

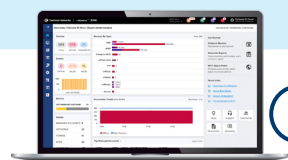
cnPilot™ e500, 501S, 502S Outdoor Wi-Fi Access Points

Omni and Sector Outdoor Wi-Fi Access Point

QUICK LOOK:

cnPilot™ e500, 501S and 502S are medium- to high-density outdoor Wi-Fi access points (AP) with a multi-functional design. These APs have internal antennas and an integrated mounting bracket to simplify installation. Perfect for a variety of applications, from omni-directional coverage to long-range Wi-Fi or high-interference outdoors where a directional RF beam is required. The 501S and 502S have a 23 dBm front-to-back signal delta for excellent isolation in high-interference environments.

e500	501S	502S
802.11 a/b/g/n/ac		
5 GHz (2x2), 2.4 GHz (2x2)		
IP67 rated housing, UV protection, LTE Filter		
-30°C to 60°C		
15.4W power out on one gigabit port		
5 dBi (5 GHz) gain omni antenna	13 dBi (5 GHz) gain sector antenna	17 dBi (5 GHz) gain sector antenna



CLOUD-MANAGED ACCESS

All cnPilot APs are managed by cnMaestro from the cloud, an on-premises VM or a private datacenter. cnMaestro provides a single-pane-of-glass dashboard for Wi-Fi, Ethernet, fixed wireless broadband and service provider home routers.

- Zero-touch onboarding
- Inventory reports, mass configuration and upgrade
- Dashboard views with alarms and key performance metrics
- Remote troubleshooting tools
- Hierarchical device organization
- Cloud-managed guest portal with social login, vouchers, rate, time and throughput limits

cnMaestro Essential cloud management is included at no additional cost. There are no setup fees, licenses or recurring costs. cnMaestro includes detailed network statistics, channel utilization graphs, and integrated remote troubleshooting tools to ensure service is always on.



MULTI-FUNCTIONAL OUTDOOR WI-FI

The cnPilot e500/501/502 series includes a second gigabit Ethernet port to power up and connect a Cambium fixed wireless subscriber module, or any powered Ethernet device. 501S and 502S features Cambium engineered high gain sector antenna array that projects RF energy in a 120° or 30° arc out the front of the AP, with ~ -10dB in the remaining 60° providing a full 180° coverage, this is ideal for outdoor Wi-Fi on a warehouse, retail store, anywhere the AP is installed on the outside of the building. 501S features power out on one gigabit Ethernet port to connect any IP- and PoE-powered device such as an IP camera, Cambium fixed wireless subscriber module, or another Wi-Fi AP. Additionally, the 501S includes enterprise features designed to improve reliable connections. Controller-less roaming, dynamic channel selection, automatic transmit power control, band steering, multi-hop MESH with alternating 2.4 GHz and 5 GHz bands are all features of the cnPilot 500/501/502 series.

Integrated troubleshooting tools provide remote access for packet capture, client statistics, operational and RF statistics, and RF scanning for interference, channel utilization, and noise floor scan.

cnPilot™ e500, 501S, 502S Outdoor Access Points

Access Point Specifications

US-FCC	Ch 1-11, 36-64, 100-144, 149-165
ISED Canada	Ch 1-11, 36-64, 100-116, 149-165
EU-ETSI	Ch 1-13, 36-64, 100-140
ROW	Ch 1-13, 36-64, 100-144, 149-173 <i>individual country limits apply</i>
Radios	1 x 5 GHz radio (802.11 a/n/ac), 2x2 1 x 2.4 GHz (802.11 b/g/n), 2x2 SU-MIMO: 2 streams
SSID Security	WPA2 (802.11i), WPA2 Enterprise (802.1x/EAP), WPA PSK, Open
Max PHY Rate	2.4 GHz radio: 300 Mbps 5 GHz radio: 867 Mbps
Ethernet	Two IEEE Gigabit auto sensing
Antenna	Internal sector antenna e500: 5.25 dBi (2.4GHz) 5 dBi (5GHz) 501S: 10.5 dBi (2.4GHz) 13 dBi (5GHz) 502S: 12.5 dBi (2.4GHz) 17 dBi (5GHz)
Max EIRP	e500: 34.25 dBm (2.4GHz) 36 dBm (5GHz) 501S: 36 dBm (2.4GHz) 36 dBm (5GHz) 502S: 36 dBm (2.4GHz) 36 dBm (5GHz) (EIRP limited by country regulations)
WLAN	256 clients, 32 SSIDs (16 per radio) WPA-TKIP, WPA2 AES, 802.1x, 802.11w PMF

Power	802.3af or 802.3at powered device Typical load: 8W, Max: 12.85W 25W when connected to full 802.3af load on GE 2
Dimensions	300 mm x 204 mm x 65 mm (11.81 in x 8.03 in x 2.56 in)
Weight	881 g (1.94 lbs)
Security	Kensington Key Slot
LED	Two dual-color LED
Ambient Operation Temperature	-30°C to 60°C
Storage Temperature	-40°C to 70°C
Humidity	95% RH non-condensing
LTE Band Filter	38, 40
Mount Options	Integrated pole 38 mm and 76 mm (1.5 in and 2.99 in), wall mount
Certifications (compliance)	Wi-Fi Alliance 802.11 a/b/g/n/ac, Passpoint 2.0, FCC, ETSI, CE, EN 60601-1-2, IEC60950, UI2043

Network Specifications

Authentication Encryption	802.1x EAP-SIM/AKA/AKA'/FAST, EAP-PEAP, EAP-TTLS, EAP-TLS/MSCHAPv2, PEAPv0/PEAPv1 MAC authentication to local database (on AP, on Controller) or external RADIUS. MAC auth fallback to guest portal
Scheduled WLAN	On/off by day, week, time of day
QoS	802.11e/WMM QoS. DSCP/ToS mapping
VLAN	802.11Q, max 4096
Fast Roaming	802.11r, OKC, cnMaestro assisted roam
Sticky Client	Enhanced roaming with thresholds
Mesh	Multi-hop (2), either band
Channel Selection	Auto RF: Manual, or automatic

Network	NAT, NAT logging firewall, DOS protection, L2/L3/DNS ACL, DHCP server, DHCP Relay option 82 LLDP, IGMP v1, v2 VLAN Pooling, RADIUS attribute VID VLAN per SSID, per user Integrated WIDS (wireless intrusion detection)
Band Steer Load Balance	Yes
Tunnel	L2TPv2, L2GRE, PPPoE
Network and RF Management Tools	Out-of-band RF spectrum analysis, RF monitor with channel/noise/interference, wired and wireless remote packet capture, ZapD performance tool, rogue, AP detection

cnPilot™ e500, 501S, 502S Outdoor Access Points

Management

Interfaces	HTTP / HTTPS web interface, SSH, Telnet SNMP V1, V2, V3 Syslog, SNMP traps, NTP
Deployment	cnMaestro Cloud, cnMaestro on-premises, Standalone AP
Services	Monetized guest portal with design tools
APIs	RESTful management and statistics API Presence location API Splunk WebSocket integration, WebSocket DNS, NAT, TCP connection log

Captive Portal

Portal features hosted on cnMaestro:

Design templates, customization tools
supports 3rd party external portal
RADIUS/LDAP/Click Through authentication
Active Directory, Google, Facebook, Office 365,
OAuth 2.0
Data Rate/Throughput limits, Time duration

Portal features hosted on the AP:

supports 3rd party external portal
RADIUS/LDAP/Click Through authentication
Data Rate/Throughput limits, Time duration

Hotspot 2.0

Hotspot 2.0/Passpoint 2.0

Accounting

RADIUS accounting, load balancing AAA
servers, Dynamic Authorization COA, DM

Service Availability

Critical network resource monitor with SSID
shutdown

Standards

Wi-Fi Protocols	802.11AC 2x2:2:2
	MIMO, VHT MCS rates, BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM, HT20/40/80 MHz,
	Transmit beamsteering, Airtime Fairness, Packet Aggregation (AMSDU, AMPDU) RIFS, STBC, LDPC, 802.11k, 802.11v
	MIMO Power Save, MRC, BPSK, QPSK, CCK, DSSS, OFDM. IEEE 802.11d/e/h/i/k/r/u/v



e500



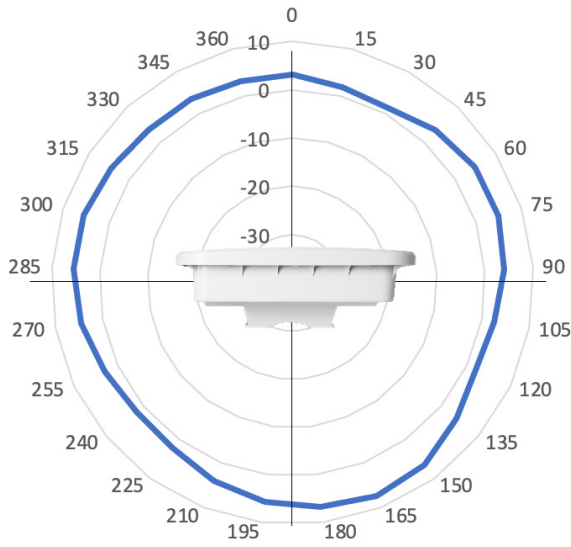
501S



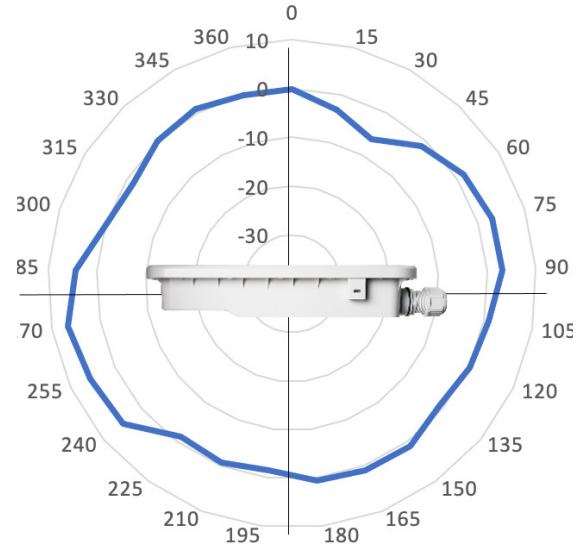
502S

cnPilot™ e500, 501S, 502S Outdoor Access Points

Antenna Patterns - e500

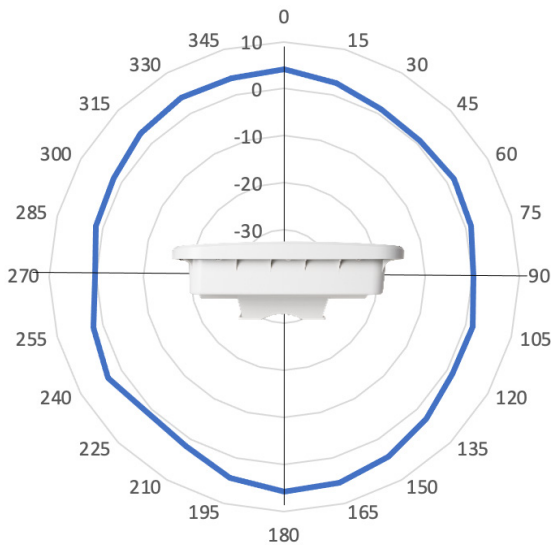


2.4 GHz Azimuth

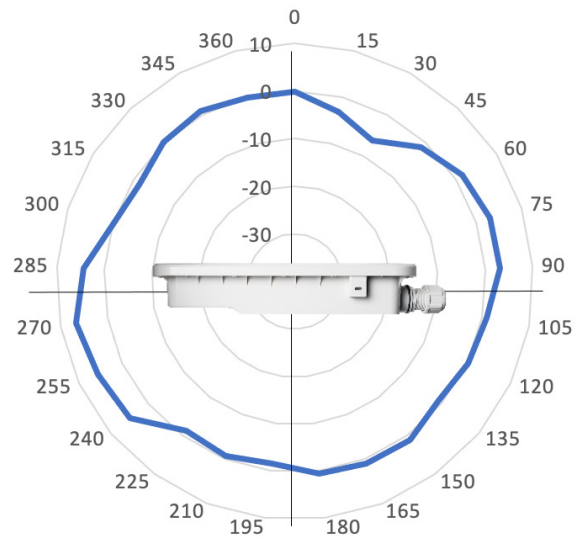


2.4 GHz Elevation

Max Gain (dB): 10
Scale: 10 dB/Div



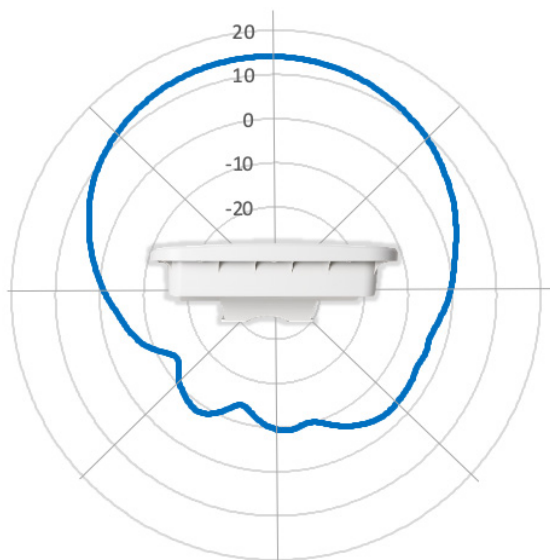
5 GHz Azimuth



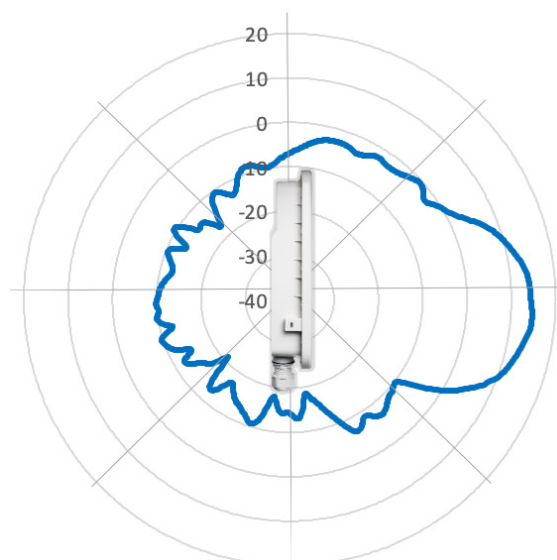
5 GHz Elevation

cnPilot™ e500, 501S, 502S Outdoor Access Points

Antenna Patterns - e501S

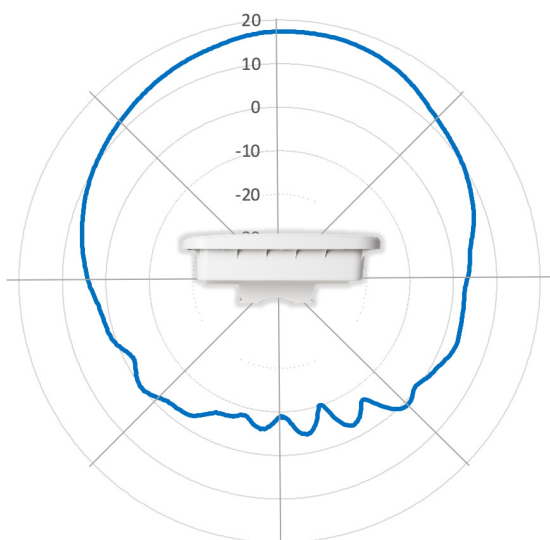


2.4 GHz Azimuth

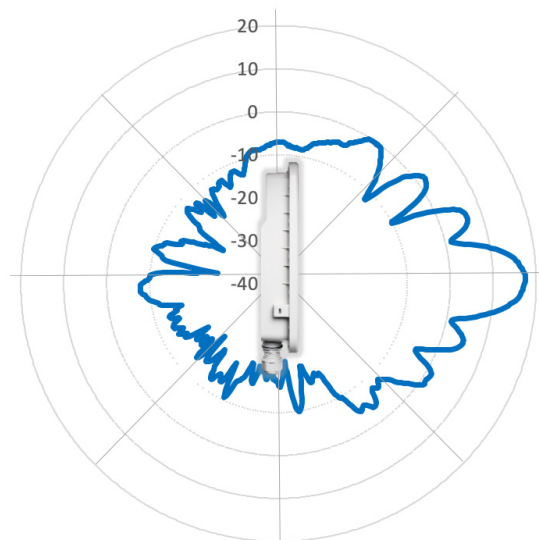


2.4 GHz Elevation

Max Gain (dB): 10
Scale: 10 dB/Div



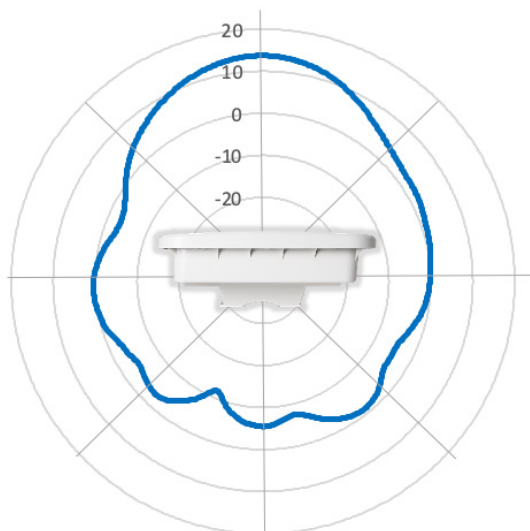
5 GHz Azimuth



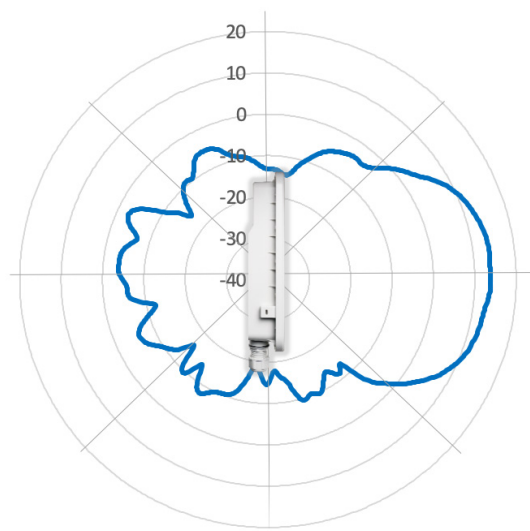
5 GHz Elevation

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Antenna Patterns - e502S

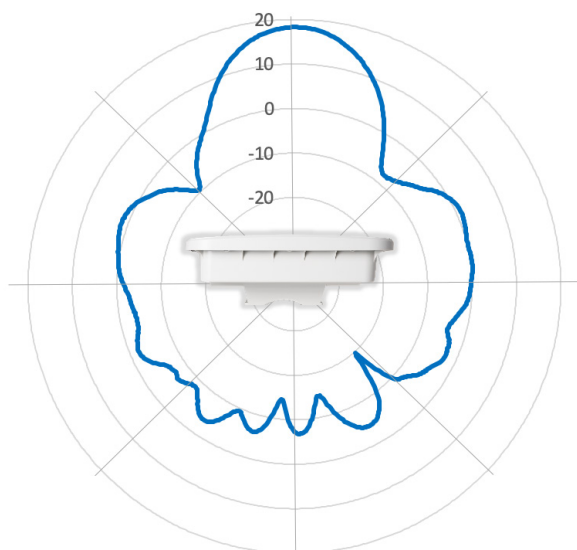


2.4 GHz Azimuth

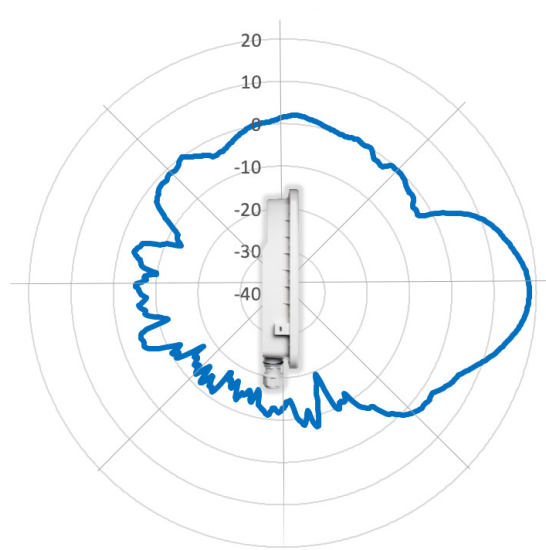


2.4 GHz Elevation

Max Gain (dB): 10
Scale: 10 dB/Div



5 GHz Azimuth



5 GHz Elevation

cnPilot™ e500, 501S, 502S Outdoor Access Points

e500 Ordering Information

PL-E500NPSA-RW	e500 Outdoor (ROW) 802.11ac 2SS int antenna AP
PL-E500NPSA-CA	e500 Outdoor (Canada) 802.11ac 2SS int antenna AP
PL-E500NPSA-EG	e500 Outdoor (Egypt) 802.11ac 2SS int antenna AP
PL-E500NPSA-EU	e500 Outdoor (EU) 802.11ac 2SS int antenna AP
PL-E500NPSA-US	e500 Outdoor (US) 802.11ac 2SS int antenna AP

501S Ordering Information

PL-501S000A-US	e501S (FCC) Outdoor, 2x2, Integrated gigabit 802.11ac AP with tilt brackets
PL-501S000A-EU	e501S (EU) Outdoor, 2x2, Integrated gigabit 802.11ac AP with tilt brackets
PL-501S000A-RW	e501S (ROW) Outdoor, 2x2, Integrated 802.11ac AP with tilt brackets

502S Ordering Information

PL-502S000A-RW	e502S (ROW) Outdoor 30° sector 802.11ac 2x2 WLAN AP with Tilt bracket
PL-502S000A-CA	e502s Outdoor (Canada) 30° sector 802.11ac 2SS AP w/tilt bkt
PL-502S000A-EG	e502s Outdoor (Egypt) 30° sector 802.11ac 2SS AP w/tilt bkt
PL-502S000A-EU	e502S (EU) Outdoor 30° sector 802.11ac 2x2 WLAN AP with Tilt bracket
PL-502S000A-US	e502S (FCC) Outdoor 30° sector 802.11ac 2x2 WLAN AP with Tilt bracket

cnMaestro X Ordering Information

MSX-SUB-T3-1	cnMaestro X for Enterprise: Advanced management and includes Cambium Care Pro Support; 1-year term
MSX-SUB-T3-3	cnMaestro X for Enterprise: Advanced management and includes Cambium Care Pro Support; 3-year term
MSX-SUB-T3-5	cnMaestro X for Enterprise: Advanced management and includes Cambium Care Pro Support; 5-year term
MSX-SUB-T3-M	cnMaestro X for Enterprise: Advanced management and includes Cambium Care Pro Support; 1-month term

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Cambium Care Ordering Information

CCADV-SUP-XV3-8-1	Cambium Care Advanced, 1-year support for one cnPilot cnPilot e500, e501S or e502S AP. 24x7 TAC support, SW updates, and NBD advance replacement for HW
CCADV-SUP-XV3-8-3	Cambium Care Advanced, 3-year support for one cnPilot cnPilot e500, e501S or e502S AP. 24x7 TAC support, SW updates, and NBD advance replacement for HW
CCADV-SUP-XV3-8-5	Cambium Care Advanced, 5-year support for one cnPilot cnPilot e500, e501S or e502S AP. 24x7 TAC support, SW updates, and NBD advance replacement for HW
CCPRO-SUP-XV3-8-1	Cambium Care Pro, 1-year support for one cnPilot cnPilot e500, e501S or e502S AP. 24x7 TAC support and SW updates
CCPRO-SUP-XV3-8-3	Cambium Care Pro, 3-year support for one cnPilot cnPilot e500, e501S or e502S AP. 24x7 TAC support and SW updates
CCPRO-SUP-XV3-8-5	Cambium Care Pro, 5-year support for one cnPilot cnPilot e500, e501S or e502S AP. 24x7 TAC support and SW updates

Not all SKUs are available at first release. Consult your Cambium Networks distributor for country availability.

LIMITED WARRANTY

Cambium Networks cnPilot e500, 501S, 502S, are covered by an extended hardware warranty for a period of 3 years after point of sale.

ABOUT CAMBIUM NETWORKS

Cambium Networks empowers millions of people with wireless connectivity worldwide. Its wireless portfolio is used by commercial and government network operators as well as broadband service providers to connect people, places and things. With a single network architecture spanning fixed wireless and Wi-Fi, Cambium Networks enables operators to achieve maximum performance with minimal spectrum. End-to-end cloud management transforms networks into dynamic environments that evolve to meet changing needs with minimal physical human intervention. Cambium Networks empowers a growing ecosystem of partners who design and deliver gigabit wireless solutions that just work.

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