Services can help you reduce overall upgrade, refresh, and migration costs as you introduce new hardware, software, and protocols into the network. With a comprehensive lifecycle of services, Cisco experts will help you minimize disruption and improve operational efficiency to extract maximum value from your Cisco DNA-ready infrastructure.

Smart Account

Creating a Smart Account by using the Cisco Smart Software Manager (SSM) enables you to order devices and licensing packages and also manage your software licenses from a centralized website. For more information on Smart Accounts, refer to <https://www.cisco.com/go/smartaccounts>.

Cisco Capital

Flexible payment solutions to help you achieve your objectives

Cisco Capital makes it easier to get the right technology to achieve your objectives, enable business transformation, and help you stay competitive. We can help you reduce the total cost of ownership, conserve capital, and accelerate growth. In more than 100 countries, our flexible payment solutions can help you acquire hardware, software, services, and complementary third-party equipment in easy, predictable payments. [Learn more](#).

Document history

New or revised topic	Described In	Date
Cisco DNA Spaces name change	Updated product name to Cisco Spaces and add DC power input part number	11/3/22

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