



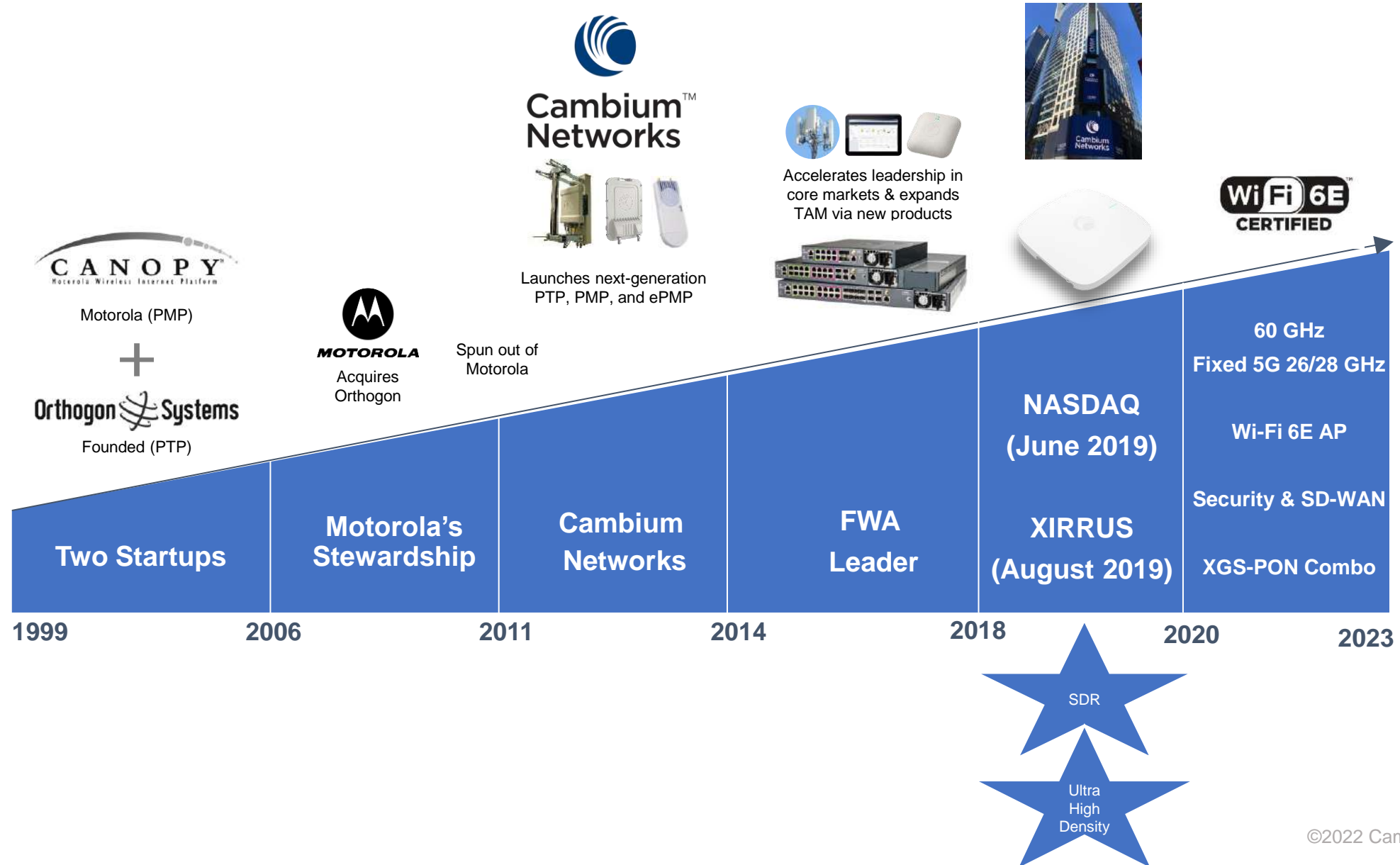
Cambium Networks™

Cambium Networks

Luca Lo Bue – KAM Italy

luca.lobue@cambiumnetworks.com

Cambium Networks History



Cambium Networks At-a-Glance



10,800
Channel Partners

19,000+
Network
operators

>718,300
Cloud managed
devices

\$75.9mm
Q3'21
revenue

31%
YTD revenue
growth

13%
Q3'21 Adj.
EBITDA margin

**NASDAQ:
CMBM**

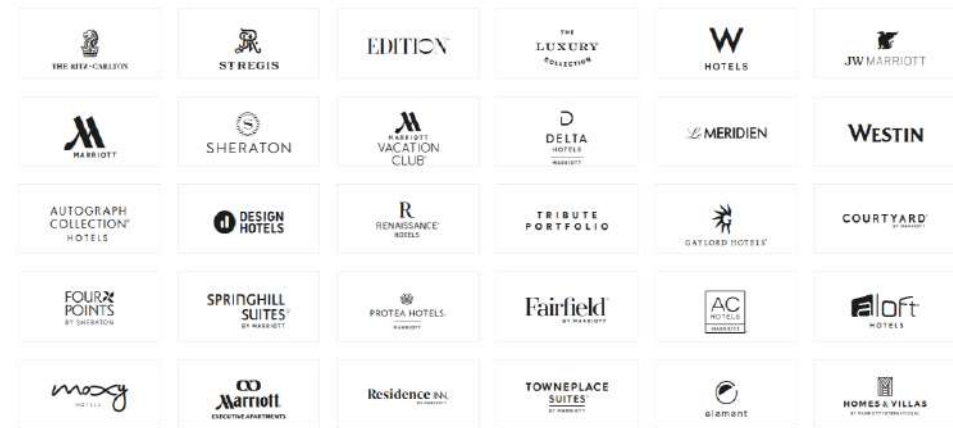
700+
Employees

Note: Financial and operating figures shown as of Q3'21

Cambium is listed as a supplier

• Why?

- Direct commitment from Cambium
- Best price guaranteed with a volume contract
- Cambium fulfils all technical requirements at a lower cost than the competition
- cnMaestro Essentials (free) is a good option for the price sensitive markets (Africa)
- Centralised management of all network components
- Advanced troubleshooting and automated configuration features that save LSPs time
- Overview of vulnerabilities, especially security for IOT devices
- Availability of thousands of Wi-Fi 6 wallplate APs

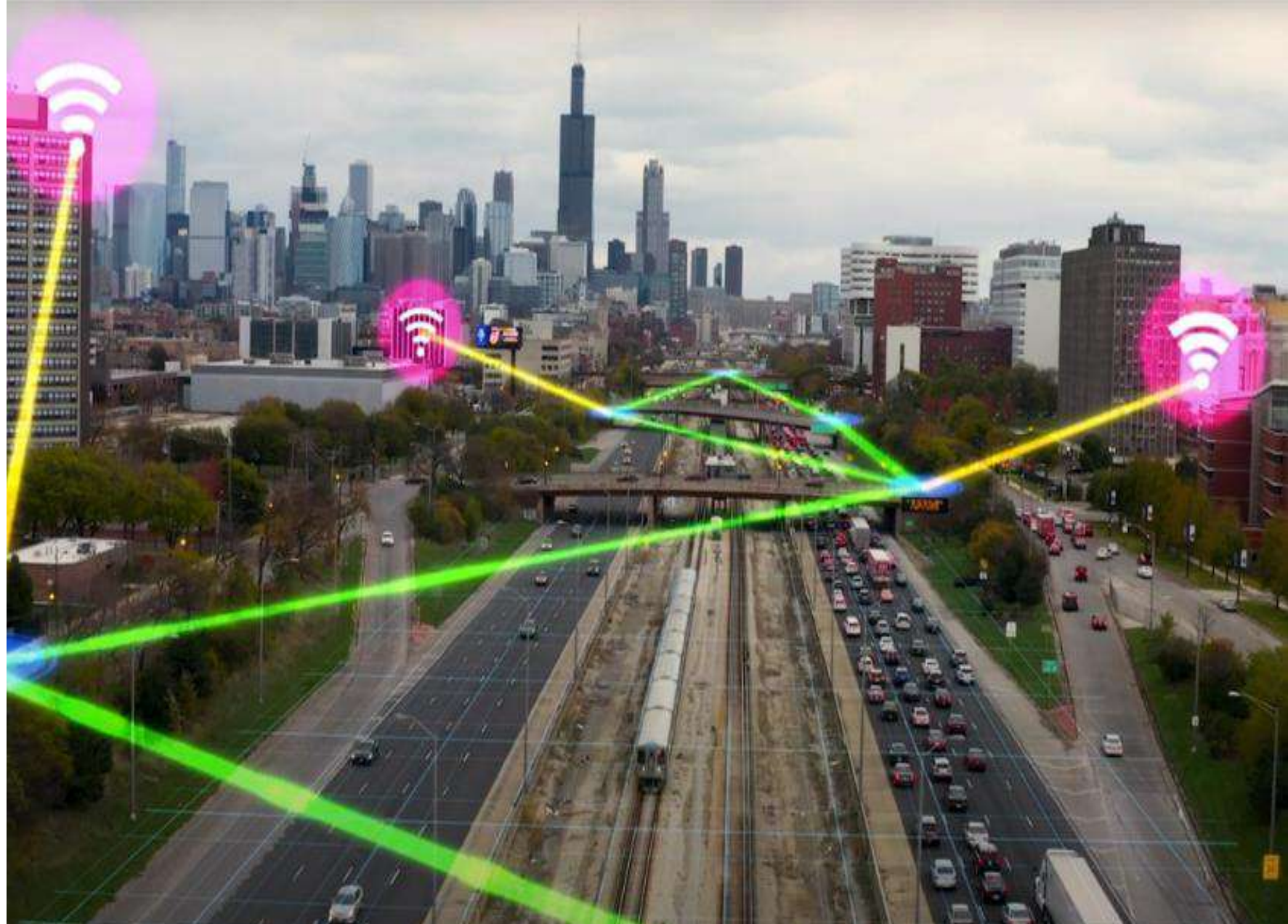




Cambium Networks™

Vertical Markets

- **ISP**
 - FWA
 - Fiber
- **Smart Cities**
 - CCTV Backhaul
 - Access Control
- **Energy**
 - Wind & Solar Farm
 - Oil & Gas
- **Environmental Monitoring**
 - Weather
 - Water
- **Enterprise Lan (Ap/Switch/SdWan)**
 - **Verticals**
 - Hospitality
 - Healthcare
 - Education
 - MDU
 - Retail
 - **Public**
 - City/Squares
 - Airports/Rail Stations
 - Events/Stadiums
 - Parks/Beaches
 - Shopping Centers/Trade Shows
 - Museums/Libraries

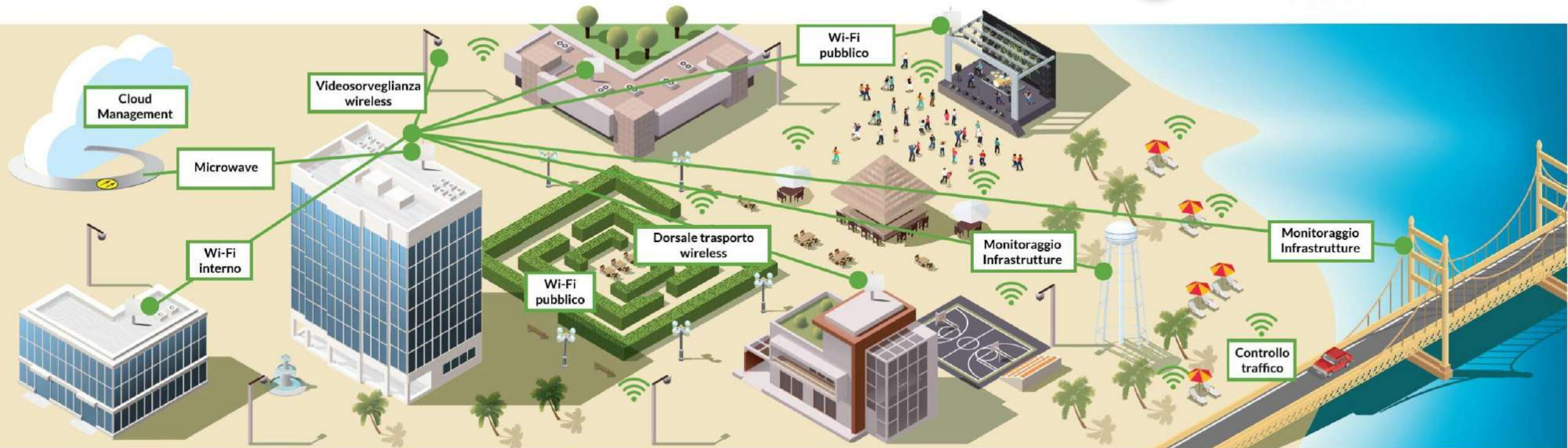


Public Guest WiFi & CCTV/IOT/Monitoring

- City/Squares
- Parks/Beaches
- Airports/Rail Stations
- Events/Stadiums
- Shopping Centers/Trade Shows
- Education/Museums



Outdoor/Indoor Wi-Fi SDR





- **Wi-Fi corridoi e camere**
- **Wi-Fi alta densità aree comuni:**
 - sale ristoranti/colazioni
 - sale meeting/conferenze
- **Wi-Fi outdoor:**
 - piscine, parchi, camping, spiagge
- **Wi-Fi per backhaul:**
 - parchi, dependance, villette, spiagge (CCTV/AP)

- **Shop di piccole dimensioni**
 - Pochi punti rete
 - Punto Cassa, Telefono e WiFi

- **Store di medio grandi dimensioni**
 - Aree Outdoor o Magazzini Attinenti
 - Ospiti, Parcheggi e CCTV

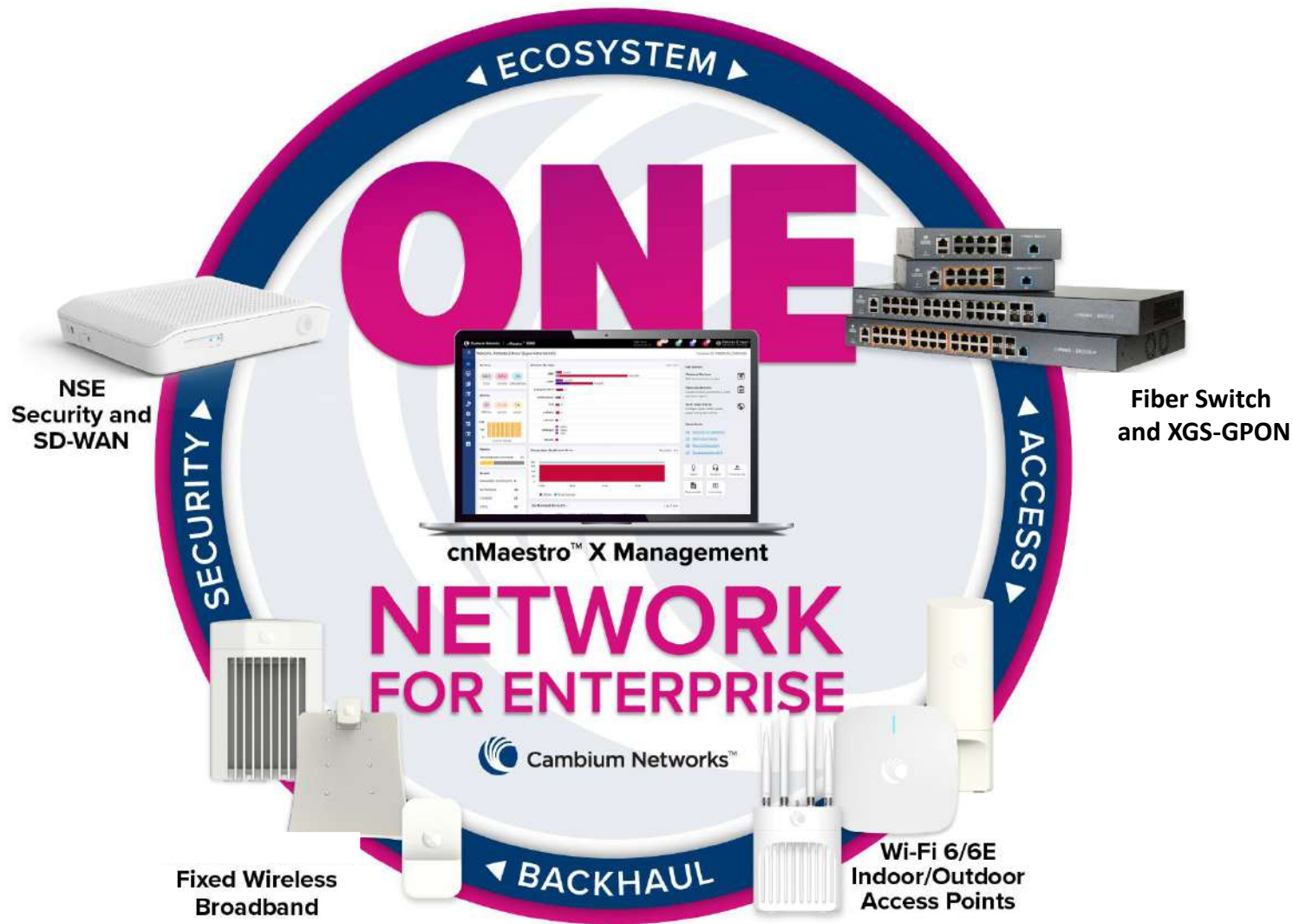




Cambium One Network



Cambium Networks™



ONE Network

- Wi-Fi, switching, security
- Single pane management



Superior Performance

- High density, long range
- Application optimized



Simple to Operate

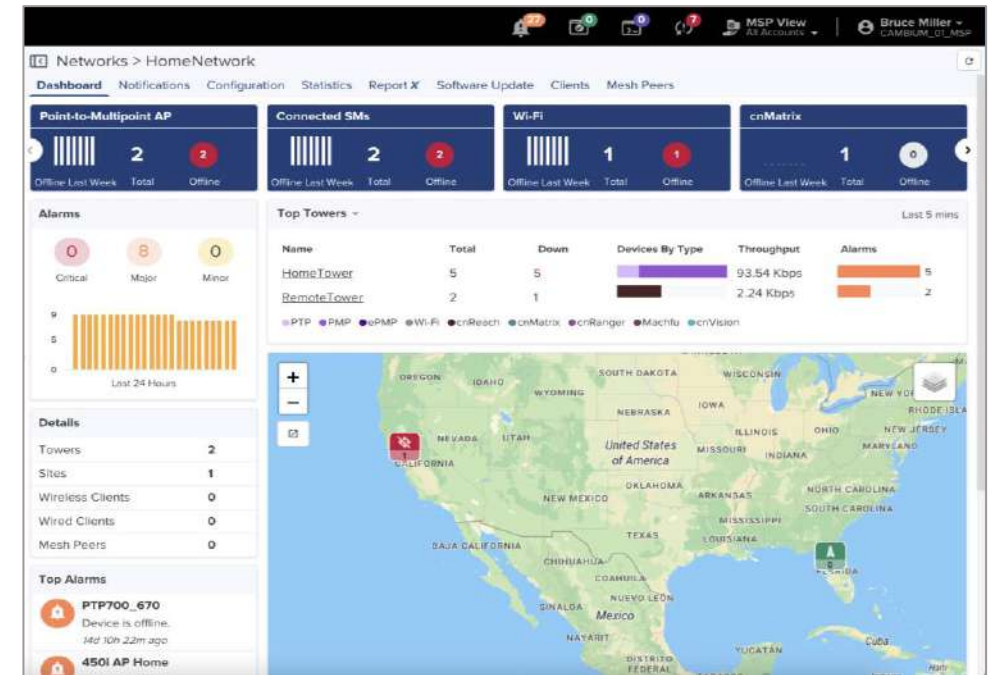
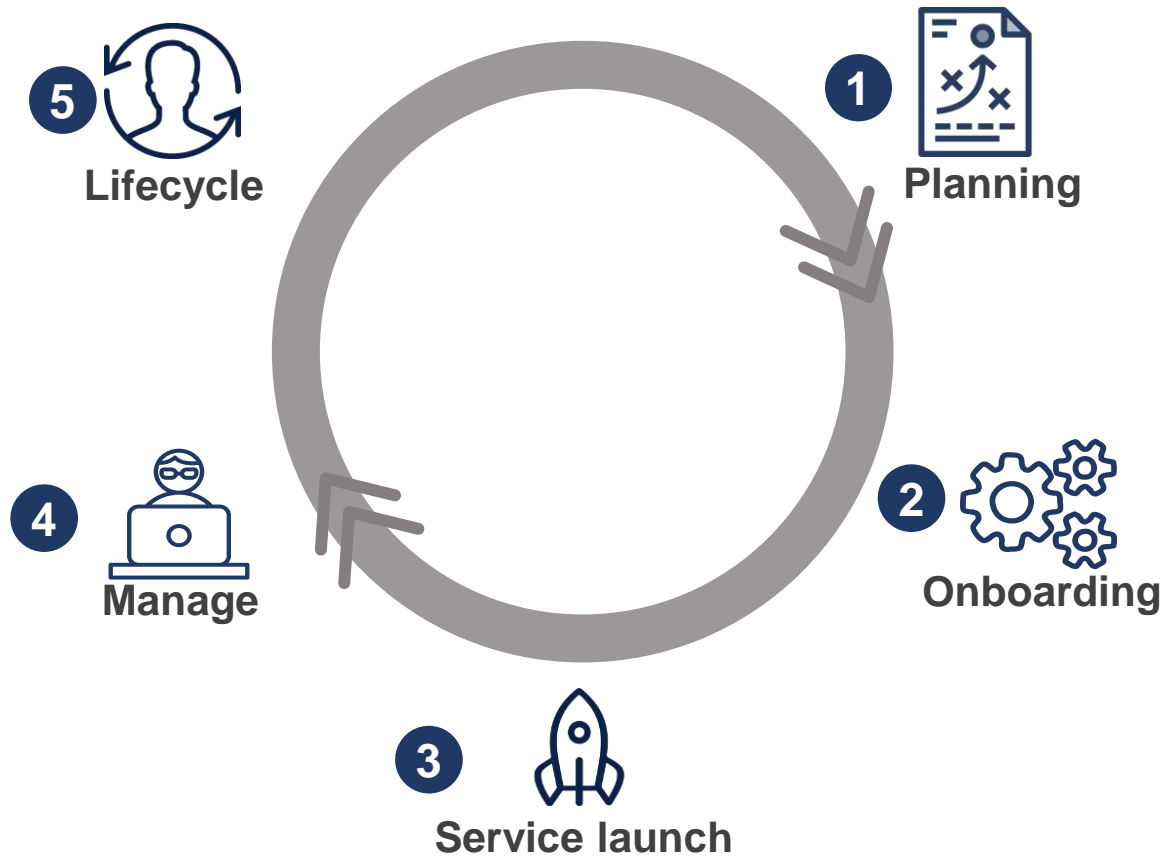
- Cloud managed
- Automation



Economical

- Less equipment
- Lower TCO

cnMaestro: One Network, One Management



cnMaestro: 2 ways to deploy



Clients



Hardware

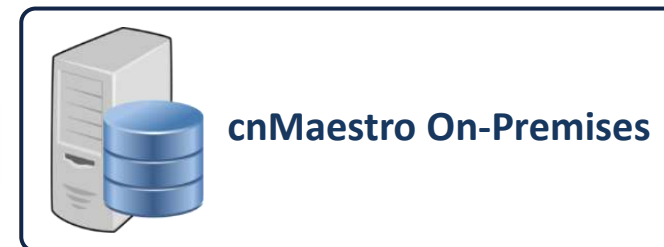
1 Cloud

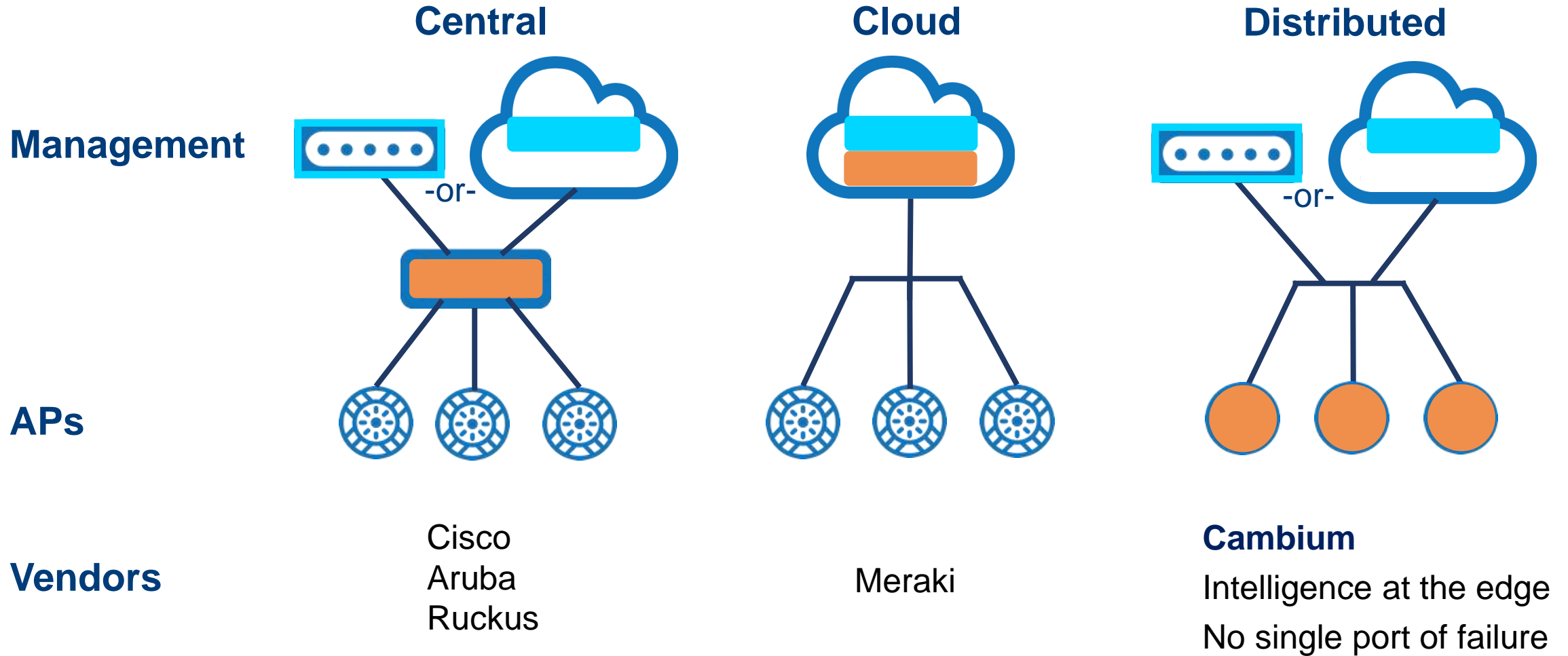
Freedom



2 Local Controller

Full Control





= Management = Control

cnMaestroX
(Includes Care PRO)

Advanced Management and Services

- **MSP Ready:** Multi-tenant, MSP & Client Dashboard, Role Private label client dashboard
- **Long-term Analytics:** Up to 2 years of data storage & Analytics
- **Advanced Auth Options:** Google, Azure
- **Higher Scale for key features** like captive portal and Mac Based ePSK
- **Telemetry & Automation API's**
- **Webhooks** for integration with Slack, Teams, Zappier, PagerDuty etc
- **Scalable AI driven self-healing Mesh** for 60GHz Fixed Wireless Solutions

Subscription

cnMaestro
Essentials
(No device limits)

Single Pane of Glass for Cambium Fixed Wireless, Wi-Fi & Switching, & IIoT

- **Massively Scalable Cloud Platform:** Millions of clients across 157 countries.
- **Flexible Deployment Options:** Public, Private Cloud, On-premises deployment Options
- **Simplified Operations:** Zero Touch Provisioning, Template Conf, Contextual dashboard, analytics, proactive alarms & reports, Remote Troubleshooting tools

License
Free

Swift Mobile App

Mobile Experience for managing small wired-wireless networks



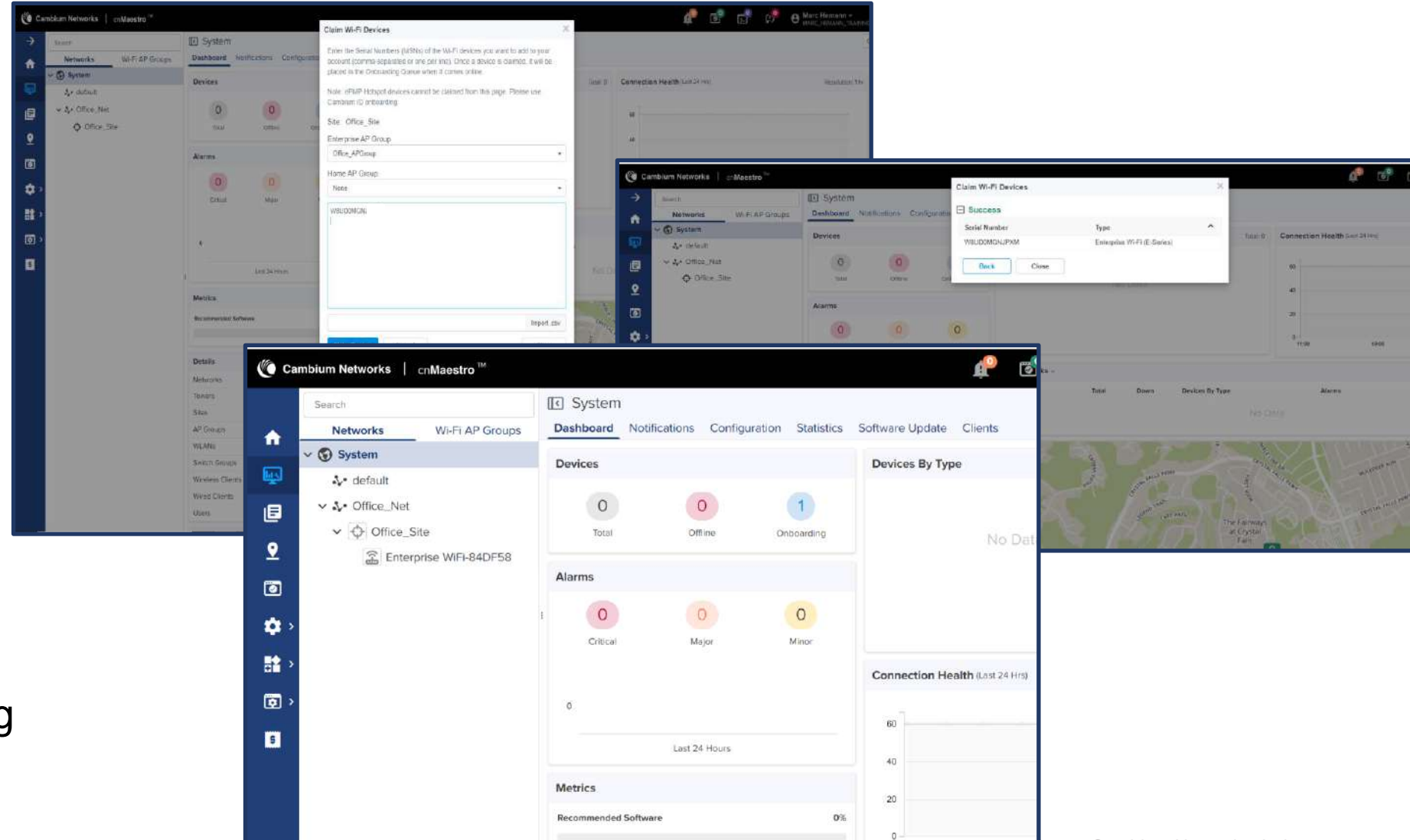
cnMaestro Essential: Free features...some added values!



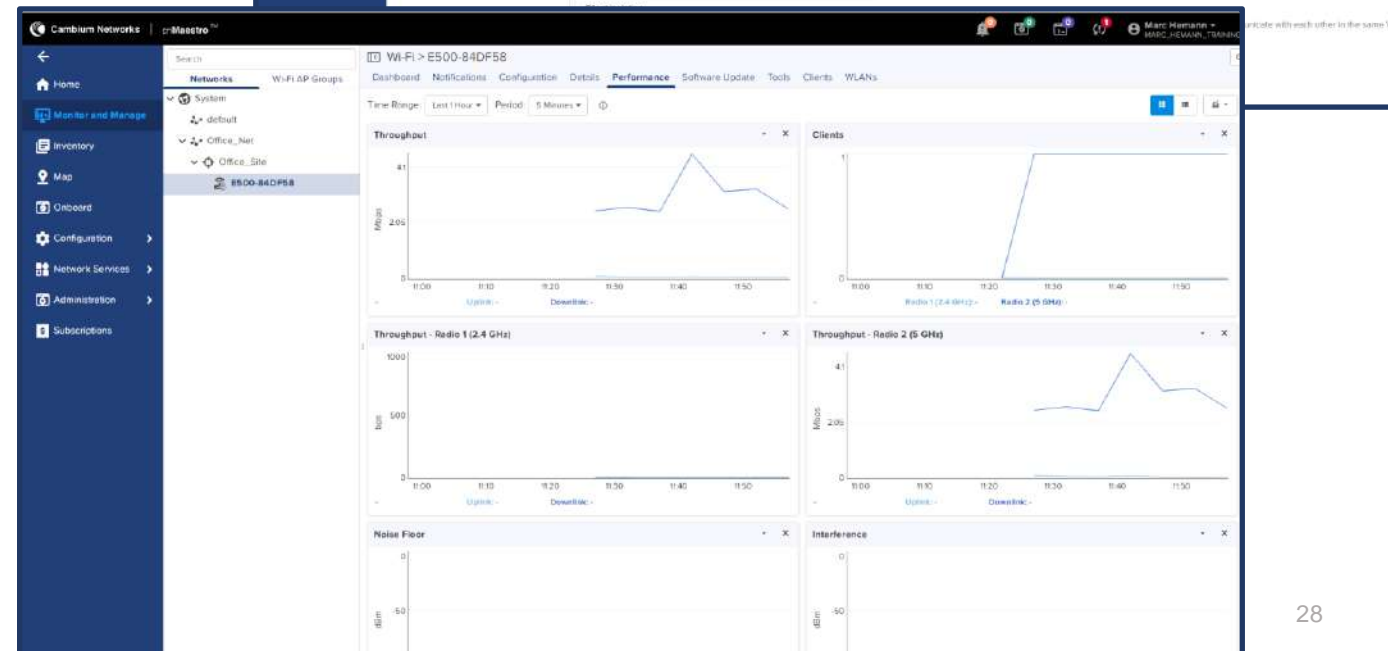
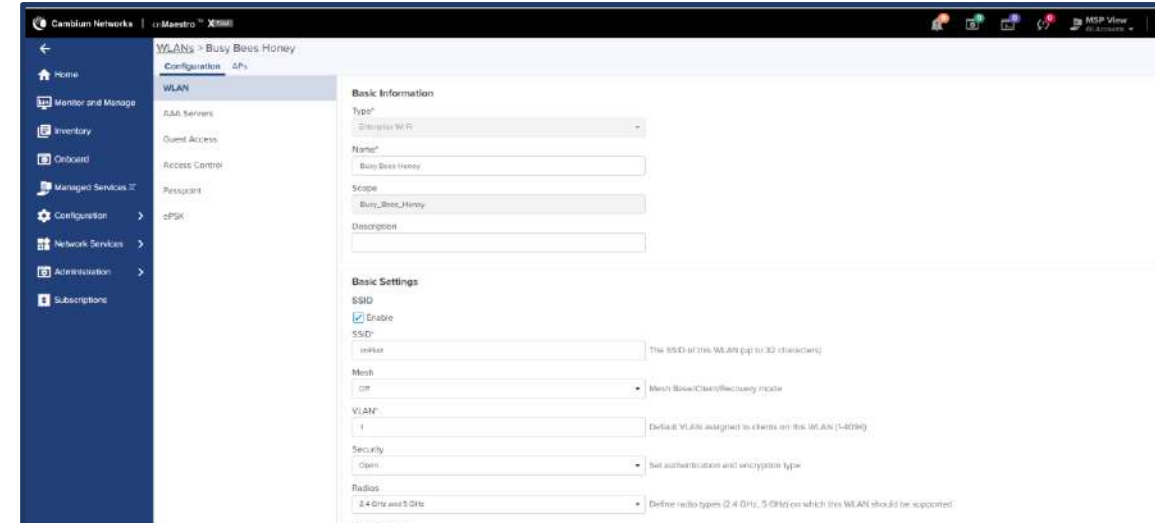
cnMaestro™
Essentials

Management: Simplified Operations

- Zero Touch Onboarding
- Templates
- Easy Config
 - SSID
 - VLAN
 - VPN
- Real Time Monitoring
 - Device/Client Performance
 - Device/Client Statistics
- Notifications
 - Events
 - Alarms
 - Reports
- Remote Troubleshooting
- Configuration Backup
- Software Update

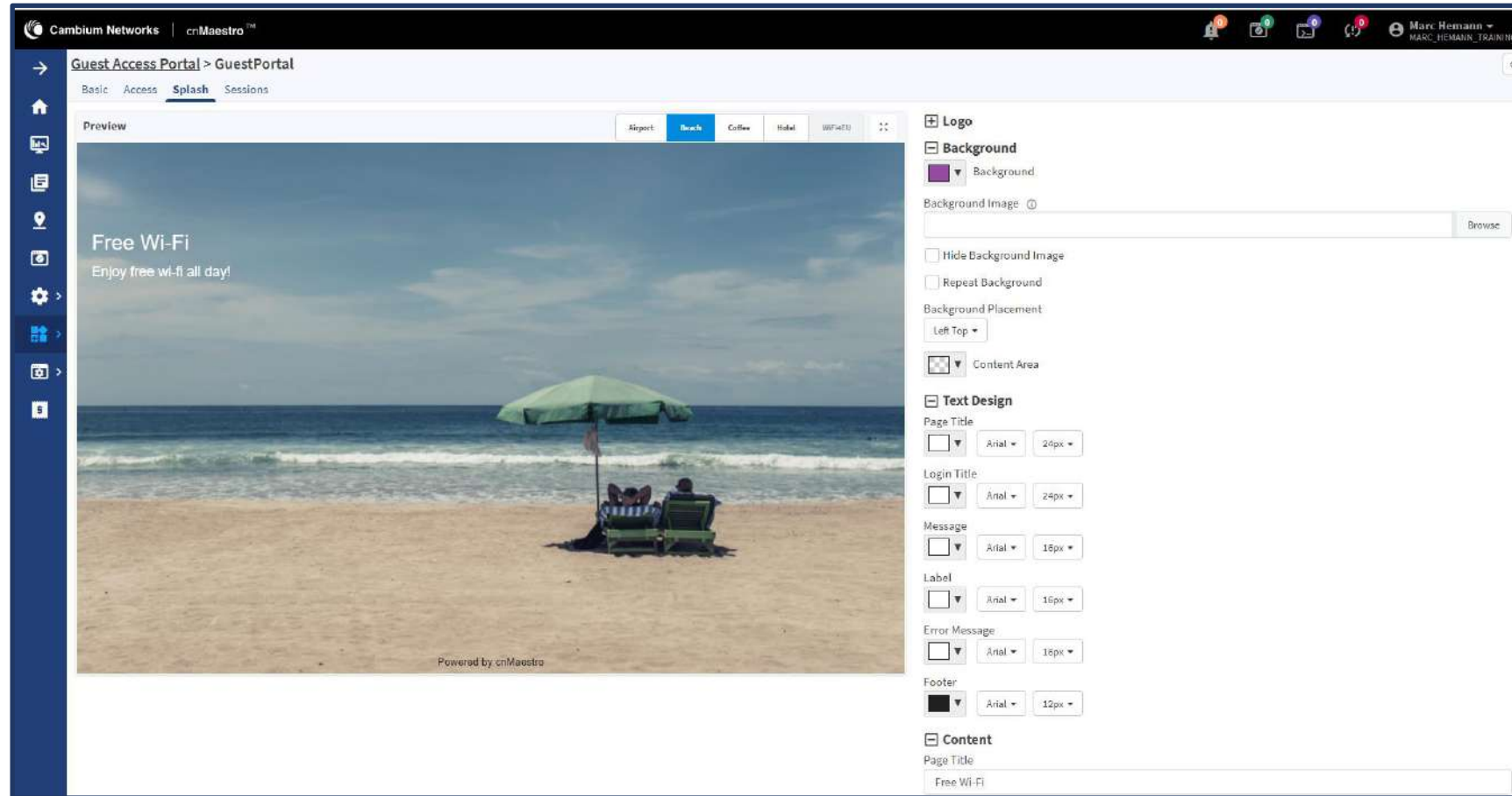


- Software Defined Radios
 - Migration Tool
- Radio Optimization
 - Multi-Modal Channel Selection
 - AutoChannel and Autotune
 - Multi-Modal RF Optimization
 - AutoRF on the intelligent edge AP
 - Out of band RF spectrum analysis
 - RF monitor with chn/noise/interference
- Enterprise Security
- Band Steering
- Rate Limits Client/WLAN
- Maximum Clients
- Fast Roaming
 - Assisted Roaming
- Device Specific Performance Metrics



Guest Access Portals

- Free Custom Portals
- Vouchers
- Social Login
- SMS
- Guest Logs (7D Free/1Y X)



The screenshot displays the Cambium Networks cnMaestro interface for configuring a Guest Access Portal. The main preview area shows a splash page with a beach background, a green umbrella, and the text "Free Wi-Fi" and "Enjoy free wi-fi all day!". The configuration panel on the right includes sections for Logo, Background, Text Design, and Content, with various settings for fonts, sizes, and colors.

Logo

Background

Background Image: @ [Browse]

Hide Background Image

Repeat Background

Background Placement: Left Top

Content Area

Text Design

Page Title: [Font] Arial 24px

Login Title: [Font] Arial 24px

Message: [Font] Arial 16px

Label: [Font] Arial 16px

Error Message: [Font] Arial 16px

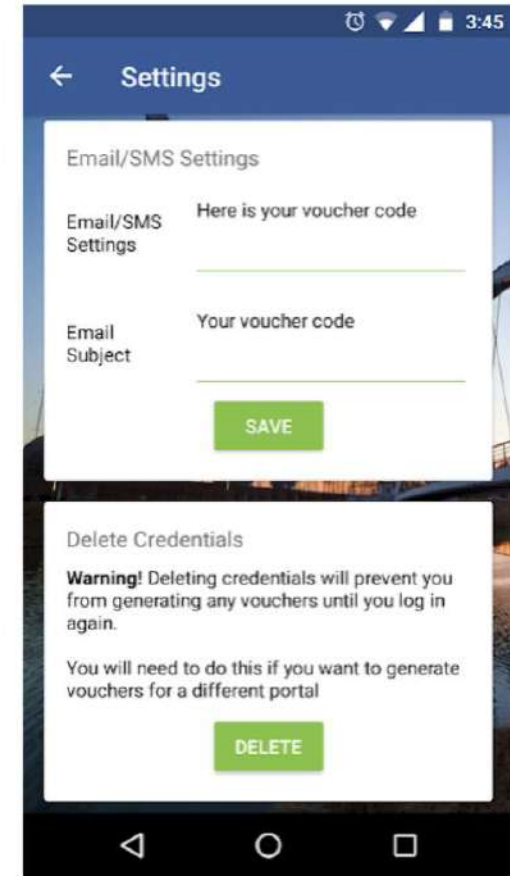
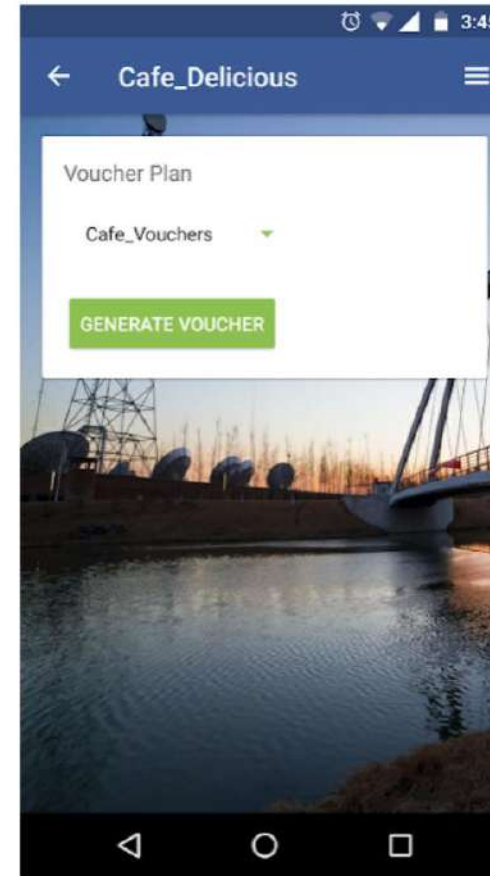
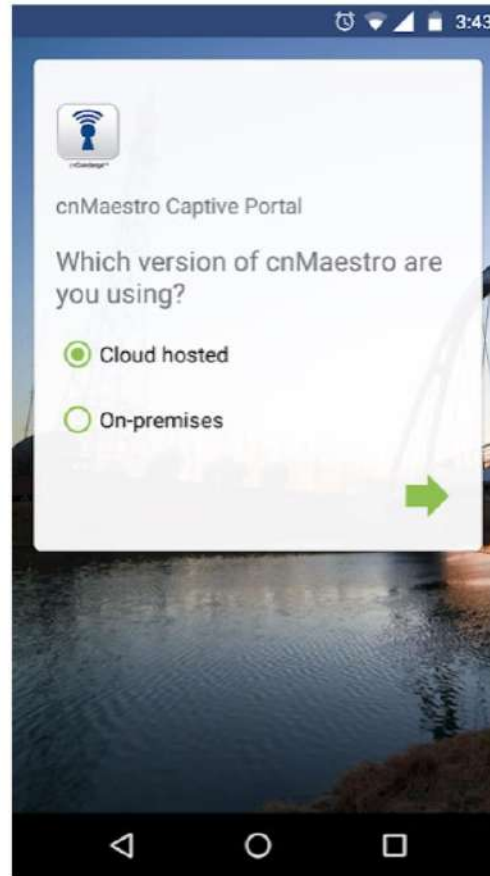
Footer: [Font] Arial 12px

Content

Page Title: Free Wi-Fi

cnConcierge: mobile app for vouchers

- display the code on device screen
- print the voucher
- send to the user to their email address
- send to the user to their phone number



Policy Based Automation

- Simplifies wired-wireless deployments
- Improves security for IoT deployments
- Minimizes human errors
- Improves network resiliency
- Reduce cost of operating the network

POLICY BASED AUTOMATION

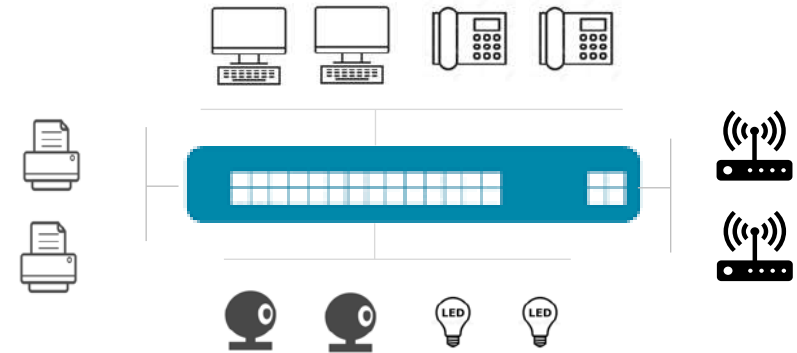
Zero Touch Provisioning

Device Profiling

Policy Enforcement

- Automatically Profile Devices
- Automatically Apply Policy Based on Device Type
- Automatically Segment devices and block unauthorized access

Increasing number of user devices and “things” connect to a converged IP network



A port is a port is port – no more need to label your ports for type of device



Security: Lan Vulnerability

Dashboard Notifications Configuration **Security** Network Performance Software Update Clients

Threats **Vulnerabilities**



Vulnerable Clients

Apply Filter(s)

Hostname	IP Address	Mac Address	Device Type	Device OS	Last Scan	Vulne
sitindia	192.168.210.110	50:9A:4C:1F:DC:FD	COMPUTER	Linux	Aug 16 2022, 13:18	57
sitindia-OptiPlex-9020	192.168.10.124	34:17:EB:A3:07:F2	COMPUTER	Windows	Aug 16 2022, 14:32	47
MacBook-Air	192.168.10.36	38:C9:86:4F:4B:E7	LAPTOP	macOS	Aug 16 2022, 07:20	31
Unknown	192.168.210.142	A0:36:9F:28:BB:F0	COMPUTER	Windows	Aug 02 2022, 23:57	18
E700-9E9F08	192.168.210.21	58:C1:7A:9E:9F:08	Enterprise WiFi Access Point	Cambium OS	Jul 28 2022, 21:49	5
sitindias-MBP	192.168.110.108	AC:BC:32:C2:7D:B7	LAPTOP	macOS	Aug 12 2022, 13:13	11
Corporate-Switch	192.168.10.29	A0:40:A0:6E:BC:07	Router, Access Point or Femtocell	BusyBox/OpenWrt	Aug 16 2022, 17:05	9
XV3-8-4DDCCC	192.168.210.14	BC:E6:7C:4D:DC:CC	Enterprise WiFi Access Point	Cambium OS	Aug 16 2022, 11:54	2
XE3-4-001188	192.168.210.12	B4:A2:5C:00:11:88	Enterprise WiFi Access Point	Cambium OS	Aug 16 2022, 17:51	2
E410-0DC8A4	192.168.210.9	58:C1:7A:0D:C8:A4	Enterprise WiFi Access Point	Cambium OS	Aug 16 2022, 07:46	2

Showing 1 - 10 Total: 25 10 < Previous 1 2 3 Next >

All Vulnerabilities

Apply Filter(s)

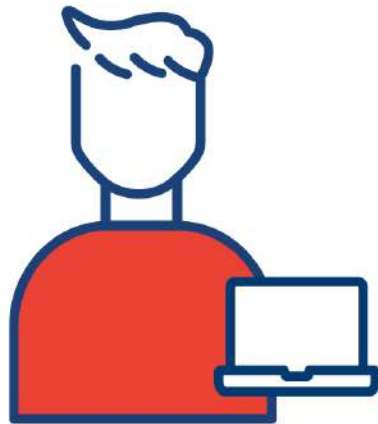
Severity	Identifier	Service	Product	Product Version	Clients Impacted
Critical	CVE-2017-7679	http	Apache httpd	2.4.18	1
Critical	CVE-2015-5600	ssh	OpenSSH	6.9	1

Why cnMaestroX? Premium features...some added values!



cnMaestro™ X Management System

EMPLOYEES

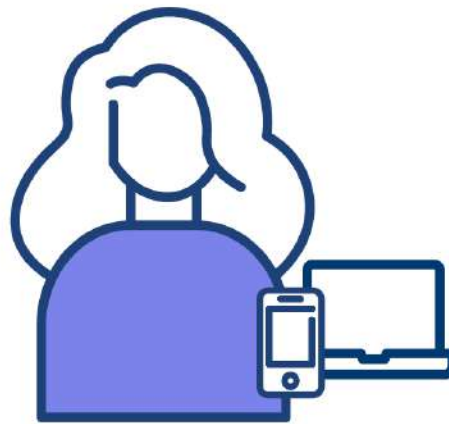


KNOWN USER
+
KNOWN DEVICE



**EASYPASS
MICROSOFT/
GOOGLE**

BYOD



KNOWN USER
+
UNKNOWN DEVICE



**EASYPASS
ONBOARDING**

GUESTS



UNKNOWN USER
+
UNKNOWN DEVICE



**EASYPASS
GUEST**

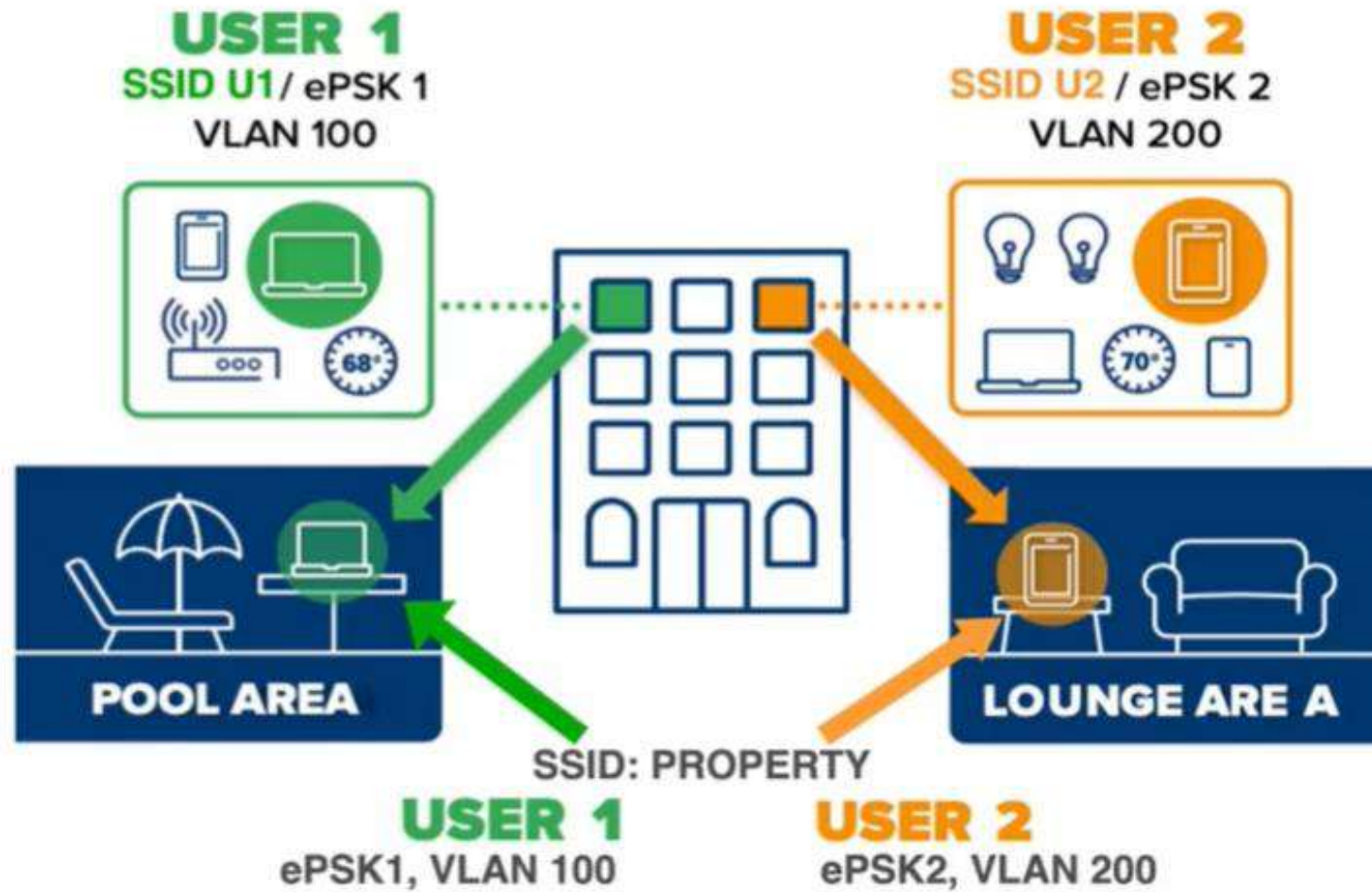
IOT DEVICES



NO USER
+
KNOWN DEVICE




**EASYPASS
ONBOARDING**




Guest/Public Access


One Click
Guests gain access after agreeing to terms of use.


Self Registration X
Guests sign up to gain access using an online form.



Sponsored Guest X
A guest ambassador must register the guest.


Voucher
User gain access using a pre-assigned access code.



Paid X
Create a paid internet access plan.

Employee/Student Access



Microsoft Azure X
Users gain secure access using Microsoft Azure authentication.


Google Login X
Users gain secure access using Google authentication.

Combined


One Click + Voucher
Multiple access method One Click and Voucher


One Click + Paid X
Multiple access method One Click and Paid Plan


Voucher + Paid X
Multiple access method Voucher and Paid Plan

Cancel

Save and Continue

Sky Apartments
WI-Fi Manager

atul.jain@cambiumnetworks.com | Logout

Show All Units (4) | Enter unit no, resident name

Assign Unit | Send Portal Link | Suspend | Extend | Terminate

Tenant BA 101 (MDU 01)
Email: tenant@gmail.com
Start Date: 22 Aug 2024,02:59PM
End Date: 31 Jan 2026,11:59PM

Tenant BA 102 (MDU 02)
Email: tenant2@gmail.com
Start Date: 22 Aug 2024,03:11PM
End Date: 21 Aug 2025,11:59PM

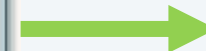
Unit List:
Unit_2000: Unassigned
Unit_2001: Assigned Unit 4 Aug 2025
Unit_2002: Unassigned
Unit_2003: Unassigned
Unit_2006: Unassigned
Unit_2009: Unassigned
Unit_2012: Unassigned
Unit_2013: Unassigned
Unit_2014: Unassigned

Welcome to the Property Manager view. Here's what property managers can do:

- Assign a unit to a client
- Send Wi-Fi info to assigned client
- Suspend a client's connectivity
- Extend a client's connectivity
- Terminate a client/unit

Note that Property Manager dashboard is part of Market Apps which is a Cambium Networks cnMaestro X functionality.

Let's start



WiFi settings updated successfully!

Welcome to -SS | Logout

Personal Wi-Fi Network Name
Personal -changed

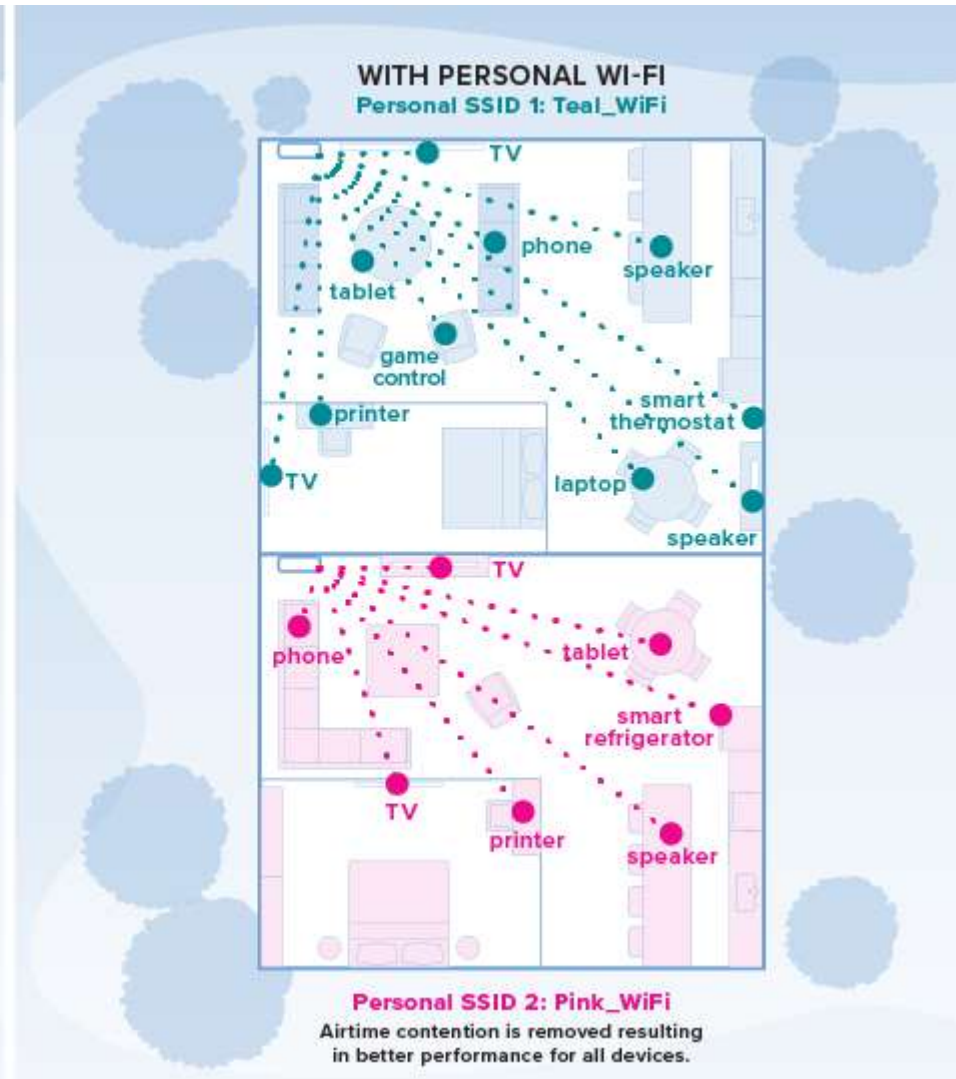
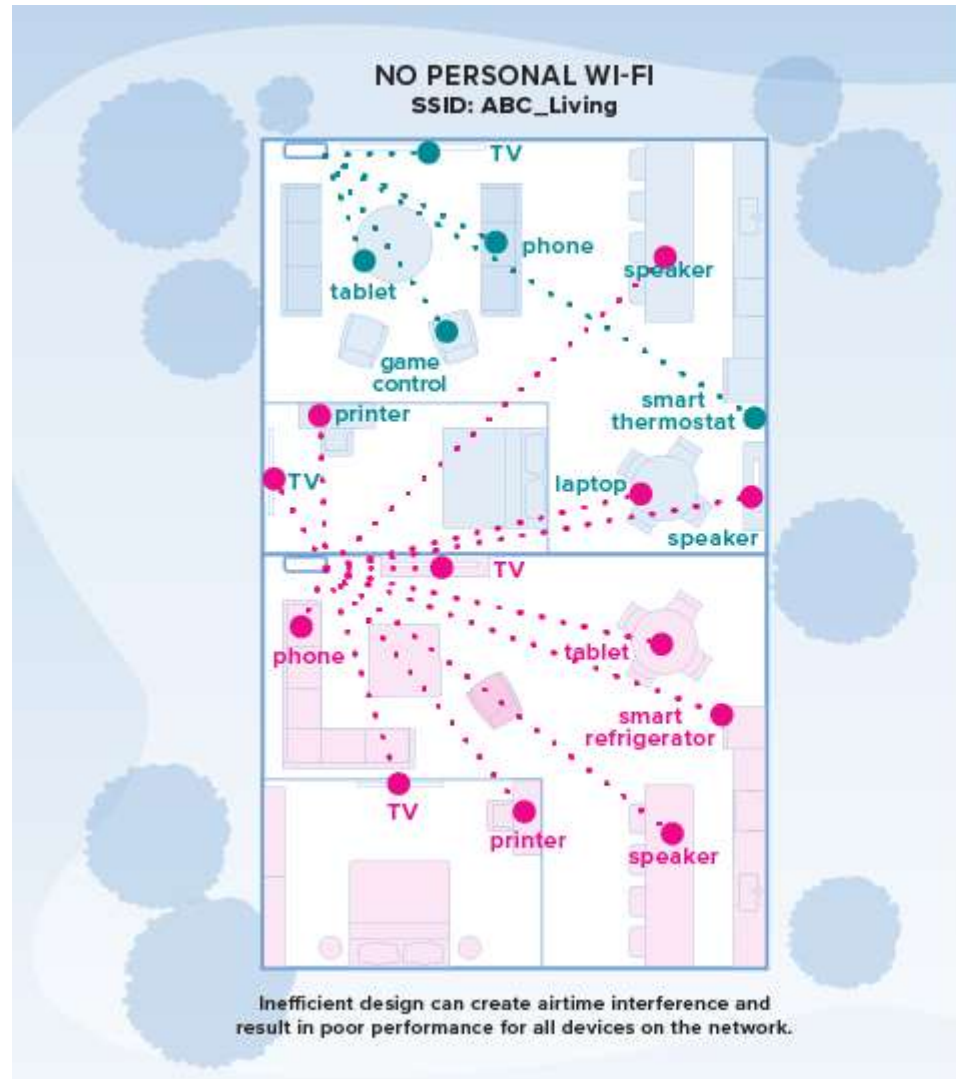
Wi-Fi Password
.....

Change

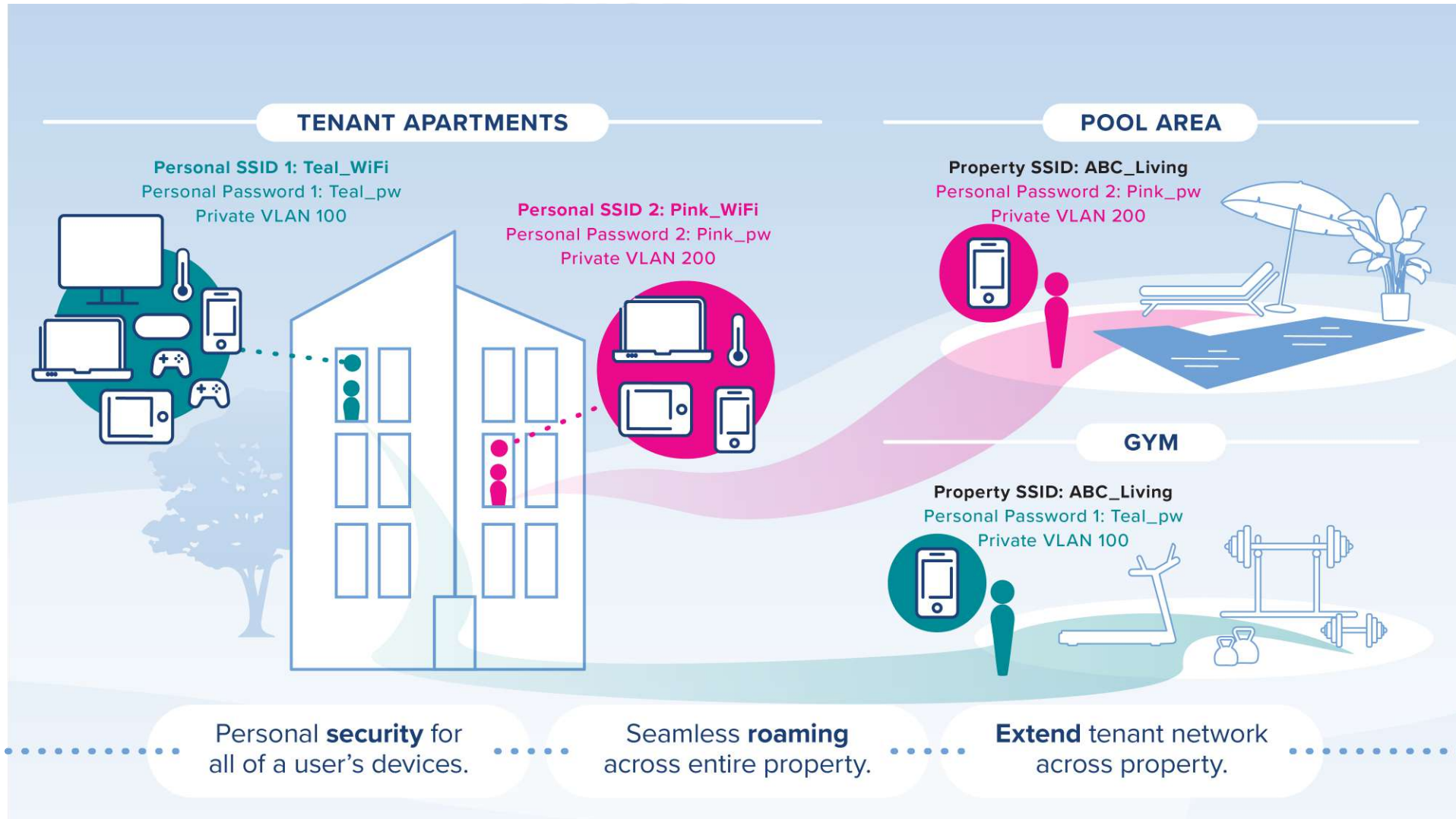
Scan to connect

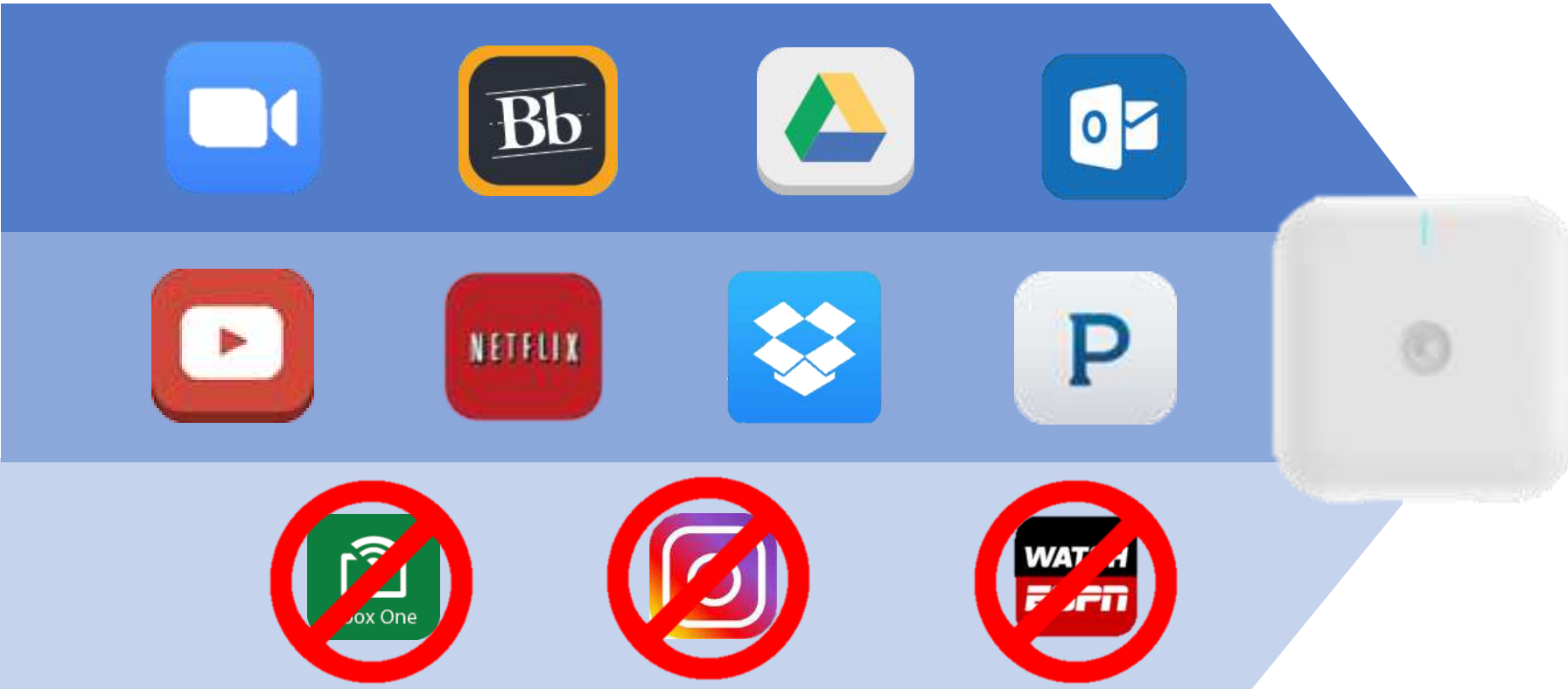
Personal Wi-Fi
Download

Wi-Fi: Personal Wi-Fi



cnMaestro™ X
Management System





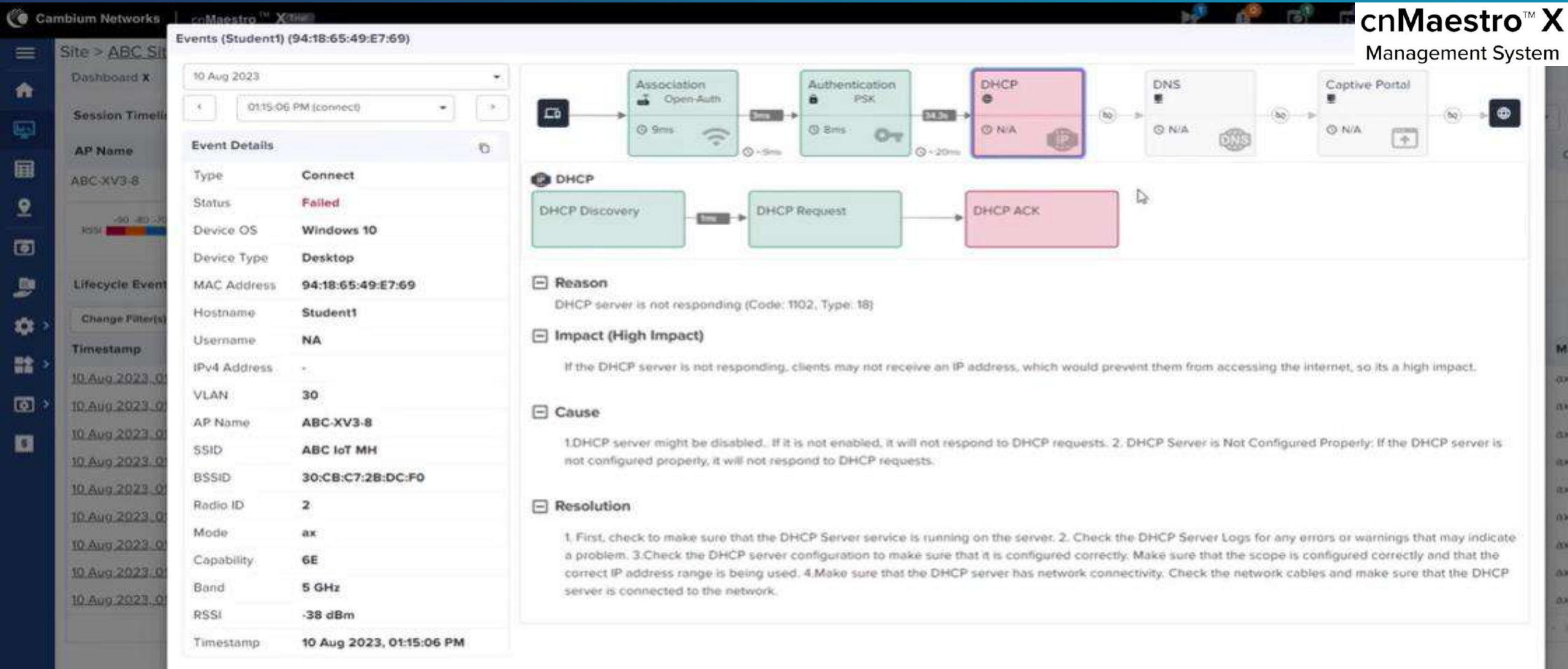
PRIORITIZE

LIMIT

BLOCK

Identify and Control Over 2000 Applications Directly in the AP

Network: AI Driven Analytics Engine



The screenshot displays the cnMaestro X Management System interface. On the left, a sidebar shows navigation options like 'Dashboard X', 'Session Timeline', and 'Lifecycle Events'. The main area is titled 'Events (Student1) (94:18:65:49:E7:69)' and shows a 'Connect' event that failed at 01:15:06 PM on 10 Aug 2023. The event details table lists the device as a Windows 10 Desktop with MAC address 94:18:65:49:E7:69, connected to AP ABC-XV3-8 on SSID ABC IoT MH. The DHCP process flow diagram shows the sequence: Association (Open-Auth) -> Authentication (PSK) -> DHCP (N/A) -> DNS (N/A) -> Captive Portal (N/A). A detailed view of the DHCP process shows 'DHCP Discovery' leading to 'DHCP Request', which then fails at 'DHCP ACK'. The reason for failure is 'DHCP server is not responding (Code: 1102, Type: 18)'. The impact is classified as 'High Impact', and the cause is identified as either a disabled DHCP server or improper configuration. The resolution steps include checking the DHCP service status, logs, and network connectivity.

Event Details	Value
Type	Connect
Status	Failed
Device OS	Windows 10
Device Type	Desktop
MAC Address	94:18:65:49:E7:69
Hostname	Student1
Username	NA
IPv4 Address	-
VLAN	30
AP Name	ABC-XV3-8
SSID	ABC IoT MH
BSSID	30:CB:C7:2B:DC:F0
Radio ID	2
Mode	ax
Capability	6E
Band	5 GHz
RSSI	-38 dBm
Timestamp	10 Aug 2023, 01:15:06 PM

Reason
DHCP server is not responding (Code: 1102, Type: 18)

Impact (High Impact)
If the DHCP server is not responding, clients may not receive an IP address, which would prevent them from accessing the internet, so its a high impact.

Cause
1. DHCP server might be disabled. If it is not enabled, it will not respond to DHCP requests. 2. DHCP Server is Not Configured Properly: If the DHCP server is not configured properly, it will not respond to DHCP requests.

Resolution
1. First, check to make sure that the DHCP Server service is running on the server. 2. Check the DHCP Server Logs for any errors or warnings that may indicate a problem. 3. Check the DHCP server configuration to make sure that it is configured correctly. Make sure that the scope is configured correctly and that the correct IP address range is being used. 4. Make sure that the DHCP server has network connectivity. Check the network cables and make sure that the DHCP server is connected to the network.

Cambium Care Pro

- **Included in cnMaestroX**
- 24 x 7 support for basic and complex technical questions
- Assistance with hardware diagnosis
- Accelerated access to Level 2 and Level 3 engineers
- Standard hardware warranty
- **Software Updates included**

cnMaestro™ X
Management System

Cambium Care Advanced*

- License
- 24 x 7 support for basic and complex technical questions
- Software Updates included
- Assistance with hardware diagnosis
- Accelerated access to Level 2 and Level 3 engineers
- **Next business day shipment of hardware replacement**

Cambium Care Prime+

- License
- 24 x 7 support for basic and complex technical questions
- Assistance with hardware diagnosis
- Direct Escalation to Level 2 and Level 3 engineers
- Service Level Agreements
- All Risks Advanced Replacement for infrastructure hardware with next business day shipment¹
- Chat support
- Quarterly reviews with reports, optimization guidance, and ongoing advisory for software releases²
- Dedicated Level 2 engineers and Service Account Manager³

* Available for Enterprise WiFi (Xirrus, cnPilot, XVcnMatrix), cnMatrix switches and 60 GHz cnWave products.
+ Available for Infrastructure products (PTP, PMP, ePMP and cnReach).
1. Not available for ePMP products.
2. Requires an annual spend of USD 10,000.
3. Requires an annual spend of USD 20,000.

cnMaestro™ X Management System

Product Summary *Features marked X require cnMaestro X subscription*

Onboarding and Provisioning

- Zero-Touch Onboarding
- Template Configuration
- Object Configuration (Enterprise)
- Claim PMP SMs Associated with AP
- cnArcher installation summary upload (PMP and ePMP) X
- Mass provisioning for ePMP /PMP/cnWave 60 GHz (Using LinkPlanner) X
- Webhooks support X

Network Services

- Social Login and SMS Authentication
- Access Vouchers
- Branded Tenant Login Page X
- Payment Gateway X
 - » Paypal
 - » IPPay
 - » QuickPay
 - » Orange Money
 - » mPesa
- Support for Software Defined Radios (SDR) on XV3-8, XE3-4 and XE5-8 Wi-Fi 6 Access Points
- Unlimited Radius based ePSK X
- Unique PSKs supported: 300 per WLAN and per account
- Unique PSKs supported: 2,000 Per WLAN and 50,000 Per Account X
- Personal Wi-Fi X

- Rogue AP Detection
- Wi-Fi Packet Capture
- ePMP/PMP Link Test
- Cambium Care Pro – 24/7 technical support, accelerated access to L2 engineers and 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 and Residential Wi-Fi, PMP, PTP, cnReach™, cnRanger™
- Multiple Product Views
 - » Access and Backhaul View
 - » Enterprise Wireless View
 - » Industrial Internet View
- Hierarchical Device Tree
- PMP/ePMP Sector Display

Administration

- Management users: 10
- Management users: 200 X
- Role-Based Access
- Auto provisioning X
- RADIUS, TACACS+, LDAP, and AD Login X
- Advanced troubleshooting X
 - » Audit logs
 - » 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 60GHz MAP features X
 - » Extensive Network Map RF Link visualization
 - » Auto Manage Route
- Open ID/SAML Authentication X

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

cnMaestro™ X Management System





- Number of Guest Portals: 4
- Number of Guest Portals: 500 X
- Paid Ambassador and Azure guest portal X
- Max number of login events: 2,000 events records for 7 days
- Max number of login events: 20,000 event records for 7 days X
- Max number of managed devices: X
25,000 for Enterprise
40,000 for FWB
- Application Visibility and Control of over 2400 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 and SKU
- AP Group and WLAN Configuration
- cnMaestro X supports a maximum of 10,000 guest client sessions sessions at a time. X
- Site Support for Collocated APs
- WIDS Support

Troubleshooting & Forensics

- Tower-to-Edge View
- Technical Support Dump export

Configuration & Monitoring

- Redundant cloud services
- Scheduled system backup
- Automatic bulk software update
- Dedicated Device Dashboards
- Statistics and 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 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
 - » 2-year for FWB
 - » 1-year for Enterprise and IloT

- Auto Device Recovery X
- Cable Diagnostics X
- PBA on EX1000 X
- MAC lists and 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 and IP groups

X Assurance

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

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

cnMaestro™ X Management System



Software: Planning & Design Solutions



cnHeat

Improve the precision of site surveys while saving time and money. Heat map displays provide the exact antenna location that offers the best connectivity.



cnArcher™

Improve installation accuracy with the free Android™ app that gives field techs the information they need to configure and properly align PMP subscriber modules.



LINKPlanner

Quickly and easily design networks for optimal deployment and cost effectiveness.



Wi-Fi Designer

Fast and easy design tool for Cambium Wi-Fi networks. Available online and free to use for anyone.

Typical Application

Quickly pre-qualify new customers saving time and money. Identify and market to addresses of unserved customers. Determine optimal greenfield site placement.

LOCATE subscriber installations

IDENTIFY unserved customers

OPTIMIZE greenfield site placements

Designed with input from field technicians and years of experience on our millions of wireless broadband modules deployed, cnArcher validates configuration and alignment in seconds.

Boost the number of installs done right the first time and increase customer satisfaction. Eliminate problems and focus your manpower on connecting new subscribers as your network grows.

LINKPlanner allows you to model scenarios, based on geography, distance, antenna height, transmit power and other factors, to optimize system performance before purchase. Quickly design networks for optimal deployment and cost effectiveness with ease. Available for Microsoft® Windows® and Mac® systems, LINKPlanner is a free, user-friendly link-design tool.

Wi-Fi Designer enables the design of Wi-Fi networks. Import floor plans, draw walls, place APs and model AP coverage to generate the bill of materials. Supports all indoor and outdoor APs across the Cambium Wi-Fi 6, cnPilot™, and Xirrus product lines. Creates PDF output report that includes heat maps and BOM.

Products Supported

- ePMP™
- PMP

- ePMP
- PMP 450

- cnReach™
- ePMP
- PMP
- PTP

- Wi-Fi 6
- Xirrus
- cnPilot

Product line	Hardware Warranty Period
cnPilot rXXX	1-year
Wi-Fi indoor	Wi-Fi5 - 5-years – Wi-Fi6/6E Limited Lifetime
Wi-Fi outdoor	3-years
cnMatrix	5-years
ePMP	3-years
PMP Core (450)	3-years
PTP Core (450i, 550)	3-years
PTP Core (670, 820)	1-year





Cambium Networks™
 Offering the only Complete Wireless Fabric Technology Solution for Enterprise


3 YEARS WARRANTY
 ePMP 1000, 2000 & 3000



Cambium Networks™

Enterprise Lan – Access Point

50+ Wi-Fi devices connecting in one area (>1 AP required)



Convention Centers



Auditoriums



Libraries



Temporary Events



Classrooms



Cafeterias



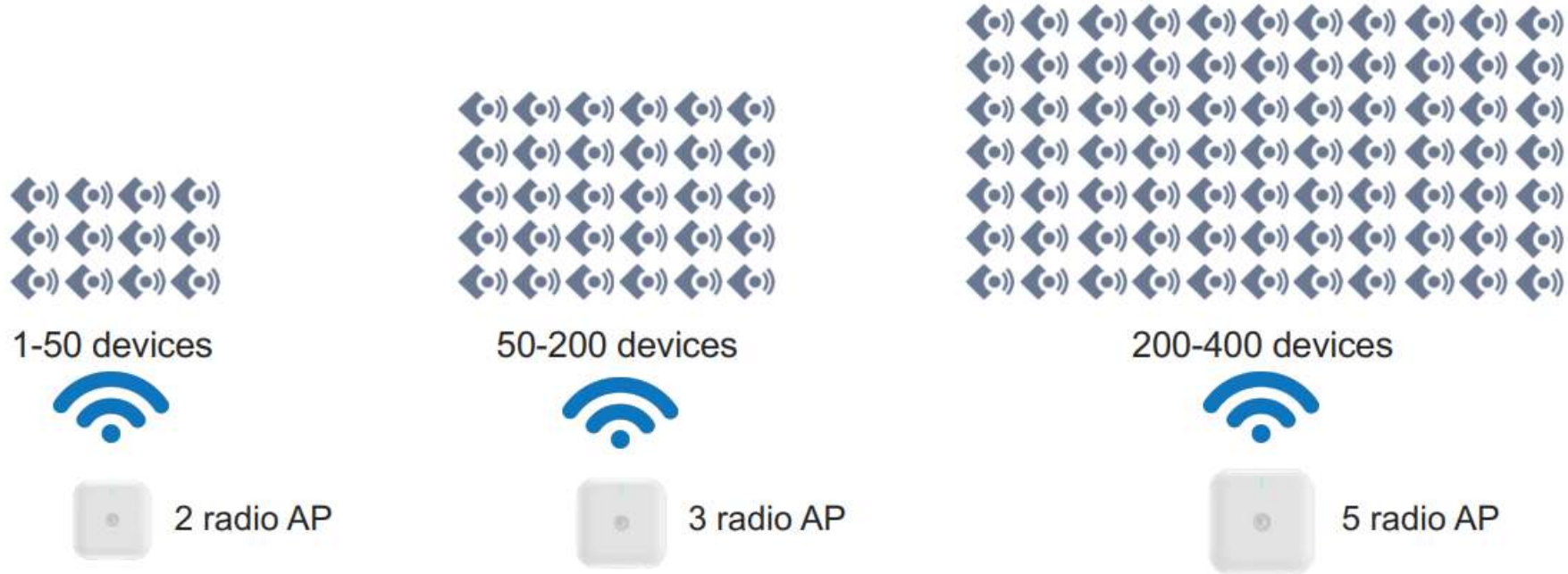
Stadiums/Arenas



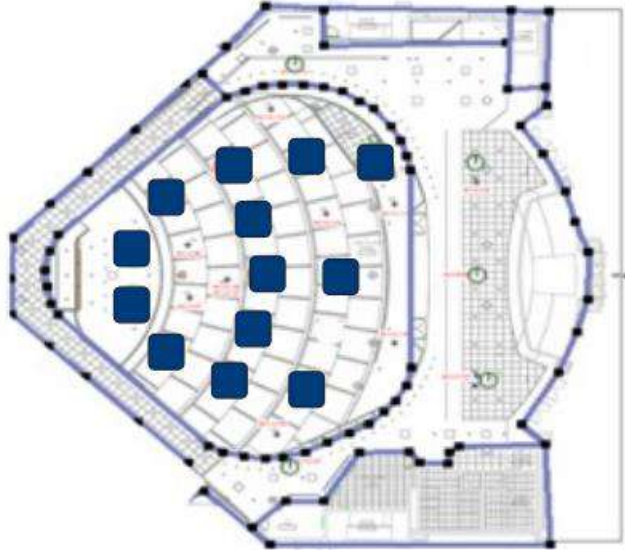
IoT



Scaled radios and bandwidth per AP to support different use cases, like more ports on a switch



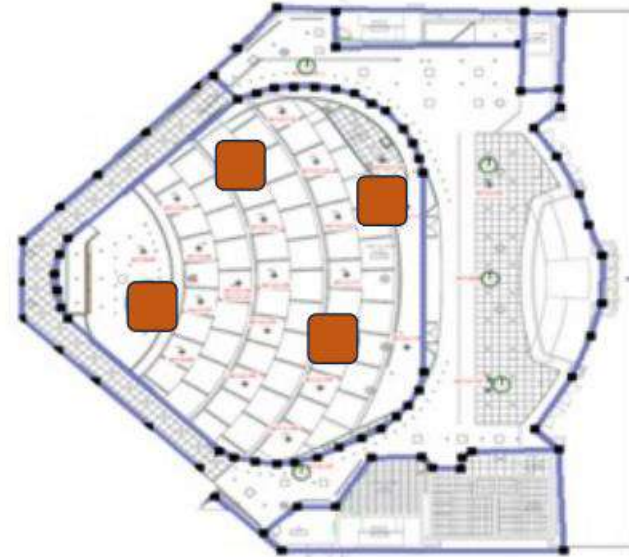
**Traditional Fixed
2-radio AP Design**



- 12** standard 2-radio APs
- 14** radios used (12-5GHz, 2-2.4GHz)
- 10** 2.4GHz radios **turned off**

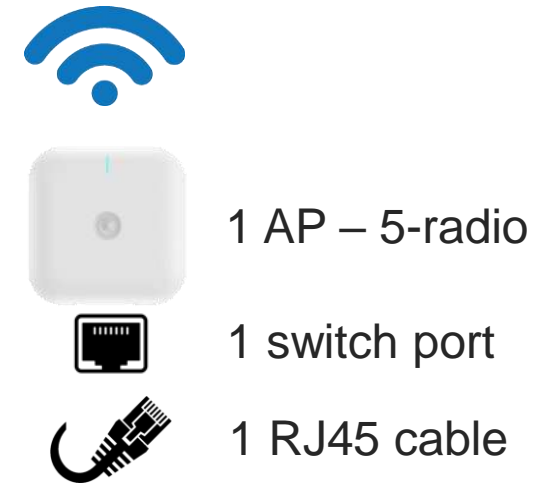
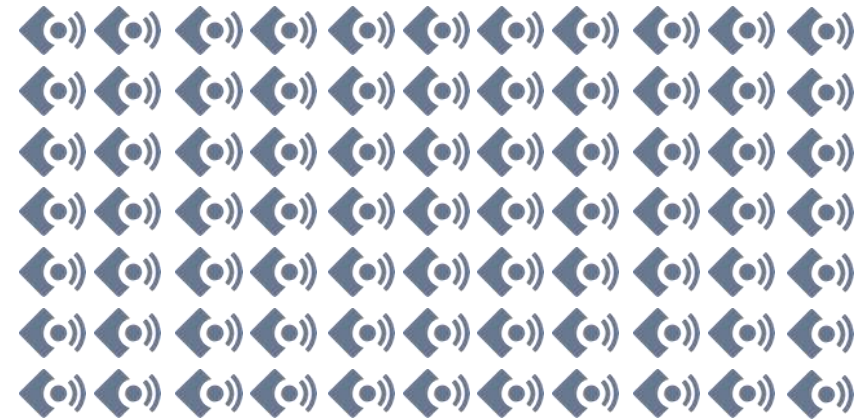
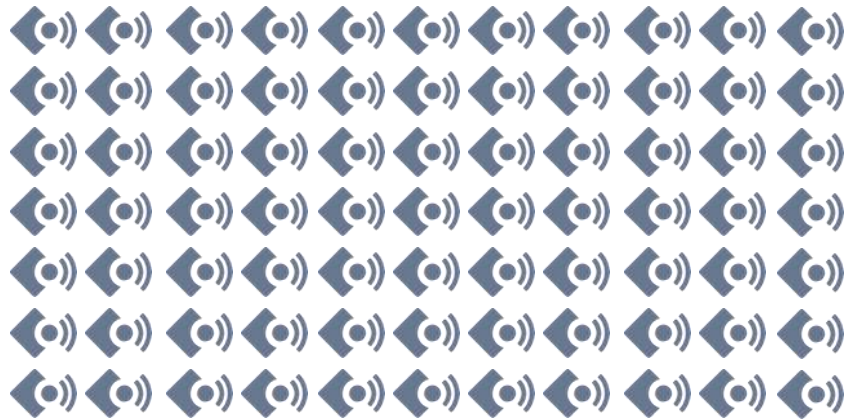
**400+ devices
Majority 5GHz**

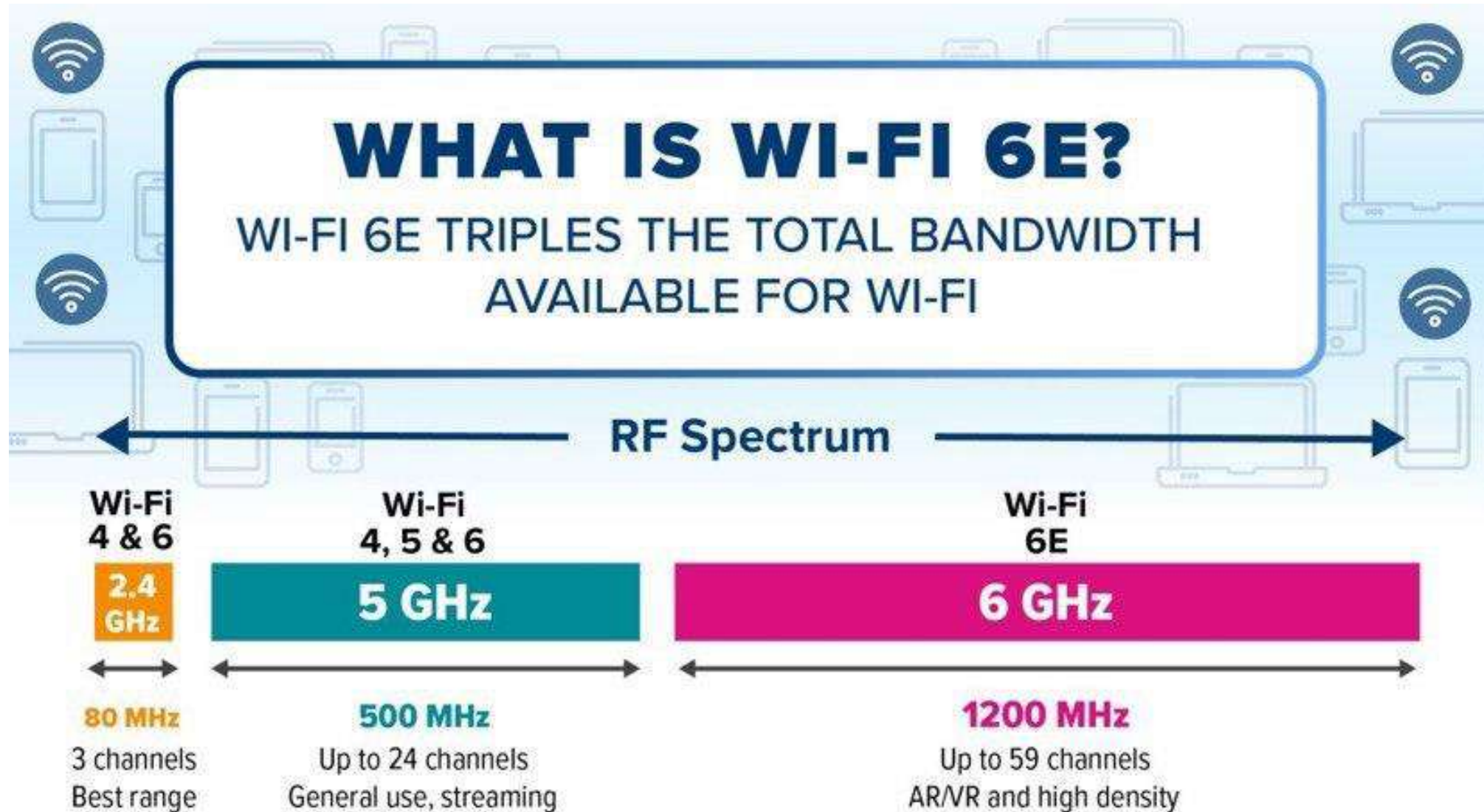
**High Density SW-Defined
5-radio AP Design**

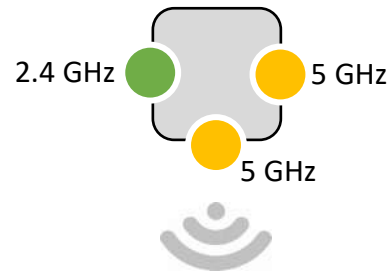


- 4** High Density APs
- 20** radios used (12-5GHz, 2-2.4GHz)
- 1** 2.4GHz radio turned off

Reduced APs, switches, cabling, installation, maintenance = **Reduced Total Cost of Ownership**

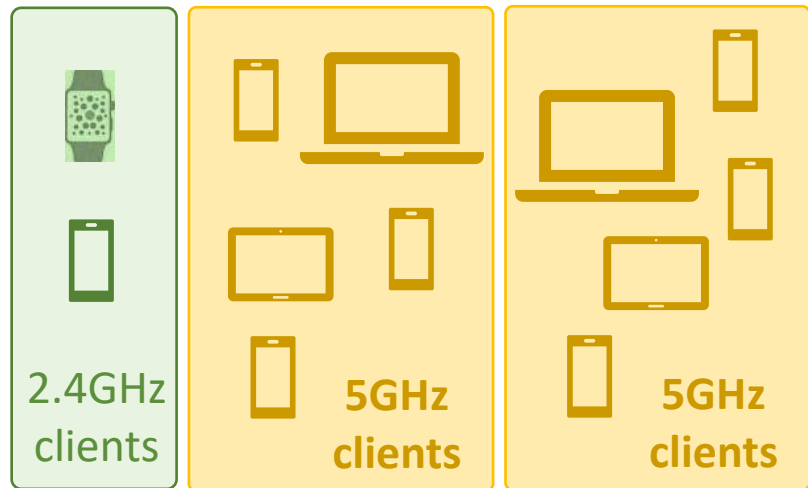






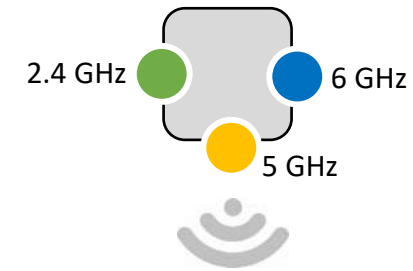
Tri-Radio, Dual Band

5 GHz 4x4
5 GHz 2x2
2.4 GHz 2x2



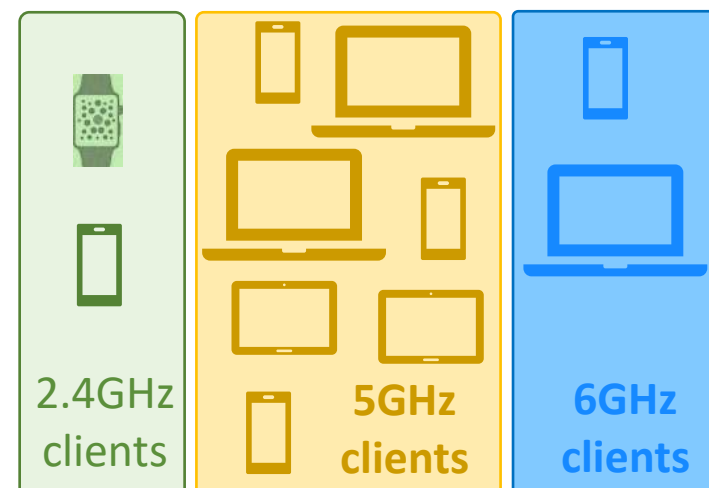
Deploy Wi-Fi 6 using full power (SP) on 5GHz as current network design and deployment methodology

Ideal for 2022 when Wi-Fi 6E AFC systems are not available



Tri Radio, Tri Band

6 GHz 4x4
5 GHz 2x2
2.4 GHz 2x2

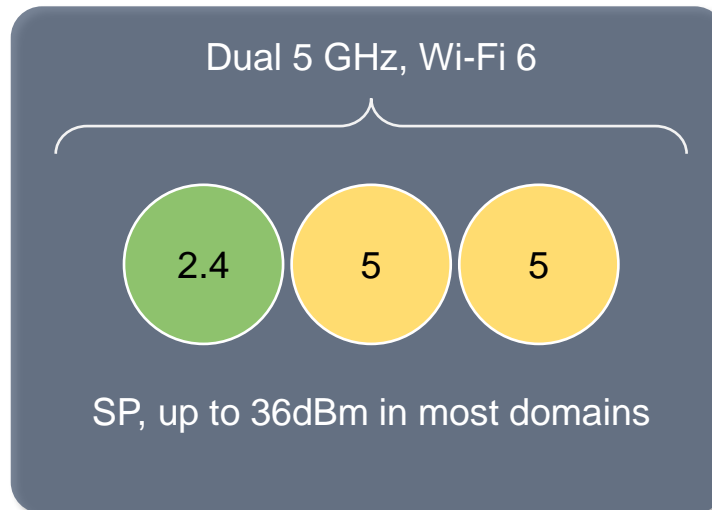
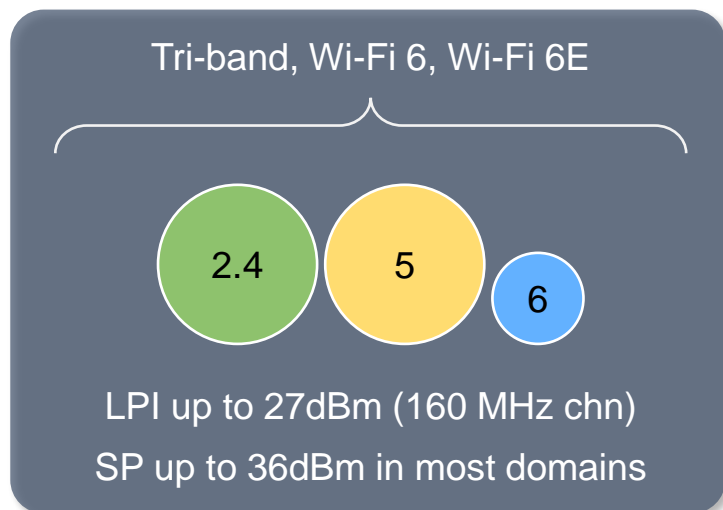


Deploy Wi-Fi 6E using lower power (LPI) today, and enable full power (SP) on 6GHz as AFC systems become available

Key: migrate to 6GHz when the devices, ecosystem, and applications require

- Better Wi-Fi 6 4x4 than Ruckus/Aruba/Extreme, etc
- 3/5 radios models have one or more radios under Software Defined control
- Upgrade to Wi-Fi 6E when you are ready
- **Network Migration Tool** – **detect, report, advise when to upgrade to Wi-Fi 6E**

XE3-4 software defined radios



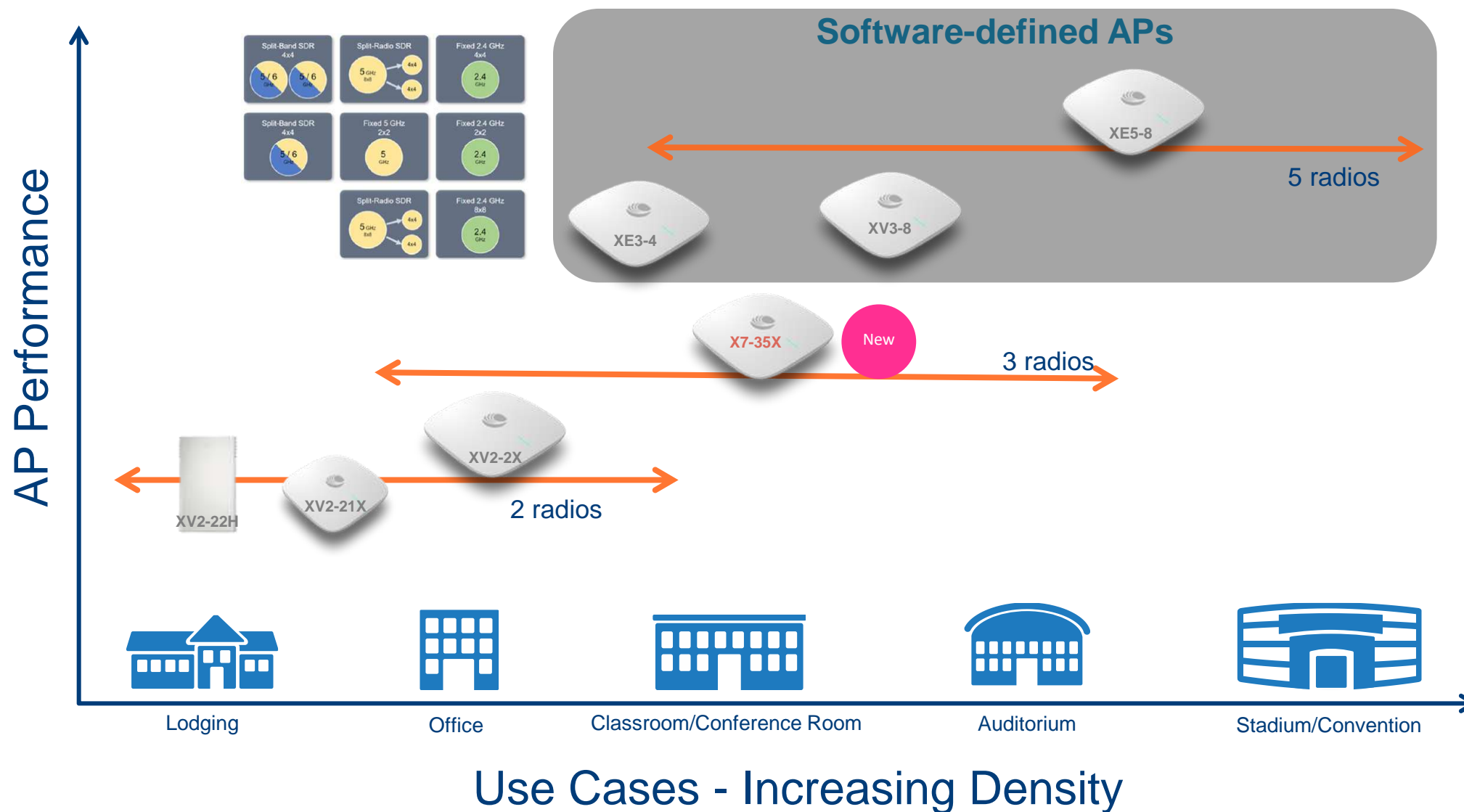
cnMaestro Split Band / Radio Options



cnMaestro Migration Tool

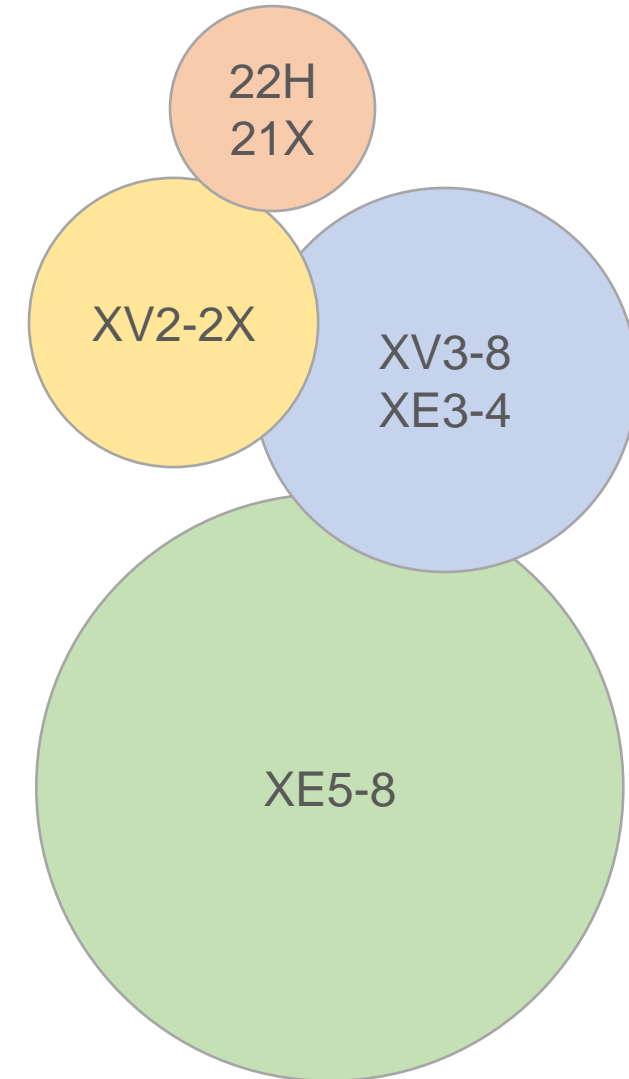


Enterprise Lan: Right sized AP for the application










Right sized access point for the application

Scale	Typical Market	Typical Use/Applications
Low density/performance	Ideal for SME and small RF zones such as hotel rooms, apartment MDU, K12 primary EDU	Internet access, media streaming, IOT
Med density/performance	Scale up performance in SME, education, hospitality Delivers higher user density (~60+ or greater), greater aggregate throughput	Media streaming, business applications
High density/high throughput	Hotel meeting rooms with hundreds of attendees, education with online learning/streaming in HD Multi-gig aggregate throughput	Low power devices, high client density, voice/video/data streaming, risk of Wi-Fi intrusion
Very high density/throughput	Large public venues like ballrooms with thousand of users, higher education with high AP and high client density Multi-gig throughput with minimal wired infrastructure	High client and high AP density, voice/video/data combined networks, location services, high risk of Wi-Fi intrusion



Wi-Fi Indoor Portfolio

							
	XV2-22H	XV2-21X	XV2-2X	X7-35X	XE3-4	XV3-8	XE5-8
Technology	Wi-Fi 6	Wi-Fi 6	Wi-Fi 6	Wi-Fi 7	Wi-Fi 6E	Wi-Fi 6	Wi-Fi 6E
Total Wi-Fi User Radios	2	2	2	3	3	3	5
Max 5GHz Radios	1	1	1	1	2	2	4
Max 6GHz Radios	0	0	0	1	1	0	2
Software-Defined Radio(s)					✓	✓	✓
Dedicated Sensor Radio						✓	
Transmit Streams	2+2 (2x2 / 2x2)	2+2 (2x2 / 2x2)	2+2 (2x2 / 2x2)	2+2+2 (2x2 / 2x2 / 2x2)	2+2+4 SDR (2x2 / 2x2 / 4x4)	4+8 SDR (4x4 / 8x8)	4+8+4+4 SDR (4x4 / 8x8 / 4x4 / 4x4)
Total RF PHY Rate	2.97 Gbps	2.97 Gbps	1.77 Gbps	9.2 Gbps	6.6 Gbps	6 Gbps	15.6 Gbps
Max Channel Width	160 MHz	160 MHz	80 MHz	320 MHz	160 MHz	160 MHz	160 MHz
Theoretical Max Active Devices	64	64	500	1,500	1,500	1,500	2,500
Uplinks / Downlinks	1 - 1 GigE / 2 - 1 GigE	1 - 1 GigE	1 - 2.5 GigE	1 - 2.5GigE	1 - 2.5GigE, 1 - 1GigE	1 - 5GigE, 1 - 1GigE	2 - 5GigE
Position Summary	Flexible Mounting	High Value	Value	All Purpose	All Purpose	High Performance	High Density
Primary Verticals/Use Cases	Hospitality/MDU EDU Dorms SMB	SMB Hospitality/MDU	SME Hospitality/MDU Retail	General Mid-market Education Hospitality	General Mid-market Education Hospitality	Education General Enterprise High Density	Public Venues Education High Density
Warranty	Limited Lifetime	Limited Lifetime	Limited Lifetime	Limited Lifetime	Limited Lifetime	Limited Lifetime	Limited Lifetime

Wi-Fi 6/6E Outdoor Portfolio



	XV2-23T	XV2-2T0	XV2-2T1	XE3-4TN
Radios	2.4/5 GHz Wi-Fi 6	2.4/5 GHz Wi-Fi 6, BLE 4.1	2.4/5 GHz Wi-Fi 6, BLE 4.1	2.4/5/6 GHz Wi-Fi 6/6E, BLE 4.1
Max 5GHz Radios	1	1	1	2
Max 6GHz Radios	0	0	0	1
Software-Defined Radio(s)				✓
Antennas	Integrated 2x2, omni	Integrated 2x2, omni	Integrated 2x2, 120 deg sector	External 4x4/2x2 and GPS, 30, 60 deg & omni options
Total Wi-Fi Bandwidth	2.97 Gbps	1.77 Gbps	1.77 Gbps	6.6 Gbps
Max Channel Width	16 0MHz	80 MHz	80 MHz	160 MHz
Theoretical Max Devices	250	500	500	1,500
Uplinks	1–1 GigE	1–2.5 GigE	1–2.5 GigE	1–2.5GigE, 1–1GigE
PoE Out		✓	✓	
Environment	IP67 rated, -40°C to 65°C	IP67 rated, -40°C to 65°C	IP67 rated, -40°C to 65°C	IP67 rated, -40°C to 65°C
Value Propositions	Value price	Up to 1km client range with high efficiency antennas	Over 1km client range with high efficiency antennas	Flexible antenna options, 6GHz ready
Primary Verticals/Use Cases	Warehouses, Parking Lots, General Outdoor Campus	Public Wi-Fi, Venues, Logistics, Transportation, Campuses	Public Wi-Fi, Venues, Logistics, Transportation, Campuses	Large Public Venues, Logistics, Manufacturing, Campuses

Highlights

- 2.4GHz / 5GHz dual band 802.11ac Wave 2
- High-efficiency, high-gain antennas
- 256–512 clients per AP
- 1.3–2.1 Gbps 5 GHz PHY Rate
- DPI AppQoS engine
- Mid-market enterprise, hospitality, logistics, retail
- Enhanced roaming, RF aware



	e425H	e430H	e410	e600
Radios	Dual band 2x2	Dual band 2x2	Dual band 2x2	Dual band 4x4
Wi-Fi	11ac.wav2	11ac.wav2	11ac.wav2	11ac.wav2
5 GHz EIRP	25 dBm	26 dBm	30.5 dBm	34 dBm
Ethernet	3 x GE PoE out	4 x GE PoE out	1 x GE	2 x GE
BLE	No	Yes	No	Yes
Environment	Wall plate	Wall plate	Indoor	Indoor
Key Value	Flexible mounting USB port	Flexible mounting	Cost-effective 2x2	Cost-effective 4x4

Wi-Fi 5 Outdoor Portfolio

Highlights

- 2.4GHz / 5GHz dual band 802.11abgnac Wave 2
- High-efficiency, high-gain antenna
- 256–512 clients per AP
- 1.3–2.1 Gbps 5 GHz PHY Rate
- DPI AppQoS engine
- Mid-market enterprise, hospitality, logistics, retail
- Enhanced roaming, RF aware



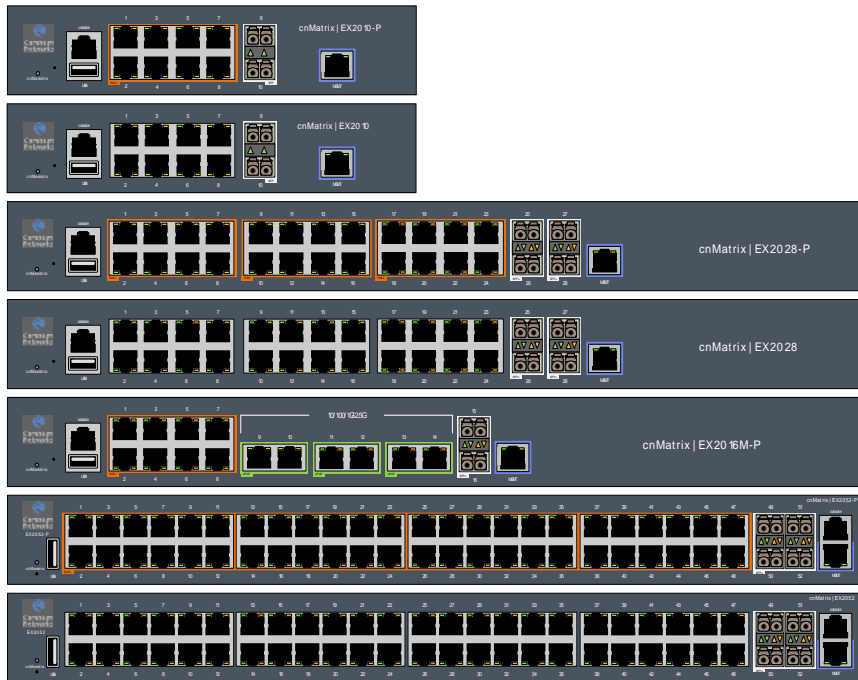
	e500/501/502	e505	e510	e700
Radios	Dual band 2x2	Dual band 2x2	Dual band 2x2	Dual band 4x4
Wi-Fi	11ac.wav1	11ac.wav2	11ac.wav2	11ac.wav2
5 GHz EIRP	33/36/36 dBm	26 dBm	35 dBm	36 dBm
Ethernet	2 x GE	1 x GE	1 x GE	2 x GE
BLE	No	No	No	Yes
Environment	Outdoor IP67 -20° to 65°C	Outdoor IP67, -30° to 65°C	Outdoor IP67, LTE filter -40° to 65°C	Outdoor IP67, LTE filter -20° to 65°C
Key Value	5 dBi (e500) 13 dBi 120° (e501) 17 dBi 30° (e502)	Small form factor	High gain 8 dBi omni Shock & Vib certified	High perf



Cambium Networks™

Enterprise Lan – Switch

Deploy Resilient Networks with cnMatrix



cnMaestro



Policy Based Automation

Cloud/On-Prem Management

Enterprise-grade L2-L3 Capabilities

Best-in-Class Total Cost of Ownership

Wired-Wireless Deployment Made Simple with cnMatrix

EX3000 Series

New

EX3000 Switches High Power PoE, Dual Power Supplies

MODEL	Port Config	802.3bt 60W
EX3028-P	24 + 4	12 Ports
EX3052R-P	48 + 4	24 Ports



EX3024F Fiber Distribution Switch

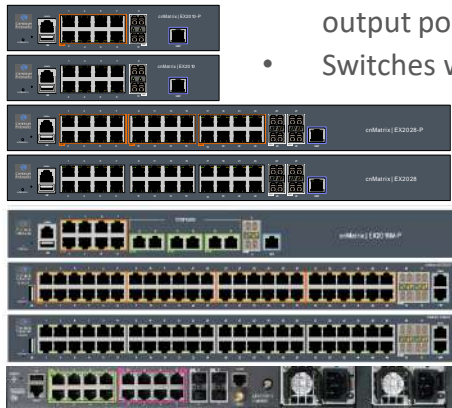
- 24 SFP+ 10Gbps fiber ports
- Dual internal power supplies
- Advanced Silicon



Right-sized Options, Simplified Operations, Lower TCO

Enterprise Layer 2 & Layer 3 switches

- 8-port, 16-port, 24-port, 48-port PoE/non-PoE options
- Multi-gig switch with 2.5G ports, 802.3bt with 60W of output power per port; SFG+ 10Gbps Fiber Uplink
- Switches with modular AC/DC power supply options



EX2000 Series

Enterprise cost-effective Layer 2 switches

- 8-port, 24-port, 48-port PoE/non-PoE options
- 802.3af/at PoE power options
- SFP 1Gbps Fiber uplinks



EX1000 Series

Common Capabilities

Policy Based Automation

- **Automated Security:** Automatic device profiling, network segmentation, policy enforcement. Automatic port configuration clean-up on device disconnect
- **Zero Touch Simplicity:** Zero-Touch Provisioning, Zero Touch Adds, Moves, Changes eliminates the need to color code ports
- **Error-free operations:** Reduce time, effort and human errors by eliminating the need for manual configuration

Sophisticated Management Options

- **Cloud, On-Premises cnMaestro:** Intuitive Cloud Dashboard & Automation
- **Swift** Mobile App Management for iOS and Android
- Industry Standard CLI

Industry Leading TCO

- Competitive Hardware Pricing
- Lower OPEX: Simplified Management delivers IT efficiency & error free operations

Right-sized Options, Simplified Operations, Lower TCO

cnMatrix TX2000 Series

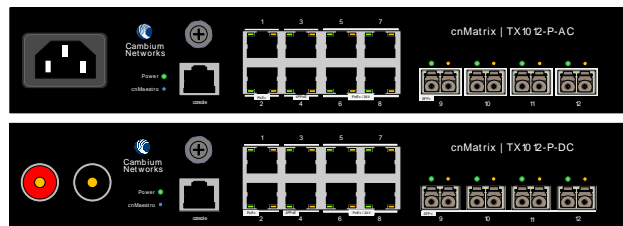


- PoE & Passive PoE, High Power PoE (90w) Options
 - 802.3af/at/bt – up to 90W
 - Passive 54V - up to 90W
 - Passive 24V - up to 15W
- Integrated Cambium Sync: dual sources
- Low Voltage Passive PoE
- Extended Temp range: -10°C to 65°C
- 802.3af/at
- Removable/Redundant PS

Ideally suited for

- PMP 450m, 450i ePMP networks
- Enterprise Networks needing redundant power supplies

cnMatrix TX1000 Series



- High Power PoE
 - 802.3af/at – up to 30W
 - Passive 54V – up to 90W
 - Passive 24V – up to 15W
- Low Voltage Passive PoE
- Extended Temp range: -10°C to 65°C
- 802.3af/at
- Fixed Internal power supplies

Ideally suited for

- ePMP Networks

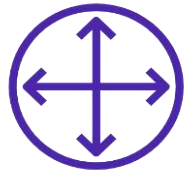


Cambium Networks™

Enterprise Lan – Firewall

Converged WAN Edge, Security and Network Service Delivery

SD-WAN



- Routing
- WAN Load-Balancing and failover
- Traffic Shaping
- WAN QoS
- Flow Preference
- Failover policy

SECURITY



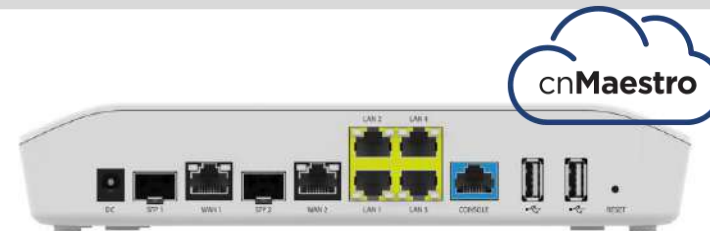
- Firewall
- IDS / IPS
- Site-to-Site VPN
- DNS based content filtering
- VPN with MFA
- Application visibility and Control
- LAN vulnerability assessment
- IoT Visibility

NETWORK SERVICES



- DHCP
- DNS
- RADIUS

Easy to deploy complete branch or distributed enterprise
Synthesize sensors across Wi-Fi, Wired ports and WAN
Holistic security with visibility into Wi-Fi and LAN
Qualify service across the enterprise network
Clear the blind spot in IoT security



NSE 3000 Edge Appliance

- 2 WAN 1Gb (SFP/RJ45)
- 4 LAN 1Gb (RJ45) ports
- USB 3.0
- Table / wall mount

NSE 3000 Appliance



Hardware

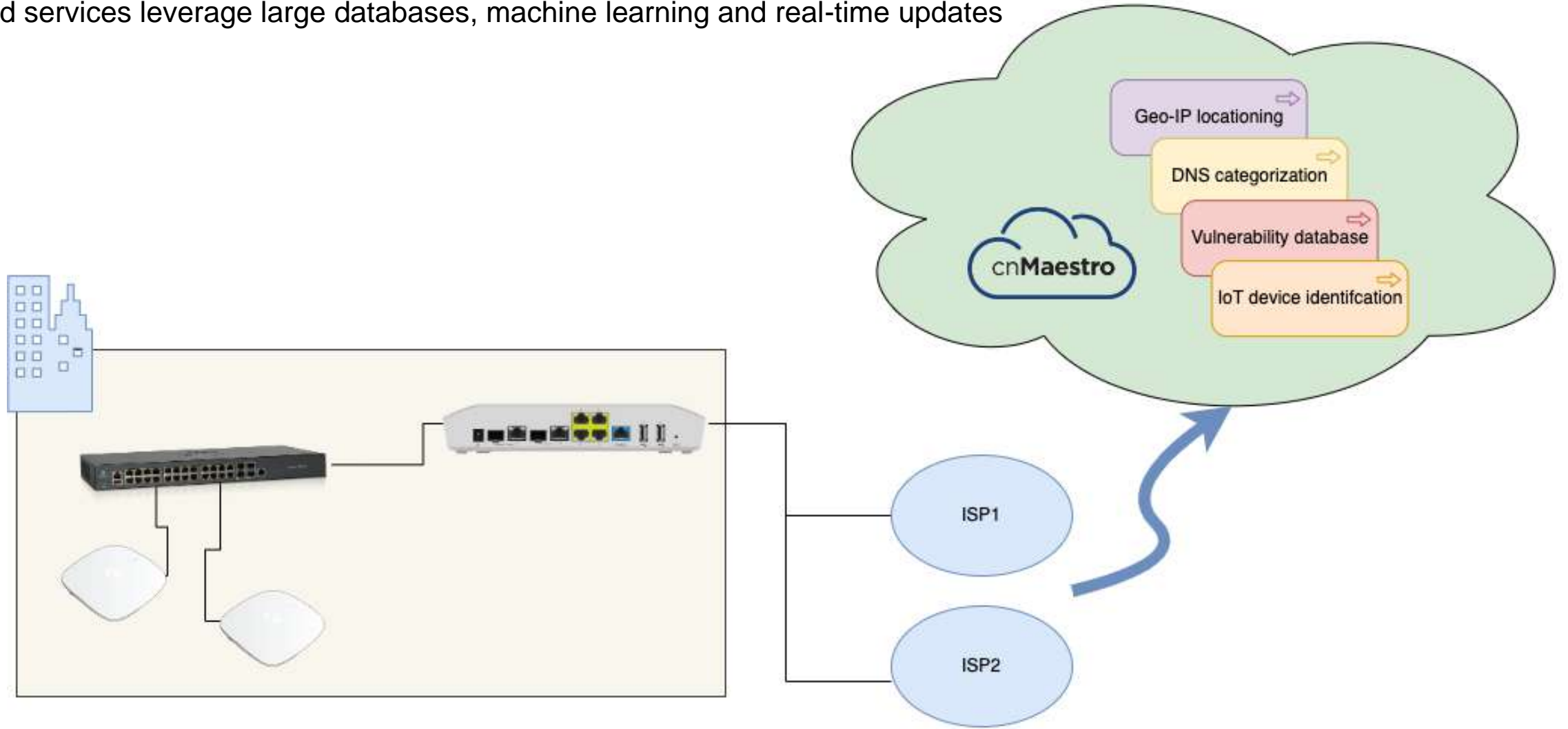
- 2 WAN 1Gb (SFP/RJ45)
- 4 LAN 1Gb (RJ45) ports
- Table / wall mount
- USB 3.0 ports

Specifications

Recommended use case	Sites and branches with up to 300 devices
Routed throughput	945 Mbps* - Layer 3 forwarding throughput
Stateful throughput	917 Mbps* - Advanced firewall throughput (NAT+AVC)
Advanced security throughput	911 Mbps* - Throughput with NAT + AVC + IDS + ACL
VPN client throughput	300 Mbps*
Site-to-Site VPN	600 Mbps* - Throughput. Maximum number of IPSec tunnels = 16
WAN Ports	2 x 1 Gbps RJ45/SFP
LAN Ports	4 x 1 Gbps RJ45
Mounting	Table top and Wall mount options
Dimensions	175.16 mm x 232.72 mm x 43 mm
Weight	.65 k g
Max Power consumption	22.8 W
Power Supply	40W DC
LEDs	Cloud connection and System indicators
Operating temperature	0°C–40°C
Operating humidity	10%–90%

Service Architecture

- On-premises appliance to implement policy
- Cloud services leverage large databases, machine learning and real-time updates



[-] Load Balancing

WAN-1 Mode

Traffic Share Percentage*

WAN-2 Mode

Traffic Share Percentage*

[-] Flow Preferences

Apply Filter(s)								Add New	iii-
WAN	Policy	Type	Deep Packet Inspection (DPI) ...	DPI Applic...	DPI Cate...	Protocol	Source		
No Data Available									

Showing 0 - 0 Total: 0 10 < Previous Next >

L2TP over IPsec Client VPN

Enable 2FA

Client IP Pool Range Start

Client IP Pool Range End

IPsec Shared Secret

IPsec Client VPN

Client IP Pool Range Start

Client IP Pool Range End

Site-to-Site VPN

Apply Filter(s)								Add New	iii
Name	IKE version	Role	Dead peer detection inte...	Remote Add...	Remote ID	Local ID			

Which do you want to manage?

IDS-IPS rules

Block Threats,
Intrusions



IDS/IPS

Enable IDS/IPS

Mode

Rule Type

Snort Code*

Procure a snort.org Oinkmaster code and paste it here. (Paste the code only and not the URL)

Category

<input type="checkbox"/> emerging-activex	<input type="checkbox"/> emerging-attack_response	<input type="checkbox"/> emerging-botcc.portgrouped	<input type="checkbox"/> emerging-botcc
<input type="checkbox"/> emerging-chat	<input type="checkbox"/> emerging-clammy	<input type="checkbox"/> emerging-compromised	<input type="checkbox"/> emerging-current_events
<input type="checkbox"/> emerging-deleted	<input type="checkbox"/> emerging-dns	<input type="checkbox"/> emerging-clos	<input type="checkbox"/> emerging-drop

Which do you want to manage?

Geo-IP rules

Block Russia,
North Korea



GEO IP WAN to LAN Filters

Mode

Countries

Exceptions

Start IP	End IP

Which do you want to manage?



Precedence*

1

Action

Permit

Type

Application Based

Deep Packet Inspection (DPI) Type*

Category

DPI Category*

Streaming Media

Apply to

All User Group IP Address / Source Subnet

Add

Close

Simplifying Security and the WAN Edge

Deny Categories

- Productivity
 - Real Estate
 - Computer and Internet Info
 - Travel
 - Social Networking
 - Entertainment and Arts
 - Job Search
 - Philosophy and Political Advocacy
 - Society
 - Kids
 - Music
 - Fashion and Beauty
 - Generative AI
- Computer and Internet Security
- Auctions
- Home and Garden
- Individual Stock Advice and Tools
- Personal sites and Blogs
- Reference and Research
- Pay to Surf
- Educational Institutions
- Search Engines
- News and Media
- Recreation and Hobbies
- Business and Finance
- Shopping
- Military
- Training and Education
- Local Information
- Games
- Hunting and Fishing
- Sports
- Internet Portals
- Dynamically Generated Content
- Motor Vehicles

Filter malware and undesirable content with our DNS content filter. Select options to block from over 88+ categories of domain names. Helps you enforce CIPA guidelines for the K-12 customer segment

IOT device visibility by fingerprinting and checking against frequently updated device databases. It provides dynamic list of OT and IOT devices in the network

Host Name	IP Address	MAC Address	Manufacturer	Device Type	Device OS
ubuntu	192.168.200.54	DC:A6:32:B9:66:27	Raspberry Pi	Raspberry	Chrome os
-	192.168.200.72	58:C1:7A:F5:E4:A1	Cambium Networks	Enterprise switch	Cambium os
SE-7006B0	192.168.200.81	30:CB:C7:70:06:B0	Cambium Networks	Network service edge	Cambium os
iceT	192.168.200.83	00:11:32:1E:74:7A	Synology	Nas_storage	Dsm
LittleEngine	192.168.200.68	48:51:B7:D2:FA:5A	Unknown	Computer	Windows
Lamp	192.168.200.58	D0:73:D5:21:2D:52	Lifx	Light	Unknown
TMI010-MAC	192.168.200.59	F0:18:98:0F:85:58	Apple	Laptop	Macos
Tertius	192.168.200.53	BC:E6:7C:51:1F:A6	Cambium Networks	Enterprise wifi access point	Cambium os
HS300	192.168.200.57	C0:06:C3:42:5C:7A	Tp-link	Smart_plug	Unknown
BRW008092CC6CFF	192.168.200.67	00:80:92:CC:6C:FF	Unknown	Printer or scanner	Embedded os
Trevors-MBP	192.168.200.82	3C:15:C2:EA:F2:8A	Apple	Laptop	Macos
Pixel-5	192.168.200.85	5E:8D:D7:10:6D:AE	Google	Mobile	Android
Side-Table-Lamp	192.168.200.65	D0:73:D5:24:46:0D	Lifx	Light	Unknown
-	192.168.200.79	F8:0F:F9:69:45:25	Google	Streaming_dongle	Android
guest2	192.168.200.84	58:C1:7A:0A:6D:24	Cambium Networks	Enterprise wifi access point	Cambium os

Simplifying Security and the WAN Edge

Dashboard Notifications Configuration **Security** Network Performance Software Update Clients

Threats **Vulnerabilities**

Total Vulnerabilities

126

Unique Critical

23

Unique Major

95

Unique Minor

8

Vulnerable Clie

26

Vulnerable Clients

[Apply Filter\(s\)](#)

Hostname	IP Address	Mac Address	Device Type	Device OS	Last Scan	Vulne
sitindia	192.168.210.110	50:9A:4C:1F:DC:FD	COMPUTER	Linux	Aug 16 2022, 13:18	57
sitindia-OptiPlex-9020	192.168.10.124	34:17:EB:A3:07:F2	COMPUTER	Windows	Aug 16 2022, 14:32	47
MacBook-Air	192.168.10.36	38:C9:86:4F:4B:E7	LAPTOP	macOS	Aug 16 2022, 07:20	31
Unknown	192.168.210.142	A0:36:9F:28:BB:F0	COMPUTER	Windows	Aug 02 2022, 23:57	18
E700-9E9F08	192.168.210.21	58:C1:7A:9E:9F:08	Enterprise WiFi Access Point	Cambium OS	Jul 28 2022, 21:49	5
sitindias-MBP	192.168.110.108	AC:BC:32:C2:7D:B7	LAPTOP	macOS	Aug 12 2022, 13:13	11
Corporate-Switch	192.168.10.29	A0:40:A0:6E:BC:07	Router, Access Point or Femtocell	BusyBox/OpenWrt	Aug 16 2022, 17:05	9
XV3-8-4DDCCC	192.168.210.14	BC:E6:7C:4D:DC:CC	Enterprise WiFi Access Point	Cambium OS	Aug 16 2022, 11:54	2
XE3-4-001188	192.168.210.12	B4:A2:5C:00:11:88	Enterprise WiFi Access Point	Cambium OS	Aug 16 2022, 17:51	2
E410-0DC8A4	192.168.210.9	58:C1:7A:0D:C8:A4	Enterprise WiFi Access Point	Cambium OS	Aug 16 2022, 07:46	2

Showing 1 - 10 Total: 25 Previous 1 2 3 Next

All Vulnerabilities

[Apply Filter\(s\)](#)

Severity	Identifie	Service	Product	Product Version	Clients Impacted
Critical	CVE-2017-7679	http	Apache httpd	2.4.18	1
Critical	CVE-2015-5600	ssh	OpenSSH	6.9	1

Get an audit of security vulnerabilities with always-on LAN vulnerability scan and notified when critical vulnerabilities are discovered.

CVE: Common Vulnerabilities and Exposures
 CVSS: Common Vulnerability Scoring System
 Vulnerabilities are analyzed by the National Institute of Standards and Technology (NIST) and then listed in NIST's National Vulnerability Database (NVD)

CVE-2014-2323 Detail

Current Description
 SQL injection vulnerability in mod_mysql_whois.c in lighttpd before 1.4.35 allows remote attackers to execute arbitrary SQL commands via the host name, related to request_check_hostname.

[View Analysis/Description](#)

Severity CVSS Version 2.x CVSS Version 2.0

CVSS 3.x Severity and Metrics:

NIST: NVD

Base Score: CRITICAL

Vector: CVSS:3.1/(AV:N)/(AC:L)/(PR:N)/(UI:N)/(S:U)/(C:H)/(H:J)/A:H

NVD Analysts use publicly available information to associate vector strings and CVSS scores. We also display any CVSS information provided within the CVE List from the CNA.

Note: NVD Analysts have published a CVSS score for this CVE based on publicly available information at the time of analysis. The CNA has not provided a score within the CVE List.

References to Advisories, Solutions, and Tools

By selecting these links, you will be leaving NIST webspace. We have provided these links to other web sites because they may have information that would be of interest to you. No inferences should be drawn on account of other sites being referenced, or not, from this page. There may be other web sites that are more appropriate for your purpose. NIST does not necessarily endorse the views expressed, or concur with the facts presented on these sites. Further, NIST does not endorse any commercial products that may be mentioned on these sites. Please address comments about this page to nvd@nist.gov.

Hyperlink	Resource
http://download.fhg-tpd.net/ftp/httpd_security/lighttpd_wc_2014_01.txt	Exploit Vendor Advisory
http://nvd.nist.gov/entry/patch/tracking/CVE-2014-2323	Third Party Advisory
http://lists.opensuse.org/opensuse-security-announce/2014-03/msg00213.html	Mailing List Third Party Advisory
http://lists.opensuse.org/opensuse-security-announce/2014-03/msg00213.html	Mailing List Third Party Advisory

Dashboard

Online
3d 7h 43m

Status

Offline Last Week

49d 9h 15m
Uptime

WAN-1 Online

0.21 Mbps
Downlink

0.25 Mbps
Uplink

WAN-2 Online

0 Mbps
Downlink

0 Mbps
Uplink

Clients & VPN Sessions

53
LAN Clients

0
VPN Sessions

Alarms

0 CRITICAL

0 MAJOR

0 MINOR

Last 24 Hours

Threats by Category Last 7 Days

● DoS Attack: 90.0% ● Unauthorized Access: 20.0%

Threats and Vulnerabilities

Threats: 10

Vulnerabilities: 151

Threats by Location Last 7 Days

#	Country	Threats
1	India	1
2	France	3
3	United States	2
4	Germany	1
5	United Kingdom	1
6	Switzerland	1

● Application Attack ● DoS Attack ● Information Leak ● Malware ● Miscellaneous ● Suspicious Traffic ● Unauthorized Access

Port Status

Details

Product Name: NSE 3000

MAC Address: 30:09:C7:...

Total Ports: 6

Port Status: 3 Up / 3 Down

VPN Sites: 2

WAN 1 IP Address: 10.0.0.1

WAN 2 IP Address: 0.0.0.0

NSE Group: ... 8 June 23

Sync Status: In Sync

Serial Number: GHY...

Software Version: 1.3.1-r2

Description:

Top Active Alarms

Top Vulnerabilities

#	ID	Severity	Clients Impacted
1	CVE-2019-9517	Critical	2
2	CVE-2021-44790	Critical	2
3	CVE-2021-26691	Critical	2
4	CVE-2021-39275	Critical	2
5	CVE-2022-31813	Critical	2

Top Vulnerable Clients

#	Name	Total	Severity
1	A0:36:9F:28...	59	Critical
2	50:9A:4C:1F...	50	Critical
3	34:17:EB:A3...	50	Critical
4	88:61:13:E2...	11	Critical
5	00:E0:4C:68...	9	Critical

Dashboard X Applications X Vulnerabilities X

Time Range: Last 24 Hours Period: 15 Minutes

Total Vulnerabilities

0

Critical Vulnerabilities

0

Major Vulnerabilities

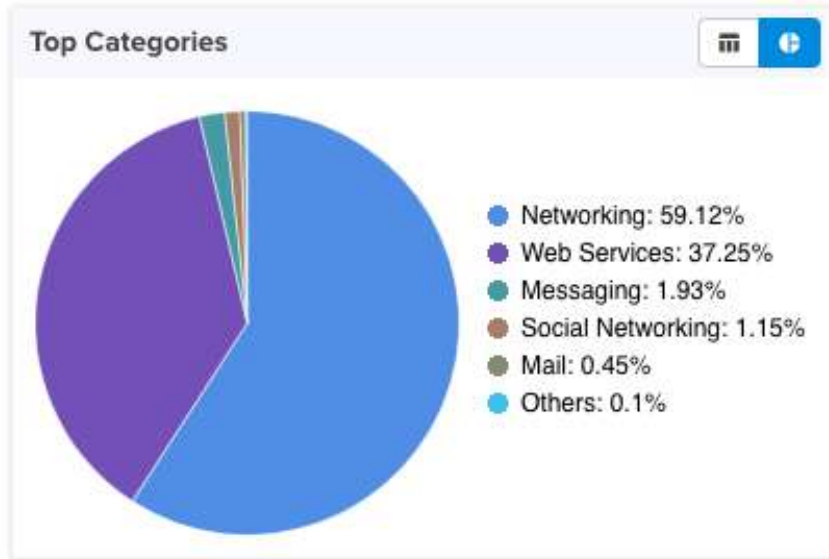
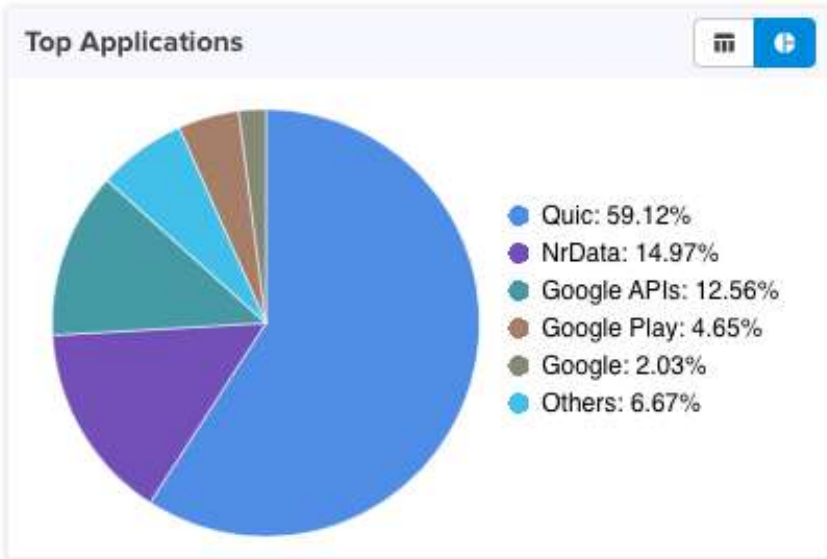
0

Minor Vulnerabilities

0

Client Details

Name	V2029
IPv4 Address	192.168.200.83
MAC Address	22:AD:3C:4E:16:80
Manufacturer	Vivo
Device Type	MOBILE
Operating System	Android
OS Version	12
Last Seen	Wed Aug 17 2022 11:00:25 G...

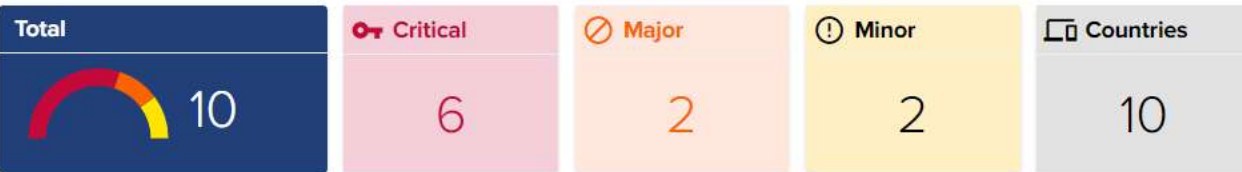


Lima > Newman

Dashboard Notifications Configuration **Security** Network Performance Software Update Clients

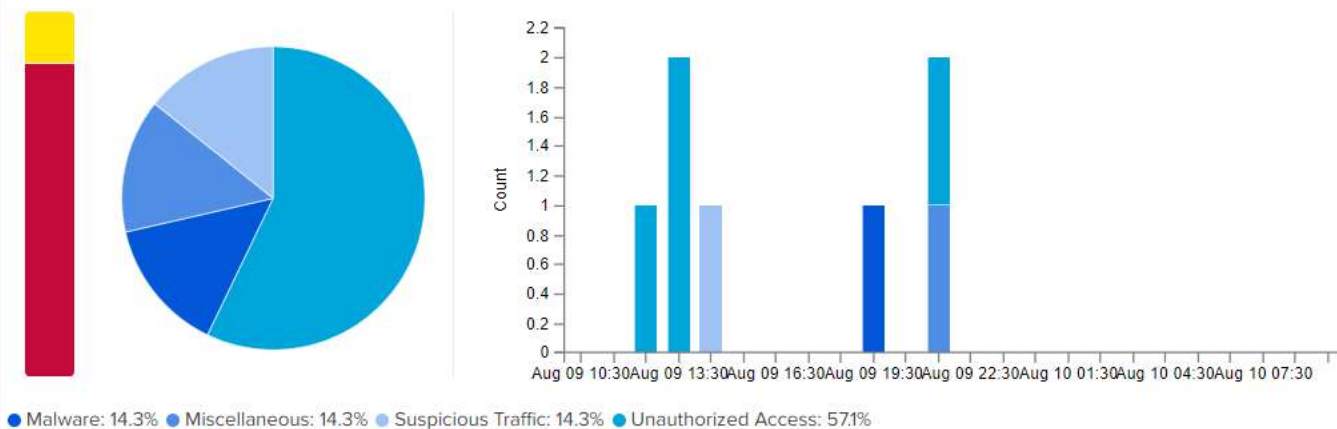
Threats Vulnerabilities

Time Range: Last 24 Hours Period: 5 Minutes



Threats by Category

Last 24 Hours



Threats by Location

Last 24 Ho

#	Country	Threats
1	Hungary	1
2	Ireland	1
3	Sweden	1
4	Unknown	1
5	China	1
6	United Kingdom	1
7	United States	1



● Application Attack ● DoS Attack ● Information Leak ● Malware ● Miscellaneous ● Suspicious Traffic ● Unauthorized Access

Apply Filter(s)

Severity	Date and Time	Snort Class	Category	Country
Critical	Tue Aug 09 2022, 12:39:57 PM	unsuccessful-user	Unauthorized Access	Hungary
Critical	Tue Aug 09 2022, 12:19:56 PM	attempted-admin	Unauthorized Access	United Kingdom
Critical	Tue Aug 09 2022, 8:57:00 PM	successful-user	Unauthorized Access	Ireland
Critical	Tue Aug 09 2022, 1:25:33 PM	successful-admin	Unauthorized Access	Sweden
Critical	Tue Aug 09 2022, 6:43:26 PM	trojan-activity	Malware	United States
Critical	Tue Aug 09 2022, 9:17:01 PM	policy-violation	Miscellaneous	China
Major	Wed Aug 10 2022, 9:21:06 AM	rpc-portmap-decode	Application Attack	Germany
Major	Wed Aug 10 2022, 8:51:04 AM	web-application-activity	Application Attack	Iran
Minor	Wed Aug 10 2022, 9:06:05 AM	icmp-event	Suspicious Traffic	India
Minor	Tue Aug 09 2022, 1:40:34 PM	not-suspicious	Suspicious Traffic	Unknown



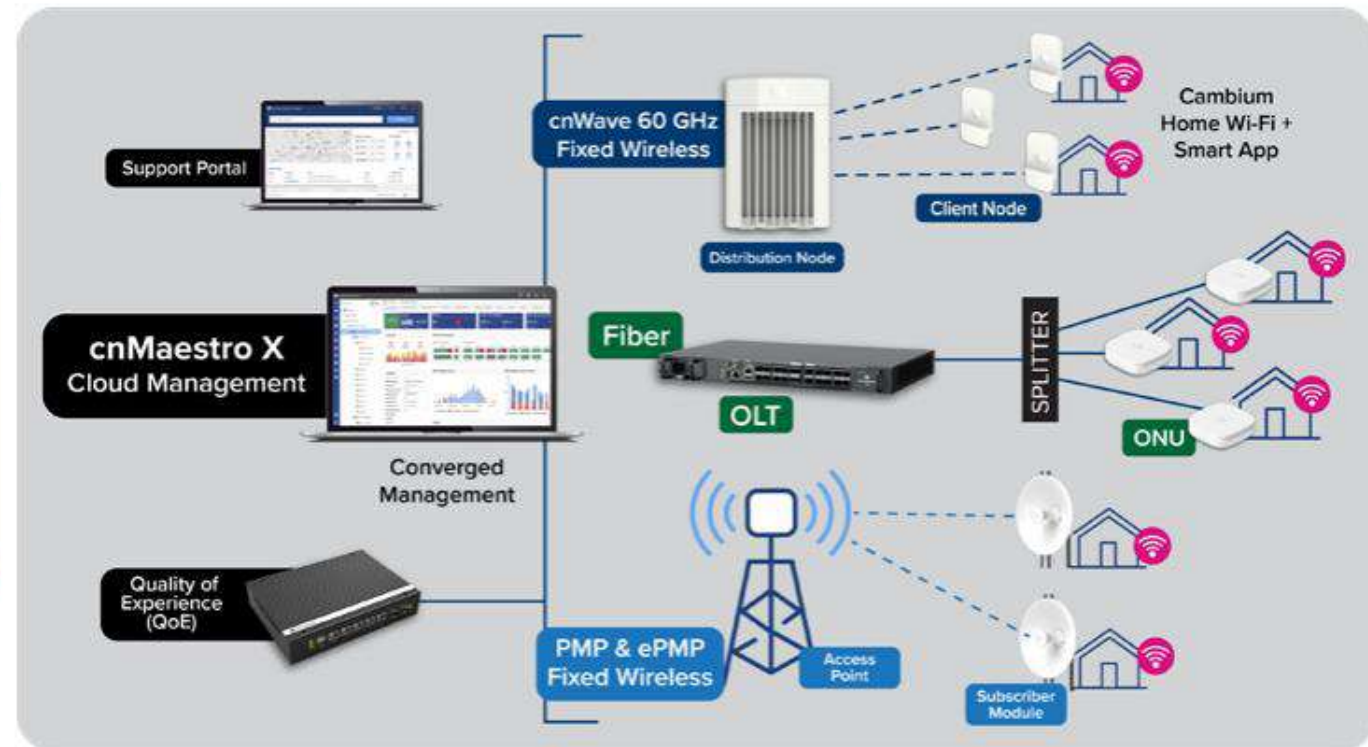
Cambium Networks™

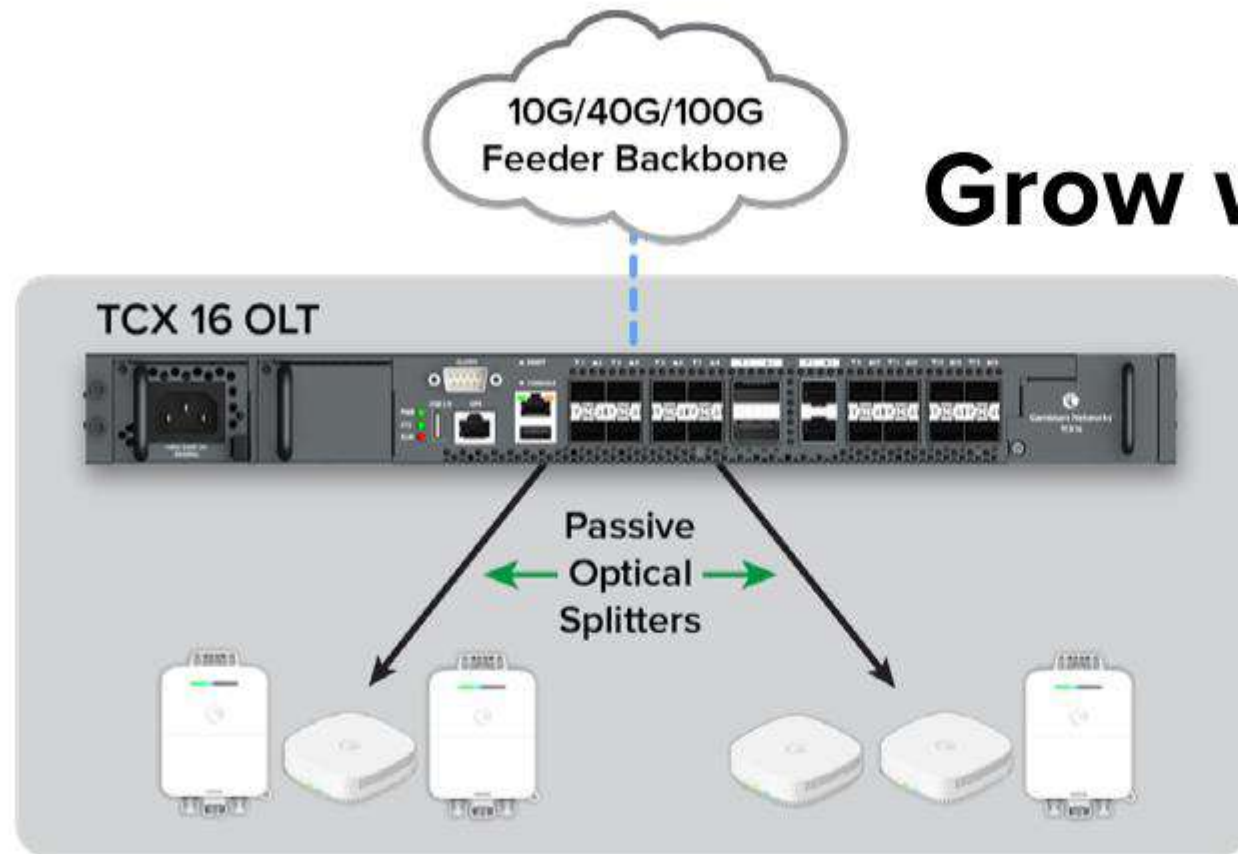
Network Infrastructure - Fiber

Maximize Your Options

Only Cambium Networks offers the ability to choose the technology that fits your business case and a single converged network centrally managed via a single pane of glass

- cnWave™ fixed wireless
- Combo PON fiber
- PMP 450 or ePMP™ fixed wireless





Grow with Reliability

Maximize your options with multi-Gigabit XGS-PON, Gigabit GPON, or a simultaneous combination of both on the same port with Combo PON. The platform is standards-based, making it an excellent choice for greenfield deployments or GPON upgrades when paired with other standards-based OLT/ONTs.

Interfaces

Uplink 2x QSFP28 (100 GE or 40 GE or 4x25 GE)
2x SFP28 / SFP+ (25 GbE or 10 GbE)

PON 8 or 16 PON Ports Supporting PON: GPON, XGS-PON, or Combo PON
Maximum Split Ratios: XGS-PON 1:256, GPON 1:128
(ITU-T G.9807.1, ITU-T G.984.1, ITU-T G.984.2, ITU-T G.984.3, ITU-T G.984.4)

Management Console ports: USB 2.0, D-SUB 9-Pin, 1x RJ-45 Out-of-Band Management (100/1000-BaseT)
In-band and out-of-band IPv4 & IPv6 Management

Hardware

Performance Non-blocking switching capacity: 300Gb/s
Jumbo frames: 9K, MAC address: 16K, VLAN number: 4K

Environmental 4+1 Left-to-Right Airflow Fan Modules (SDA FAN)
Operating temperature: -40°F to 149°F (-40°C to +65°C)
Relative humidity: 5% to 95%

Power Hot Swappable Redundant Power Modules (AC is a priority when using AC and DC)
AC PSU: Universal 250W AC (100 to 240VAC, 50 Hz to 60 Hz)
DC PSU: -48VDC 250W (-72 to -38.4VDC)

Features

Networking DHCP Relay, Option 82 Support
IGMP V2/V3 Multicast Support
VLAN tagging, Support IEEE 802.1Q, SVLAN, CVLAN, Q-in-Q
IEEE 802.1p QoS Service Prioritization Support

Single Management Interface 8 or 16 PON (Downlink) interfaces and 4 Uplink Interfaces.

Dimensions 440 x 260 x 44.5 mm
17.32 x 10.24 x 1.75 in

Management SNMP, Syslog, CLI, API, TR-069, and cnMaestro Support for ease of use

Network Protection G.8032 Ring protection, RSTP, Rogue ONT Detection, AES Encryption

Provisioning Advanced QoS, service rate limits, VLAN, Q-in-Q, full statistics engine

Regulatory

FCC, ICES, EN, IEC, CAN/CSA, ETSI, ANSI/UL, AS/NZS (details in product documentation)



DC PSU



AC PSU



Fan



PON Transceivers



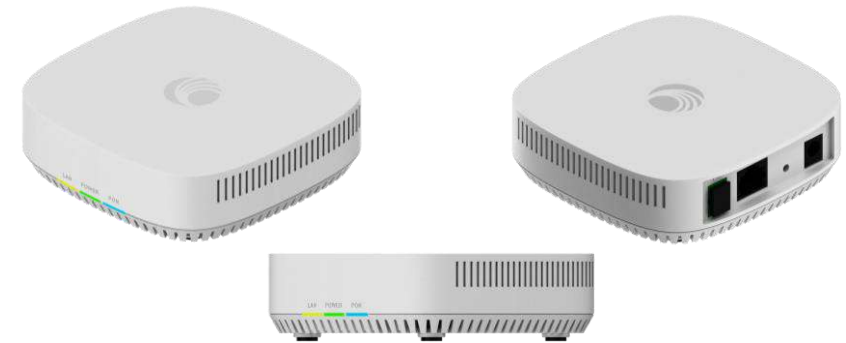
SGX00 Gigabit Indoor GPON

PON	GPON: 2.488 / 1.244 Gbps Wavelength: D: 1490 nm, U: 1310 nm TX Power: Class B+ 4-9 dBm RX Sensitivity: -28 to -8 dBm
LAN	LAN 10/100/1000 Base-T Ethernet
Dimensions	4.15 x 4.15 x 1.3 in (105 x 105 x 33mm)
Environment	Indoor 32° to 113°F (0° to 45°C) 10% to 95% non-condensing
Power	12V DC 1A included

SXX00 Multi-gigabit Indoor XGS-PON

PON	XGS-PON: 9.95 / 9.95 Gbps Wavelength: D: 1577 nm, U: 1270 nm TX Power: Class B+ 4-9 dBm RX Sensitivity: -28 to -8 dBm
LAN	10/100/1000/2500 Base-T Ethernet
Dimensions	4.15 x 4.15 x 1.3 in (105 x 105 x 33mm)
Environment	Indoor 32° to 113°F (0° to 45°C) 10% to 95% non-condensing
Power	12V DC 1A included

Indoor ONT / GPON or XGS-PON



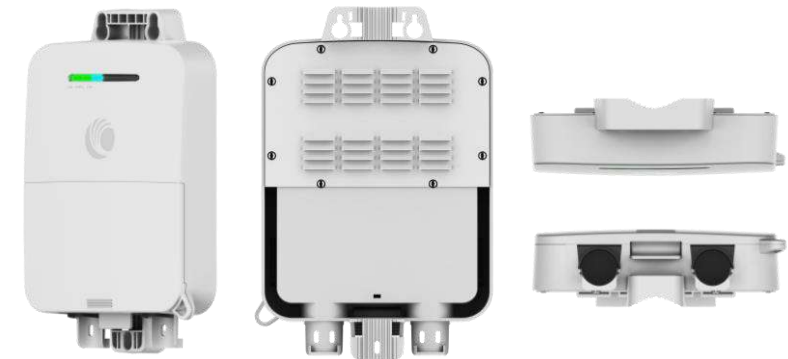
SGT00 Gigabit Outdoor GPON

PON	GPON: 2.488 / 1.244 Gbps Wavelength: D: 1490 nm, U: 1310 nm TX Power: Class B+ 4 to 9 dBm RX Sensitivity: -28 to -8 dBm
LAN	LAN 10/100/1000 Base-T Ethernet
Dimensions	8.8 x 12 x 3.14 in (224 x 305 x 80mm)
Environment	IP55 Outdoor -22° to 140°F (-30° to 60°C) 10% to 95% non-condensing
Power	30V DC 0.5A Cambium PoE included Standard polarity PoE supported

SXT00 Multi-gigabit Outdoor XGS-PON

PON	XGS-PON: 9.95 / 9.95 Gbps Wavelength: D: 1577 nm, U: 1270 nm TX Power: Class B+ 4-9 dBm RX Sensitivity: -28 to -8 dBm
LAN	10/100/1000/2500 Base-T Ethernet
Dimensions	8.8 x 12 x 3.14 in (224 x 305 x 80mm)
Environment	IP55 Outdoor -22° to 140°F (-30° to 60°C) 10% to 95% non-condensing
Power	30V DC 0.5A Cambium PoE included Standard polarity PoE supported

Outdoor ONT / GPON or XGS-PON



Back View

Top / Bottom

RV22 Wi-Fi 6 Home Mesh Router

With cnMaestro™ Response Center and Subscriber App

RV22 Quick Look

- 802.11a/b/g/n/ac, ax
- 5 GHz (3x3:2); 2.4 GHz (2x2:2)
- 4 x GbE RJ45 interface
- 12VDC, 2.5mm CP, P/S



cnMaestro Response Center

Response Center analytics deliver useful Insights and recommended actions to reduce the time to repair and eliminate truck rolls.

The intuitive cnMaestro subscriber workflow walks through the steps to set up a new subscriber and provision services. Use the same workflow tool to adjust managed broadband and Wi-Fi services.

- Planned release June 2024
- cnMaestro cloud micro-service
- Integrated case tracking
- Context-aware Wi-Fi Insights
- Issue → Recommendation → Actions
- Wi-Fi scanner
- Single pane-of-glass management

Self-Service Subscriber App

Empower your subscribers to be part of their own service delivery with the easy-to-use self-service Subscriber App. Curated data is clearly displayed on the dashboard, while useful tools are obvious and intuitive.

- Android or iOS
- Service Provider branded
- Self-service at your fingertip
 - Family Time
 - Web Content Filter
 - Speed Test
 - Optimize Wi-Fi

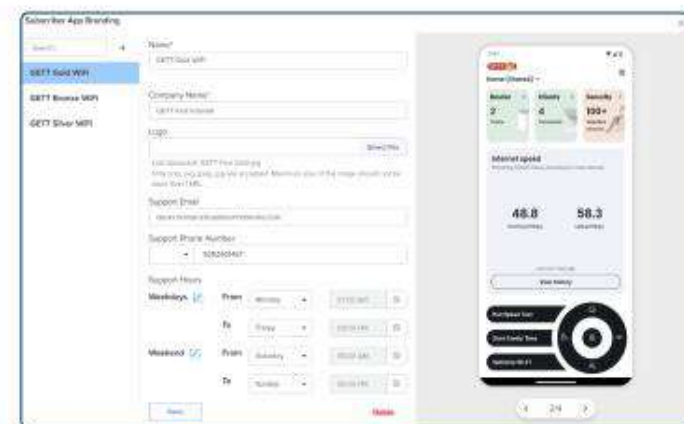


Subscriber and Service Workflows

cnMaestro subscriber workflows allow the provider to create a service and link it to a person and a site. Multiple services can be created in cnMaestro with each service including custom logos, service names, support contacts, and support hours. Use the service tool to create multiple levels of service with unique branding and information.

Assign a service to a subscriber and the subscriber site. Once linked, an invitation to manage the network will be automatically generated and sent to the subscriber email address.

- Create a Subscriber Profile
- Edit Subscriber App Branding
- Add a Subscriber
- Claim the AP
- Push Email Invitation



Subscriber App Branding

Search +

GETT Gold WiFi

GETT Bronze WiFi

GETT Silver WiFi

Create customized App logos that represent each level of service subscribed. In this example, the service provider (GETT) has a gold, silver, and bronze level.

Update customer support hours to reflect the purchased service level.



Cambium Networks™

Network Infrastructure – FWA
Point to Point / Point to Multi-Point

60GHz Infrastructure at a Fraction of the Cost of Fiber

- **Fast and Simple:**

- Ladders/rooftops vs. trenching
- Couple of hours vs. days/weeks/months
- No authorizations

- **Familiar Tools**

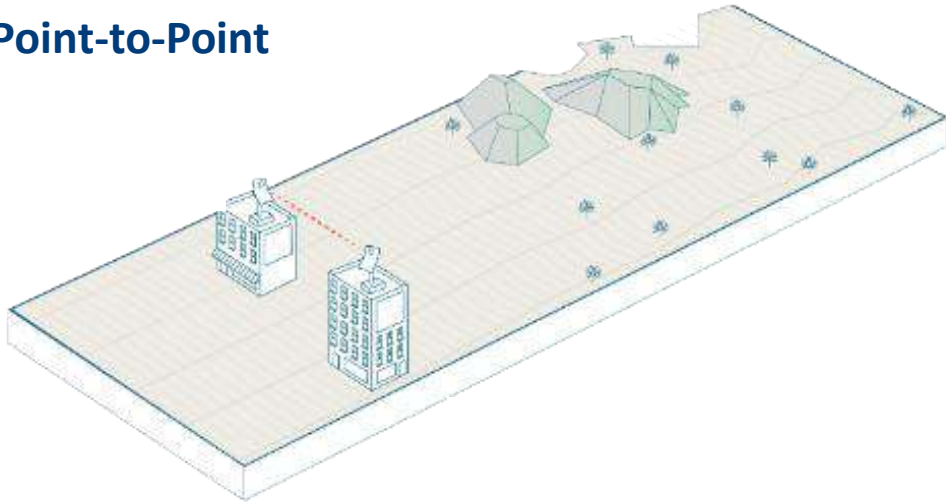
- Unlicensed spectrum doesn't interfere with 5 GHz
- Layer 2 bridged networks
- PoE power

- **Fiber-like speeds wherever needed**

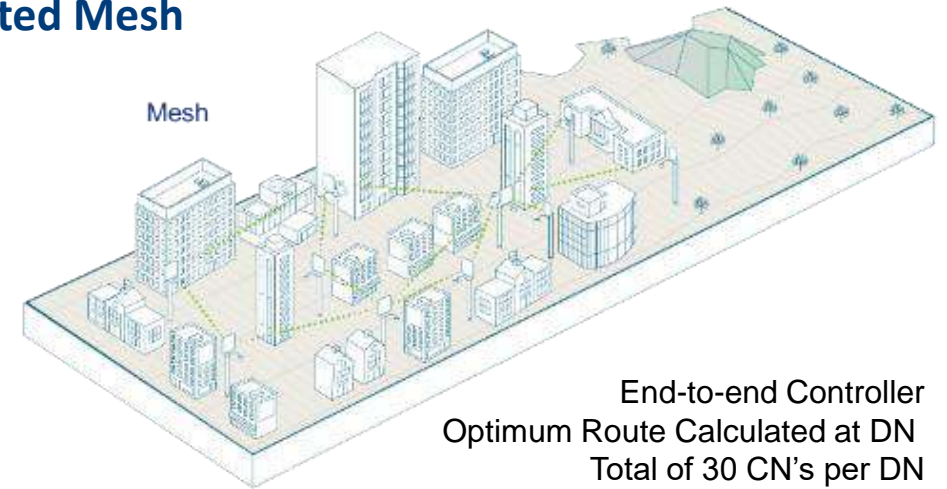
- Internet
- Building to Building connectivity
- Wi-Fi extension
- Video Surveillance
- Temporary events
- IoT



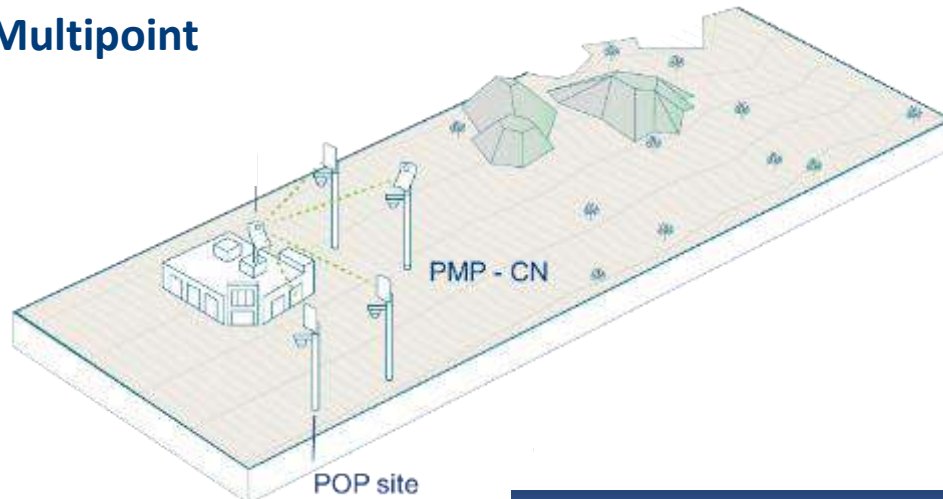
Point-to-Point



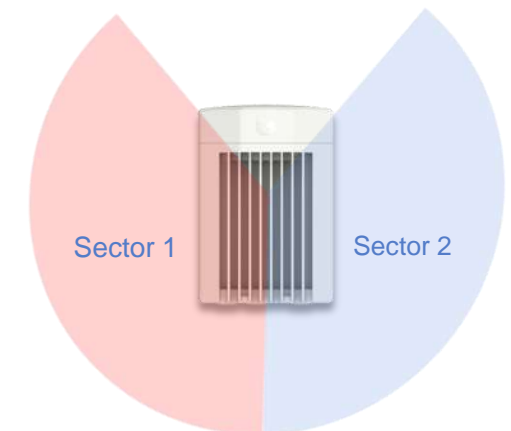
Distributed Mesh



Point-to-Multipoint



Distribution Node (DN) has 2 sectors
15 Clients Nodes (CN)
Total of 30 CN's per DN



Distribution Node



V5000
Dual Sector

Client Nodes (PMP or PTP)



V3000
High Gain
44.5 dBi Dish



V2000
Flexible
Mid-Range



V1000
Small
Form-Factor

All 60 GHz cnWave products include:

- Cloud or on-premises network management with cnMaestro™
- Optional advanced management features with cnMaestro X
- Network planning capabilities with cnHeat, LINKPlanner, and ANP
- On-board or Remote e2e Controller Software

- Layer 2 or layer 3 network connectivity
- IPv4 or IPv6 networking protocols
- Security with HTTPS interfaces and 128-bit AES encryption
- 3-year warranty
- Options for extended warranty, Cambium Care Pro, and advanced replacement

60GHz cnWave Performance



	V1000	V2000	V3000 – Small Dish	V3000 – Large Dish
Capacity (each direction)	Up to 1Gbps	Up to 1.8 Gbps	Up to 1.8 Gbps, CB 2.8 Gbps	Up to 1.8 Gbps, CB 2.8 Gbps
PTP – Range*	Up to 150 m	Up to 1.0 km	Up to 1.5 km	Up to 2 km
PMP – Range*	Up to 150 m	Up to 475 m	Up to 675 m	Up to 750 m
Form Factor	Small	Integrated Radome	Dish	Dish
Ease of PTP Alignment	Simple	Simple	Use the alignment tube	Use the alignment tube
Built-in I/O	Single 1000BaseT	2.5 GbE PoE In 2.5 GbE PoE Out	1000BaseT PoE In 1000BaseT PoE Out SFP+	1000BaseT PoE In 1000BaseT PoE Out SFP+
List Price	*	**	***	***

- Recommended ranges are rules of thumb. (MCS9 99.9% at 32 mm/hour rain)
- LINKPlanner should be used to determine range, capacity and fade margin for your specific geographic location and connectivity requirements

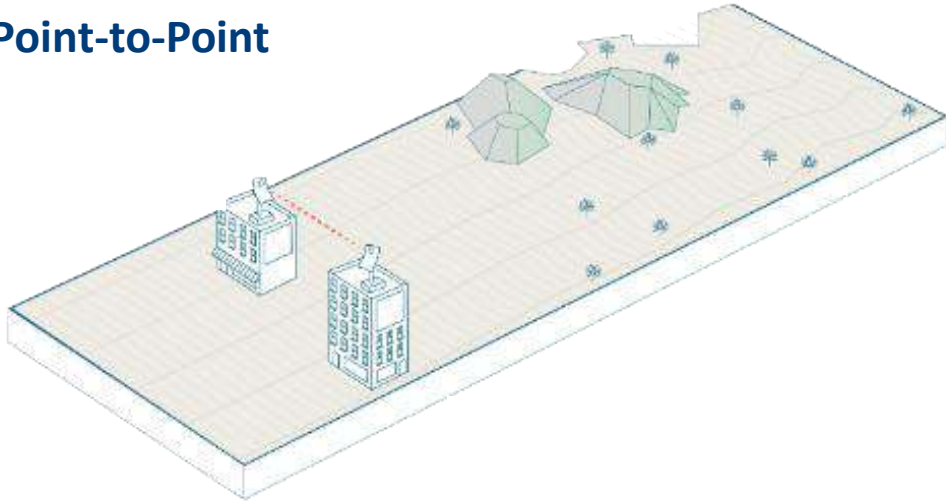
5GHz Infrastructure

- **Fast and Simple:**
 - Ladders/rooftops vs. trenching
 - Couple of hours vs. days/weeks/months
 - No authorizations
- **Familiar Tools**
 - Unlicensed spectrum
 - Layer 2 bridged networks
 - PoE power
- **High speeds wherever needed**
 - Internet
 - Building to Building connectivity
 - Video Surveillance
 - IoT

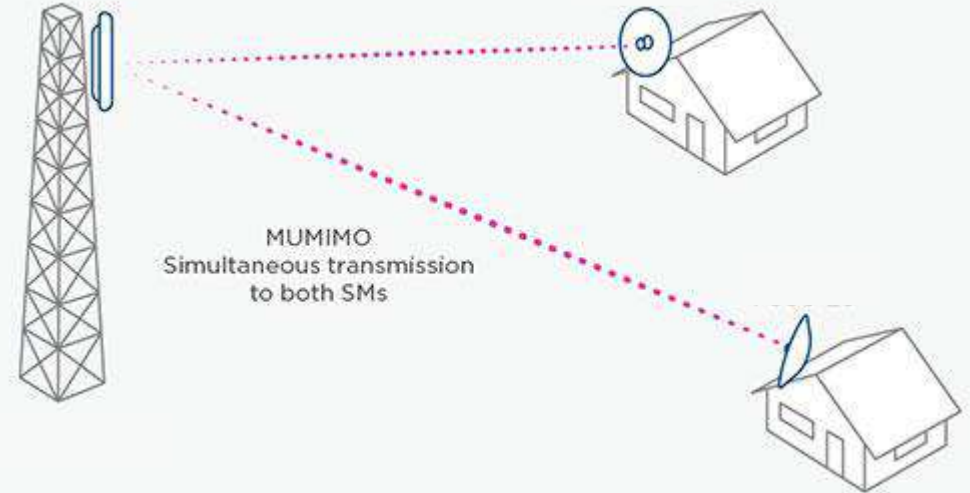
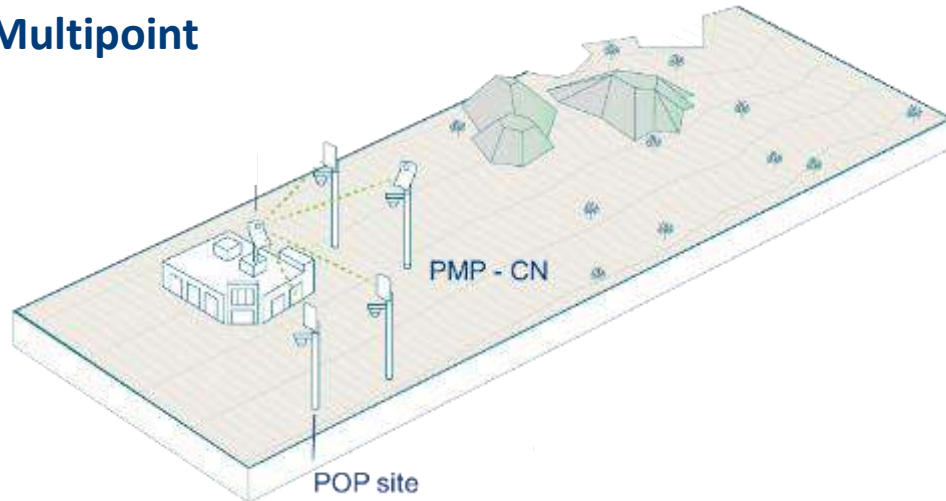


5GHz Deployment Options – ePMP/PTP

Point-to-Point



Point-to-Multipoint











Management & Configuration Centralized

5GHz ePMP Platform

	ePMP™ Force 300							ePMP 3000		
										
	Force 300-13L	Force 300-13	Force 300-16	Force 300-19	Force 300-25	Force 300 CSM	Force 300-19R	3000L	ePMP 3000 Access Point with MU-MIMO	
Frequency Band(s)	5 GHz									
Channel Size	20 40 80 MHz					+5/10 MHz in PTP		20 40 80 MHz		
Physical Layer	2 x 2 MIMO / OFDM 802.11ac Wave 2 256QAM							2 x 2 MIMO 802.11ac Wave 2 256QAM	4 x 4 MU-MIMO 802.11ac Wave 2 256QAM	
Interface	Gigabit							Gigabit	Gigabit/SFP	
Environmental	IP55					IP68		IP68	IP55	
Latency	5~7ms							5~7ms	5~7ms	
Performance	Up to 400 Mbps	Up to 600 Mbps							Up to 600 Mbps	1+ Gbps
Powering Methods	30V Cambium PoE							30V Cambium PoE	56V PoE 802.3at	
Power Consumption	12 W							12 W	21 W	
Max Tx Power	28 dBm	28 dBm	29 dBm	28 dBm	28 dBm	29 dBm	28 dBm	29 dBm	30 dBm	
Antenna	13 dBi Integrated	13 dBi Integrated	16 dBi Integrated	19 dBi Panel	25 dBi Dish	RP-SMA	19 dBi Panel	90/120° Sector:	4 x 4 MU-MIMO sector / Optional UL beamforming	
Modes	SM PTP	SM PTP	SM PTP	SM PTP	SM PTP	SM PTP	SM PTP	AP: 64 Subscribers	AP: 120 subscribers	

5GHz PTP

	Bridge-in-a-Box	Force 300-25	Force 425	PTP 550	PTP 550E	PTP 450	PTP 450i	PTP 670	PTP 700
									
Technology	802.11ac / 802.11ac	802.11ac Wave 2	802.11ax	802.11ac Wave 2	802.11ac Wave 2	Proprietary	Proprietary	Proprietary	Proprietary
Max Throughput	200//600Mbps	600 Mbps	1 Gbps	1.4 Gbps	1.4 Gbps	300 Mbps	300 Mbps	450 Mbps	450 Mbps
Frequency Range (GHz)	4.9–5.97	4.9–5.97	4.910 – 6.135	5.15–5.97	4.9–6.2	3.3–3.6 3.55–3.8 5.4–5.8	4.9–5.925	4.9–6.05	4.4–5.9
Line of Sight	LoS	LoS	LoS	LoS	LoS	LoS	LoS	LoS, nLoS, NLoS	LoS, nLoS, NLoS
Channel BW (MHz)	5/10/20/40	20/40/80	20/40/80	2x 20/40/80	2x 20/40/80	5/10/20/30/40	5/10/15/20/30/40	5/10/15/20/30/40/45	5/10/15/20/30/40/45
Latency	2–3 ms	2–3 ms	<5 ms	3–5 ms	3–5 ms	3–5 ms	3–5 ms	1–3 ms	1–3 ms
Tx Power	30 dBm	27 dBm	28 dBm	27 dBm	27 dBm	22 dBm	27 dBm	27 dBm	27 dBm
Top Modulation	256 QAM	MCS 0 (BPSK) to MCS 9 (256 QAM-5/6)	MCS 0 (BPSK)	256 QAM	256 QAM	256 QAM	256 QAM	256 QAM	256 QAM
Max Frame Size	1700 Bytes	1700 Bytes	1700 Bytes	1700 Bytes	1700 Bytes	1700 Bytes	1700 Bytes	9600 Bytes	9600 Bytes
Spectrum Management	Standby Spectrum Analyzer	Standby Spectrum Analyzer	Live Spectrum Analyzer	Dynamic Channel Selection	Dynamic Channel Selection	Standby Spectrum Analyzer	Standby Spectrum Analyzer	Dynamic Spectrum Optimization (DSO)	Dynamic Spectrum Optimization (DSO)
Dynamic Filter	No	No	No	No	No	No	Yes	No	Yes
IEEE 1588v2 & SyncE	No	No	No	No	No	No	No	Yes	Yes
TDD Sync	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
IP Rating	IP55/67	IP55	IP55	IP66/67	IP66/67	IP 66/67	IP66/67	IP66/67	IP66/67
Encryption	AES 128	AES 128	AES 128	AES 128	AES 128	AES 128	AES 128	AES 128/AES 256	AES 128/AES 256
QOS	3 Level	3 Level	3 Level	3 Level	3 Level	2 Level	4 Level*	8 Levels	8 Levels
Integrated Antenna	13/16/19 dBi	16 dBi	25 dBi or 16 dBi	23 dBi	23 dBi	14 dBi	23 dBi	23 dBi	23 dBi
Power Consumption	7W	12 W	28 W	<25 W	<25 W	12 W	<25 W	<30 W	<30 W



Cambium Networks™

Thank You!

Any Questions?

luca.lobue@cambiumnetworks.com
