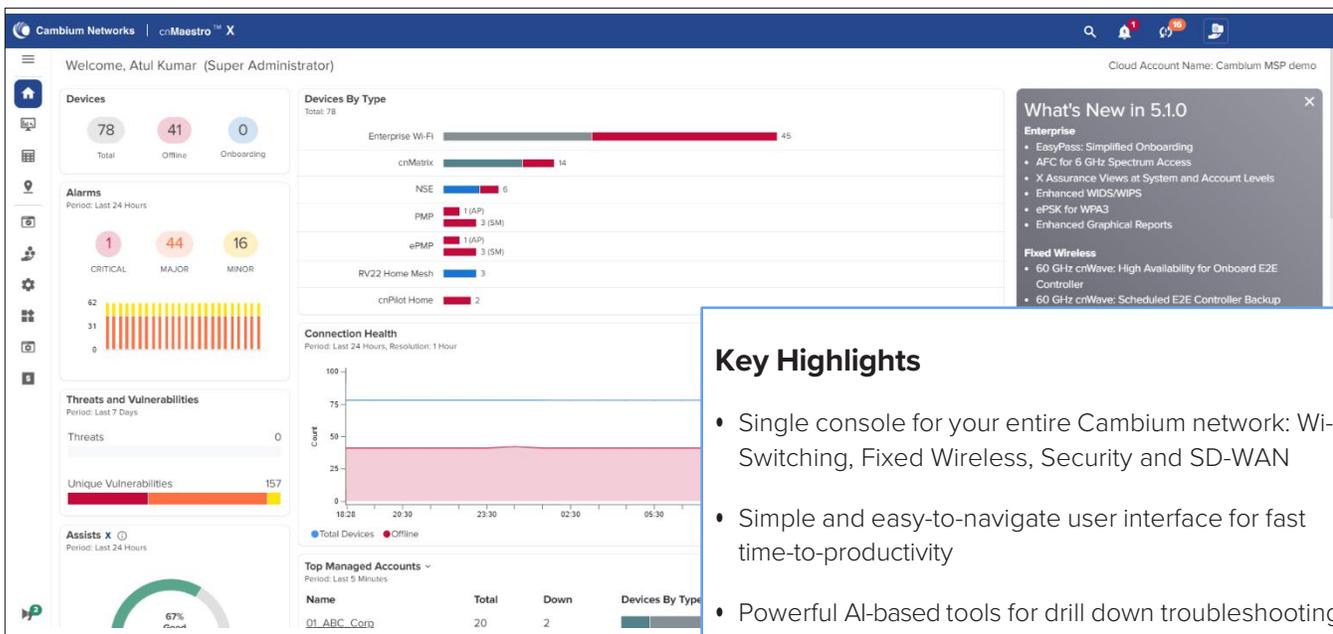
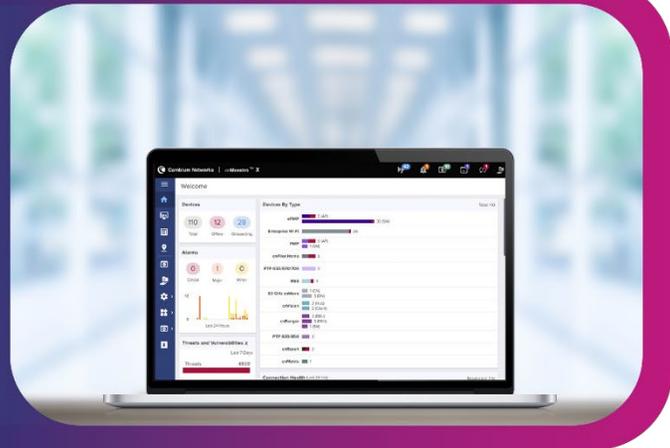


# cnMaestro™ X Management System

## cnMaestro Quick Look

A simple, yet sophisticated AI-based network management system for Cambium Networks wireless and wired solutions.

- Elastic scalability in a single-pane-of-glass experience for Cambium’s ONE Network
- Secure, end-to-end network management with zero-touch provisioning
- Simplified operations and ongoing maintenance for the network administrator



### Key Highlights

- Single console for your entire Cambium network: Wi-Fi, Switching, Fixed Wireless, Security and SD-WAN
- Simple and easy-to-navigate user interface for fast time-to-productivity
- Powerful AI-based tools for drill down troubleshooting and rapid problem resolution
- Flexible integration via APIs and Webhooks for third party extensibility and customization
- Includes Cambium Care Pro software support with 24x7 L2 engineer access and all software updates for cnMaestro and managed devices

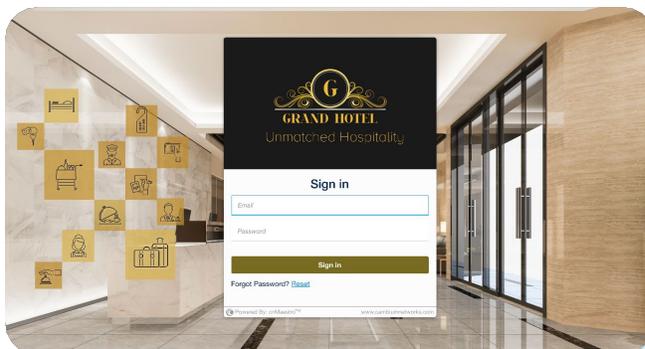
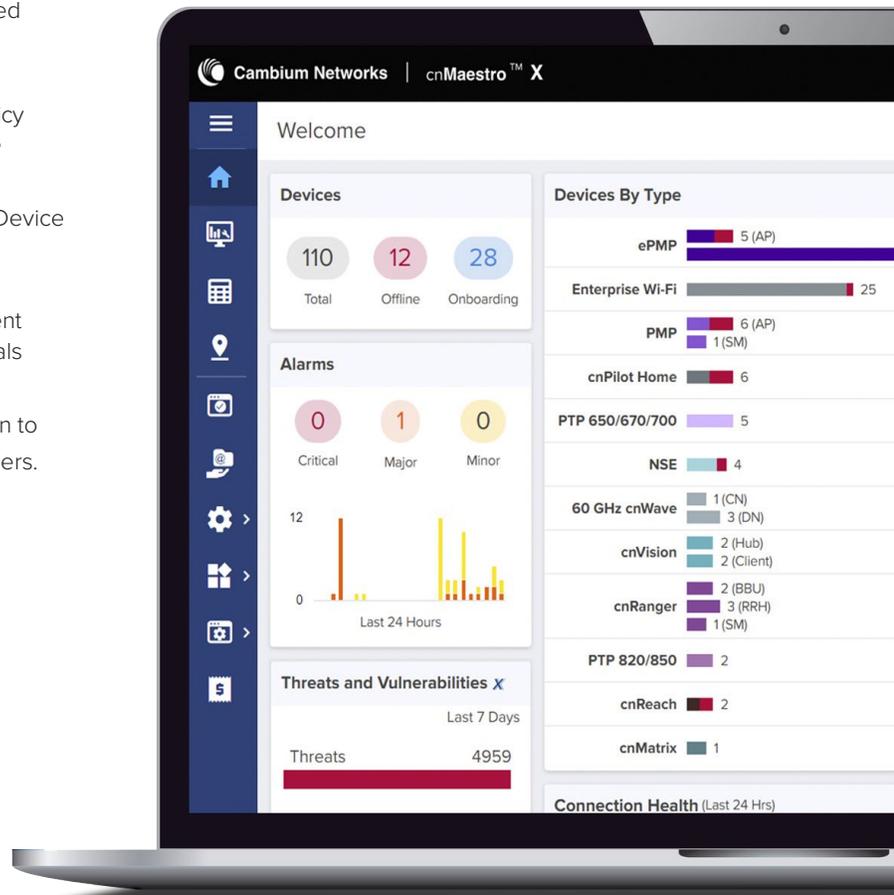
Note: cnMaestro X is an account level construct and all devices in the account require a cnMaestro X subscription.



## cnMaestro™ X Management System

### Advanced Functionality in cnMaestro X

- X Assurance provides AI-powered analytics to identify and fix wireless network issues, helping IT admins improve user experience by proactively finding root cause of problems.
- EasyPass offers diverse Wi-Fi onboarding options for employees, guests, attendees, and IoT, featuring advanced captive portals and one-year client login history.
- Application visibility and control provides analytics and policy control for 2400+ applications at the Wi-Fi and WAN edge
- Advanced cnMatrix switch features including QinQ, Auto Device Recovery (ADR) and cable diagnostics
- Customizable MSP dashboard with ability to create different brands with multi-tier customizations including guest portals
- Consolidated MSP tenant statistics with ability to drill down to manage a specific tenant without impacting data from others. Support for up to 200 managed tenants.
- Restful APIs and Webhooks for integration with existing OSS/BSS systems and event monitoring
- Assists function scans device configurations to identify potential vulnerabilities and recommends improvements to save time troubleshooting.
- Long-term historical data retention: 2-year data for FWB and 1-year data for Enterprise and IIoT devices
- RADIUS, TACACS+, LDAP, and AD Login for user administration



cnMaestro X allows MSPs to create a custom branding experiences for their customers.

## cnMaestro™ X Management System

### Key Functionalities

- **Zero-touch provisioning:** Create, provision, monitor and manage the entire network of wireless and wired devices from a single dashboard login with key performance metrics, alarms, and alerts. The cloud-first UI design is easy to learn and apply across the portfolio and helps network administrators simplify operations and deliver an optimal client experience.
- **With centralized visibility and control for Cambium Networks' wireless and wired products,** network administrators can quickly and easily deploy networks with minimal training. Whether you work on small sites or large distributed networks with thousands of sites, cnMaestro makes deployment and operations easy. Administrators have access to information needed to enforce policies and optimize performance. Remote support capability is integrated into the architecture, along with powerful help desk tools to debug remote issues without going onsite. Troubleshooting tools such as ping, traceroute, throughput, and live packet captures are included, dramatically reducing resolution times and enabling remote troubleshooting.
- **Deployment flexibility and TCO:** Choice of public cloud, private cloud, or on-premises deployment with best TCO. cnMaestro helps reduce operating costs and accelerate return on investment. cnMaestro does not require Wi-Fi controllers, thereby reducing the complexity and cost of deploying Wi-Fi networks.
- **Built for scale and security at all levels:** Devices connect to cnMaestro Cloud using SSL-enabling deployments without changes to the firewall configuration. Cambium Intelligent edge architecture enables fault-tolerant networks where the network continues to operate even when the cloud is unreachable due to a WAN outage. With cnMaestro X, you can manage networks with up to thousands of sites, and up to 25,000 devices.
- **Tailored views for enterprise, access and backhaul, and IloT:** The access and backhaul view provides visualization and control of devices from service provider towers to the network edge.
- **Supports network hierarchy,** enabling easy configuration, monitoring, and debugging at network nodes to reduce operational costs. This is especially critical for large networks or small distributed networks with small on-site IT staff.
- **Provides a bird's-eye view of network health** with insights on performance, connectivity, and client experience. Administrators can quickly identify potential trouble spots and drill down from network to client-level details.
- **Extensible platform for managing third-party endpoints.**
- **cnMaestro X supports the following Cambium solutions:**
  - » **Wi-Fi 6/6E/7 Access Points (APs)**
  - » **cnPilot™ E-series and R-series APs**
  - » **Xirrus XD, XH, XA, and XR 11ac APs**
  - » **cnMatrix™ EX1000/2000/3000, and TX1000/2000 Series Switches**
  - » **Network Service Edge (NSE)**
  - » **cnWave™ 60 GHz and 28 GHz**
  - » **PTP (point-to-point)**
  - » **PMP and ePMP™ (point-to-multipoint)**
  - » **PON**
  - » **cnReach**
  - » **cnRanger™**

cnMaestro On-Premises Server Requirements	Resources	Enterprise	Fixed Wireless	Enterprise and Fixed Wireless
	<b>8vCPUs, 16 GB RAM, 250 GB Hard Disk</b>	10,000 Enterprise devices (Wi-Fi, cnMatrix, NSE)	20,000 Fixed Wireless devices (PMP, ePMP, PTP, cnReach, cnRanger)	10,000 total devices – Fixed Wireless and Enterprise (PMP, ePMP, PTP, PON, Wi-Fi, cnMatrix, NSE)
	<b>16vCPUs, 32 GB RAM, 500 GB Hard Disk</b>	25,000 Enterprise devices (Wi-Fi, cnMatrix, NSE)	40,000 Fixed Wireless devices (PMP, ePMP, PTP, cnReach, cnRanger)	25,000 total devices Fixed Wireless and Enterprise (PMP, ePMP, PTP, PON, Wi-Fi, cnMatrix, NSE)

# cnMaestro™ X Management System

## Product Summary *Features marked X require cnMaestro X subscription*

### Onboarding & Provisioning

- Zero-touch onboarding
- Template configuration
- Object configuration (enterprise)
- Claim PMP SMs associated with AP
- cnMaestro Installer installation summary upload (PMP & ePMP) X
- Mass provisioning for ePMP/PMP/cnWave 60 GHz (using LINKPlanner) X
- Webhooks support X

### Network Services

- Branded tenant login page X
- Support for software-defined radios (SDR) on XV3-8, XE3-4, & XE5-8 Wi-Fi 6 APs
- Unlimited radius-based ePSK X
- Unique PSKs supported: 2,000 per WLAN & 50,000 per account X
- Personal Wi-Fi X
- Number of guest portals: 500 X
- EasyPass
  - o One-click
  - o Sponsored guest X
  - o Voucher
  - o Paid X
    - Payment gateway X
      - » PayPal
      - » IPPay
      - » QuickPay
      - » mPesa
  - o WiFi4EU
  - o Azure guest portal X
  - o Google authentication X
  - o Self-registration: SMS & email X
  - o Combined options
- Max number of login events: Unlimited event records for 7 days X
- Max number of guest client sessions at a time: 10,000 X
- Max number of managed devices: X
  - 25,000 for enterprise
  - 40,000 for FWB
- Application visibility & control of over 2,400 different applications across the Wi-Fi access network X

### Wi-Fi

- Simplified wireless LAN view
- Stateful firewall support
- Dynamic channel listing based on country, release, & SKU
- AP group & WLAN configuration
- Site support for collocated APs
- WIDS support X

### X Assurance X

- Client connection lifecycle monitoring & analysis
- Root cause analysis of connection & service failures
- Network-wide client health monitoring & scoring

**NOTE:** X Assurance is available in cnMaestro X Cloud, but not in cnMaestro X On-Premises.

### Troubleshooting & Forensics

- Tower-to-edge view
- Technical support dump export
- Rogue AP detection
- Wi-Fi packet capture
- ePMP/PMP link test
- Cambium Care Pro – 24/7 technical support, accelerated access to L2 engineers, & software updates/upgrades X

### Security

- Communication over SSL
- No Inbound internet access
- Not-in-traffic path
- Disaster recovery

### Deployment

- Cloud-hosted, delivered as a service
- Customer-hosted VMware OVA
- Amazon Marketplace AMI

### Visualization

- Full Visibility across network
- Supports ePMP, cnMatrix, enterprise & residential Wi-Fi, PMP, PTP, cnReach, cnRanger
- Multiple product views
  - o Access & backhaul view
  - o Enterprise wireless view
  - o Industrial internet view
- Hierarchical device tree
- PMP/ePMP sector display
- Spectrum analyser: PMP X

### Configuration & Monitoring

- Redundant cloud services
- Scheduled system backup
- Automatic bulk software update
- Dedicated device dashboards
- Statistics & trending
- Email alerts
- Supporting concurrent device jobs X
- Configuration lock X
- Managed service provider accounts X
- Support for up to 200 accounts
- High availability (1+1) for On-Premises X
- Monitor Wi-Fi performance from client or AP to cnMaestro (On-Premises NMS; Cloud NMS – N/A) X
- Assists for cnMatrix, Wi-Fi, cnPilot-R, PMP, ePMP, cnWave 5G Fixed, & PTP 670/700 X

### Data & Reporting

- Statistics reports exported in CSV
- Export UI tables in CSV or PDF X
- RESTful monitoring/provisioning API X
- Graphical reports X
- Long-term data retention X
  - o 2 years for FWB
  - o 1 year for enterprise & IIoT

### Administration

- Management users: 200 X
- Role-based access
- Auto-provisioning X
- RADIUS, TACACS+, LDAP, & AD login X
- Advanced troubleshooting X
  - o Audit logs
  - o Audit syslog & event syslog (On-Premises NMS; Cloud NMS – N/A)
- Advanced monitoring X
  - o Session management
  - o User authentication (On-Premises NMS; Cloud NMS – N/A)
- cnWave 60 GHz MAP features
  - o Extensive network map RF link visualization X
  - o Auto-manage route
- Open ID/SAML authentication X

### MarketApps X

- Managed Wi-Fi
- Self-Service Personal Wi-Fi

### cnMatrix

- Zero-touch remote provisioning
- Policy-based automation (PBA) on EX2000/EX3000
- Cambium Sync on TX series
- DHCP client/server
- Automated voice VLAN
- Assists X
- QinQ X
- Auto-device recovery
- Cable diagnostics X
- PBA on EX1000 X
- MAC lists & location services for PBA X

### Network Service Edge (NSE)

- Site-to-site VPN
- WAN flow preferences
- DHCP/RADIUS/DNS services
- Load balancing
- WAN QoS
- Firewall
- LAN vulnerability assessment
- Granular content filtering
- WAN failover policy & IP groups
- High Availability

## cnMaestro™ X Management System

### cnMaestro X Part Numbers

Tier	Product		cnMaestro X Subscription SKU
Free Tier	cnPilot Enterprise (ePMP Hotspot)	1000 Hotspot	No subscription needed
	cnPilot Home	All R-Series APs	
	cnRanger	All SM Models	
	cnVision	MAXr, MAXrp, MICRO, MINI	
	cnWave 60 GHz	All Client Nodes	
	ePMP	All SM Models	
	PMP	All SM Models	
Tier 3	Enterprise Wi-Fi	All E-Series, XE/XV/X7-Series and Xirrus (AOS) APs	MSX-SUB-[Model]-1/3/5*
Tier 5	60 GHz cnWave	All Distribution Nodes	MSX-SUB-T5-1/3/5
Tier 7	cnWave 5G Fixed	All BTS Models	MSX-SUB-T7-1/3/5
Tier 20	cnMatrix	All cnMatrix Switches	MSX-SUB-[Model]-1/3/5*
Tier 21	cnVision	FLEXr, HUB360	MSX-SUB-EPMP-1/3/5
	ePMP	All AP Models	
Tier 22	PMP	All AP Models except 450m and 450mv	MSX-SUB-PMP450i-1/3/5
Tier 23	PMP	450m	MSX-SUB-PMP450m-1/3/5
Tier 24	cnRanger	All BBU Models	MSX-SUB-PTP-1/3/5
	cnReach	All cnReach Models	
	PTP	All PTP Models	
Tier 30	NSE	NSE 3000	NSE-SUB-3000-1/3/5**
Tier 60	RV22 Home Mesh	RV22	RV-SUB-22-1/3/5**

\*cnMatrix Switches and Wi-Fi APs:

These products use model-based SKUs for subscription.

For Wi-Fi access points, the corresponding cnMaestro X SKU follows a specific format:

The base part of the SKU will be ""MSX-SUB-"" followed by the model name of the access point (e.g., XV2-21X).

The ending part will be ""-1/3/5"", indicating the subscription term duration (1, 3, or 5 years).

Similarly, for cnMatrix switches, the cnMaestro X SKU follows the same format based on the switch model name (e.g., EX3024F)

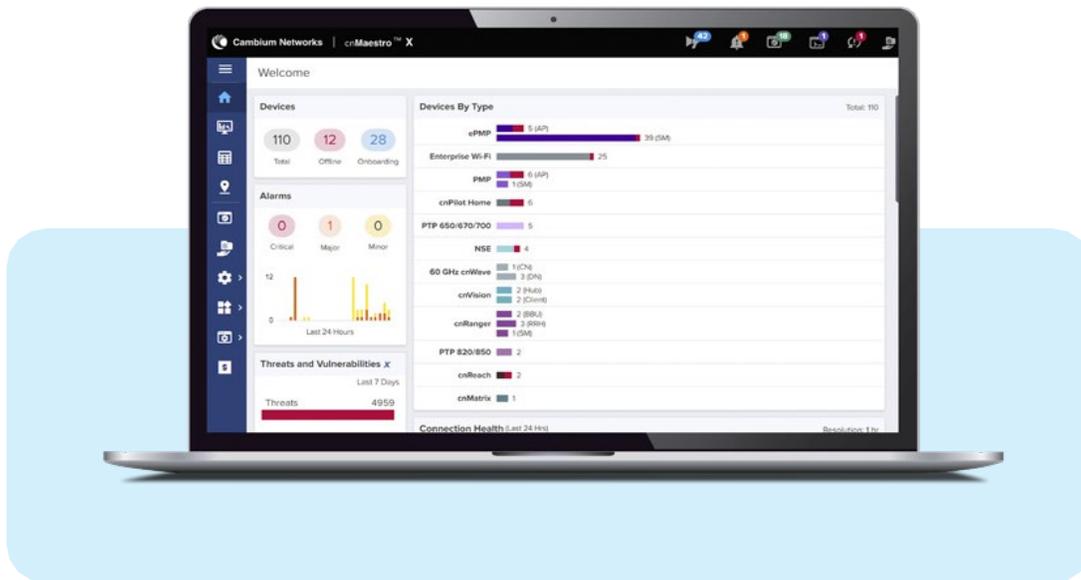
For example:

The SKU for 3-year cnMaestro X subscription for XV2-21X AP and a 5-year cnMaestro X subscription for an EX3024F switch would be:

SKU	Description
MSX-SUB-XV2-21X-3	cnMaestro X for one XV2-21X AP. Creates one Device Tier3 slot. Includes Cambium Care Pro support. 3-year subscription
MSX-SUB-EX3024F-5	cnMaestro X for one EX3024F. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 5-year subscription

\*\* Unlike other products, NSE3000 & RV22 devices need a subscription to be used on either cnMaestro X or cnMaestro Essentials.

## cnMaestro™ X Management System



**GET STARTED at**

[cloud.cambiumnetworks.com](https://cloud.cambiumnetworks.com)

**Free 90-day trial of cnMaestro X:**

[cambiumnetworks.com/cnmaestro-x](https://cambiumnetworks.com/cnmaestro-x)

### ABOUT CAMBIUM NETWORKS

Cambium Networks enables service providers, enterprises, industrial organizations, and governments to deliver exceptional digital experiences and device connectivity with compelling economics. Our ONE Network platform simplifies management of Cambium Networks’ wired and wireless broadband and network edge technologies. Our customers can focus more resources on managing their business rather than the network. We make connectivity that just works.

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