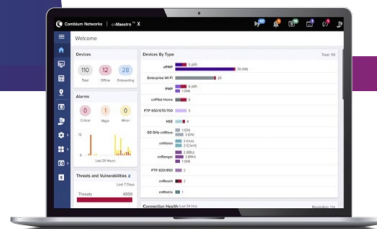# cnMatrix EX3000 Series Switches

EX3000 Series Quick Look

- Zero-touch deployments
- Policy-based automation
- Auto-device profiling and segmentation
- Non-blocking, line-rate architecture with fully featured L2/L3 switching

cnMaestro

Cloud-Managed, Secure, Enterprise-Grade Switching

Cambium Networks' next-generation switching platform offers a cloud-managed, high-performance, feature-rich, enterprise-grade ethernet switching solution.

The cnMatrix™ platform of switches provides:

- Easy and simple, free cloud (or on-premise) management with cnMaestro™ Network Management.

- Zero-touch deployment of switches makes installation easy.

- Policy-based automation eliminates manual and time consuming configuration, during adds, moves, and changes of network devices.

- Enhanced security with automated device profiling and segmentation.

- Unified wired-wireless access solution.

The cnMatrix series of fully managed switches delivers full Layer 2 and Layer 3 capabilities with enhanced access security. Depending on the model, the cnMatrix EX3000 Series offers flexibility with SFP+ (10 Gbps) fiber uplink ports. Some switches support SFP-28 (25 Gbps). The EX3000 series also comes with dual removable power supplies and features up to 60W/90W of PoE per port. These switches come with a 5-year limited lifetime warranty.

cnMatrix EX30xxR-P & EX30xxRM-P Series Switches

Access Point Specifications

	EX3028R-P	EX3052R-P	EX3030RM-P	EX3052RM-P
Throughput	128 Gbps	176 Gbps	420 Gbps	368 Gbps
Forwarding Rate in Mpps (64 Byte Packets)	120	120	120	120
Packet Buffer	1.5 MB	1.5 MB	1.5 MB	1.5 MB
10/100/1000 Ports	24	48	0	24
2.5 G Ports	n/a	n/a	24	24
Energy Efficient Ethernet	✓	✓	✓	✓
Uplink Ports	4 SFP+	4 SFP+	6 SFP28	4 SFP28
PoE+ Enabled Ports 802.3af/at/bt (30W)	12	24	0	24
PoE++ Enabled Ports 802.3af/at/bt (60W)	12	24	0	0
PoE++ Enabled Ports 802.3af/at/bt (90W)	0	0	24	24
Serial Console	✓	✓	✓	✓
USB	✓	✓	✓	✓
Out-of-Band Management Port	✓	✓	✓	✓
Rack Mount Kit	✓	✓	✓	✓
Internal Fans	2	2	3	3
Reset Button	✓	✓	✓	✓
MAC Address Table Size	16K	16K	32K	32K
Flash Storage	256 MB	256 MB	256 MB	256 MB
DRAM	1 GB	1 GB	1 GB	1 GB
VLANs (simultaneous)	4K	4K	4K	4K
QinQ	Yes	Yes	Yes	Yes
LACP/Trunking	8 LAGs/8 links per 8 LAGs/8 links per LAG			
QoS Priority Queues	8	8	8	8
PVRST	64	64	64	64
Ingress/Egress ACL	512	512	512	512
Static ARP Entries	512	512	512	512
ARP Entries	1000	1000	1000	1000
Static Routes	64	64	64	64
Dynamic Routing	512	512	512	512
IGMP Multicast Groups	512	512	512	512
Policy Based Automation	✓	✓	✓	✓

cnMatrix EX30xxR-P & EX30xxRM-P Series Switches

Specifications – All Models

Quality of Service	ACL mapping/marking of ToS/DSCP (COS)	**Layer 2 Feature Set**	802.1d, RSTP, 802.1s - MSTP, PVRST
	ACL mapping marking of 802.1p		VLAN, port, protocol, 802.1q
	ACL mapping to priority queue		QinQ
	DiffServ support		802.1x authentication
	Honoring DSCP and 802.1p (CoS)		Auto MDI/MDIX
	Traffic shaping/metering		BPDU guard, root guard, loop guard
	Priority queue management using Weighted Round Robin (WRR), Strict Priority (SP) and a combination of WRR and SP		IGMP snooping v1/v2/v3*, fast leave
			IGMP proxy
Traffic Management	ACL-based inbound rate-limiting policies		LLDP/LLDP MED
	Broadcast, multicast, and unknown unicast rate limiting		Static MAC
	Inbound rate limiting per port		Flow control per port
	Outbound rate limiting per port/queue		Port mirroring: Port based, ACL based, VLAN based
Security	802.1x authentication		Port isolation/private VLAN edge
	MAC authentication/MAB		Link aggregation groups (static/LACP)
	Guest VLAN/failover VLAN authorization		Rate limiting/storm control
	Local & radius authentication/authorization		Jumbo frame (9K)
	Radius/Tacacs/Tacacs+		DHCP snooping
	Secure shell		BPDU filtering
	Secure copy (SCP)		Broadcast/multicast/unlearned unicast (storm control)
	Local username/password		DoS protection
	Port security		Ping/TraceRoute/ICMPv6
	DHCP snooping		
	Dynamic ARP inspection		
Security (ACL) Permit/deny actions for inbound IP and layer 2 traffic classification based on:	Source/destination IP address	**Layer 3 Feature Set**	Inter-VLAN routing
	TCP/UDP source/destination port		Static ARPs
	IP protocol type		Static routes
	Type of Service (ToS) or differentiated services (DSCP) field		DHCP relay w/multiple helpers per VLAN
	Source/destination MAC address		Dynamic routing – RIPv1/v2
	EtherType		Dynamic routing – OSPFv2
	IEEE 802.1p user priority		Route redistribution
	VLAN ID		Dynamic ARP inspection
	RFC 1858—Security considerations for IP fragment filtering		

Management	cnMaestro	Out-of-band Ethernet management	Display log messages multiple terminals*
	Industry standard Command Line Interface (CLI)	SSH/SSH v2	TFTP/SFTP
	DHCP client	SNMP v1/v2/v3	Telnet client/server
	Embedded web management (HTTP/HTTPS)	DHCP relay	IPv6 management
	Embedded DHCP server	Simple Network Time Protocol (SNTP)	Password management
	USB file management and storage	Local/remote system logging	Auto-install support for firmware images and config files*
		Policy-based automation	

* Feature to be included in a future release.

cnMatrix EX30xxR-P & EX30xxRM-P Series Switches

Hardware Specifications

	EX3028R-P	EX3052R-P	EX3030RM-P	EX3052RM-P
Power Supply	CRPS dependent	CRPS dependent	CRPS dependent	**CRPS dependent**
Max Switch Power (with Traffic)	61W	82.5W	TBD	**TBD**
MTBF (Hours)	547,054	471,517	TBD	**TBD**
Flash Storage	256 MB	256 MB	256 MB	256 MB
DRAM	1 GB	1 GB	1 GB	1 GB
Weight	3.679 kg (8.11 lb)	4.904 kg (10.81 lb)	TBD	**TBD**
Dimensions	4.44 x 28 x 44.15 cm (1.73 x 11.02 x 17.38 in)	4.4 x 39.4 x 44.15 cm (1.73 x 15.51 x 17.38 in)	TBD	**TBD**
CPU Speed	800 MHz	800 MHz	TBD	**TBD**
LEDs per Port	Link/Activity, PoE	Link/Activity, PoE	TBD	**TBD**
PoE+ Power Budget	CRPS	CRPS	CRPS	**CRPS**
PoE + Voltage	54V	54V	54V	**54V**
PoE Max Power per Port	30W, 60W	30W, 60W	30W, 90W	**30W, 90W**
Rack Mountable	Yes 1U	Yes 1U	Yes 1U	**Yes 1U**
Temperature Ranges	0° to 50°C (32° to 122°F)	0° to 50°C (32° to 122°F)	0° to 50°C (32° to 122°F)	**0° to 50°C (32° to 122°F)**
Operating Humidity	55° at 95% RH	55° at 95% RH	TBD	**TBD**
Storage Temperature	-40° to 70°C (-40° to 158°F)	-40° to 70°C (-40° to 158°F)	**TBD**	TBD

Acoustic Noise dBA per Switch (Ambient Temperature)

EX3028R-P	**1200W CRPS** 73.3dB -<33C, 73.4dB 30C-40C, 73.6dB >43C
	930W CRPS 71dB -<33C, 71.2dB 30C-40C, 71.5dB >43C
	600W CRPS 69.9dB -<33C, 70dB 30C-40C, 70.4dB >43C
EX3052R-P	**1200W CRPS** 76.4dB -<33C, 76.5dB 30C-40C, 76.96dB >43C
	930W CRPS 72.8dB -<33C, 73dB 30C-40C, 73.3dB >43C
	600W CRPS 72dB -<33C, 72.2dB 30C-40C, 72.5dB >43C

cnMatrix EX30xxR-P & EX30xxRM-P Series Switches

IEEE Standards

Core Switching Features	IEEE 802.1ab—Link Layer Discovery Protocol (LLDP) IEEE 802.1D—Spanning tree compatibility IEEE 802.1p—Ethernet priority with user provisioning and mapping IEEE 802.1s—Multiple spanning tree compatibility IEEE 802.1Q—Virtual LANs with port-based VLANs IEEE 802.1X—Port-based authentication 802.3az—Energy-efficient Ethernet	**Advanced Layer 2 Features**	Authentication, Authorization, and Accounting* (AAA) IEEE 802.1ad (QinQ) Broadcast/Multicast/Unknown unicast storm recovery DHCP Snooping IGMP Snooping Querier Independent VLAN Learning (IVL) support Jumbo Ethernet frame support Port MAC locking Port mirroring Protected ports Static MAC filtering
VLAN Support	IEEE 802.1W—Rapid spanning tree compatibility IEEE 802.3—10BASE-T IEEE 802.3u—100BASE-T IEEE 802.3ab—1000BASE-T IEEE 802.3ac—VLAN tagging IEEE 802.3ad—Link aggregation IEEE 802.3x —Flow control Bridged Local Area Networks - Amendment 07: Multiple Registration Protocol	**Layer 3 Features**	Inter-VLAN Routing Static ARP Static Routes RFC 2131 – DHCP Relay RFC 2328 – OSPF Version 2 RFC 2453 – RIP Version 2 PIM-SM – Multicast routing
IEEE 802.1Q-2003	RFC 4541—Considerations for Internet Group Management Protocol (IGMP) Snooping switches ANSI/TIA-1057—LLDP-MEDia Endpoint Discovery (MED)		

*Feature to be included in a future release.

cnMatrix EX30xxR-P & EX30xxRM-P Series Switches

System Facilities

Event and error logging facility	RFC 896—Congestion control in IP/TCP networks	RFC 2132—DHCP options and BOOTP vendor extensions
Run-time and configuration download capability	RFC 951—BOOTP	RFC 2819—Remote Network Monitoring Management Information Base
PING utility	RFC 1034—Domain names - concepts and facilities	RFC 2865—RADIUS client
FTP Transfers via IPv4/IPv6	RFC 1035—Domain names - implementation and specification	RFC 2869—RADIUS Extensions
RFC 768—UDP	RFC 1321—Message digest algorithm	RFC 3579—RADIUS support for EAP
RFC 783—TFTP	RFC 1534—Interoperability between BOOTP and DHCP	RFC 3580—IEEE 802.1X RADIUS usage guidelines
RFC 791—IP	RFC 2021—Remote network monitoring management information base version 2	RFC 3164—BSD syslog protocol
RFC 792—ICMP	RFC 2030—Simple Network Time Protocol (SNTP)	RFC 3580—802.1X RADIUS Usage Guidelines
RFC 793—TCP		
RFC 826—ARP		
RFC 894—Transmission of IP datagrams over Ethernet networks		

Management

SNMP v1, v2, and v3	RFC 4716—SECSH public key file format	RFC 2818—HTTP over TLS
SSH 1.5 and 2.0	RFC 4419—Diffie-Hellman group exchange for SSH transport layer protocol	RFC 3268—AES cipher suites for transport layer security
RFC 4252—SSH authentication protocol	SSL 3.0 and TLS 1.0	Telnet
RFC 4253—SSH transport layer protocol	RFC 2246—TLS protocol, version 1.0	Web GUI
RFC 4254—SSH connection protocol		
RFC 4251—SSH protocol architecture		

SNMP MIBs

Enterprise MIBs for Full Configuration Support of Switching Features	RFC 1213—MIB II	RFC 2674—VLAN MIB	RFC 3273—RMON groups 1, 2, and 3
	RFC 1493—Bridge MIB	RFC 2737—Entity MIB version 2*	RFC 3291—Textual conventions for internet network addresses
	RFC 1612—DNS resolver MIB extensions	RFC 1213 MIB II	
	RFC 1643—Definitions of managed objects for Ethernet-like interface types	RFC 2819—RMON groups 1, 2, 3, and 9	RFC 3434—RMON Groups 1, 2, and 3
	RFC 2233—Interfaces group MIB using SMI v2	RFC 2863—IF-MIB	RFC 4022—TCP-MIB
	RVC 2613—SMON MIB	RFC 2925—Definitions of managed objects for remote ping, traceroute, and lookup operations	RFC 4113—UDP-MIB
	RFC 2618—RADIUS authentication client MIB		
Quality of Service MIBs	MIBs for full configuration support of DiffServ, ACL, and Cos functionality		
	RFC 3289—Management information base for DiffServ architecture (read-only)		

* Feature to be included in a future release.

cnMatrix EX30xxR-P & EX30xxRM-P Series Switches

Quality of Service

|	
Classify Traffic Based on Same Criteria as ACLs and Optionally	Mark the IP DSCP or precedence header fields
	Police the flow to a specific rate with two- color aware support
	RFC 2474—Definition of the differentiated services field (DS field) in the IPv4 and IPv6 headers
	RFC 2475—An architecture for differentiated services
	RFC 2597—Assured forwarding per-hop behavior
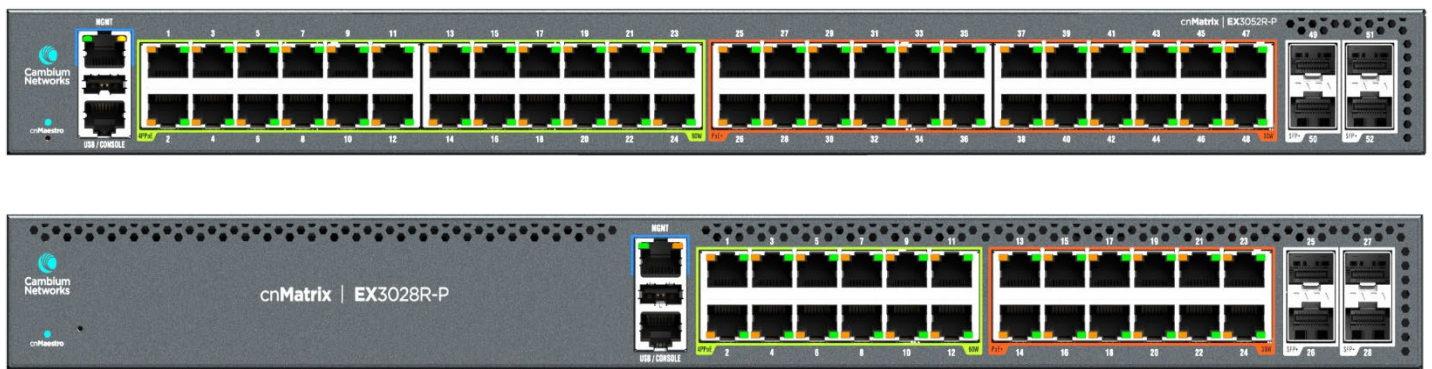
EX3028R-P

EX3052R-P / CRPS

cnMatrix EX30xxR-P & EX30xxRM-P Series Switches

cnMatrix Ordering Information		
Type	**Part #**	**Description**
EX3028R-P	MXEX3028GxPA10	Intelligent Ethernet Switch, 24 1G (12 PoE+ ports and 12 4PPoE ports (60W)) and 4 SFP+ ports, Dual/Removeable power supplies (not included) No power cord, non-USA
EX3052R-P	MXEX3052GxPA10	Intelligent Ethernet Switch, 48 1G (24 PoE+ ports and 24 4PPoE ports(60W)) and 4 SFP+ ports, Dual/Removeable power supplies (not included) No power cord, non-USA
EX3028R-P	MXEX3028GxPA11	Intelligent Ethernet Switch, 24 1G (12 PoE+ ports and 12 4PPoE ports (60W)) and 4 SFP+ ports, Dual/Removeable power supplies (not included) No power cord, USA only
EX3052R-P	MXEX3052GxPA11	Intelligent Ethernet Switch, 48 1G (24 PoE+ ports and 24 4PPoE ports (60W)) and 4 SFP+ ports, Dual/Removeable power supplies (not included) No power cord, USA only
CRPS	MXCRPSAC600A0	600W total Power, no power cord
CRPS	MXCRPSAC930A0	930W total Power, no power cord
CRPS	MXCRPSAC1200A0	1200W total Power, no power cord
CRPS	MXCRPSDC600A0	600W total Power, 36v–72v, includes 3m cable connector
CRPS	MXCRPSDC930A0	930W total Power, 36v–72v, includes 3m cable connector
CRPS	MXCRPSDC1200A0	1200W total Power, 36v–72v, includes 3m cable connector
Power Cord	N000900L092A	AC line cord, US Type B, 15A, 1.2 m C13 connector
Rack Ears	MX-EXTXFULLA-1	cnMatrix rack mount kit: Full-width switch
Transceiver	SFP-10G-SR	10G SFP+ MMF SR Transceiver, 850 nm. -40°C to 85°C (-40°F to 185°F)
Transceiver	SFP-1G-SX	1G SFP MMF SX Transceiver, 850 nm. -40°C to 85°C (-40°F to 185°F)
Transceiver	SFP-10G-LR	10G SFP+ SMF LR Transceiver, 1310 nm. -40°C to 85°C (-40°F to 185°F)
Transceiver	SFP-1G-LX	1G SFP SMF LX Transceiver, 1310 nm. -40°C to 85°C (-40°F to 185°F)
Transceiver	SFP-1G-Copper	1000Base-T (RJ45) SFP Transceiver. -40°C to 85°C (-40°F to 185°F)
Transceiver	SFP-10G-Copper	10G Base-T (RJ45) SFP Transceiver. 0°C to 70°C (-40°F to 185°F)

cnMaestro X Ordering Information		
Type	**Part #**	**Description**
cnMaestro X for EX3028R-P	MSX-SUB-3028R-P-1	cnMaestro X for one EX3028R-P. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 1-year subscription
cnMaestro X for EX3028R-P	MSX-SUB-3028R-P-3	cnMaestro X for one EX3028R-P. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 3-year subscription
cnMaestro X for EX3028R-P	MSX-SUB-3028R-P-5	cnMaestro X for one EX3028R-P. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 5-year subscription
cnMaestro X for EX3052R-P	MSX-SUB-3052R-P-1	cnMaestro X for one EX3052R-P. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 1-year subscription
cnMaestro X for EX3052R-P	MSX-SUB-3052R-P-3	cnMaestro X for one EX3052R-P. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 3-year subscription
cnMaestro X for EX3052R-P	MSX-SUB-3052R-P-5	cnMaestro X for one EX3052R-P. Creates one Device Tier20 slot. Includes Cambium Care Pro support. 5-year subscription

cnMatrix EX30xxR-P & EX30xxRM-P Series Switches

EX3028R-P Cambium Care Advanced Ordering Information	
Part #	Description
CCADV-SUP-EX3028R-P-1	Cambium Care Advanced, 1-year support for one EX3028R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-SUP-EX3028R-P-3	Cambium Care Advanced, 3-year support for one EX3028R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-SUP-EX3028R-P-5	Cambium Care Advanced, 5-year support for one EX3028R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-EX3028R-P-1	Cambium Care Advanced Add-on to cnMaestro X, 1-year support for one EX3028R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-EX3028R-P-3	Cambium Care Advanced Add-on to cnMaestro X, 3-year support for one EX3028R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-EX3028R-P-5	Cambium Care Advanced Add-on to cnMaestro X, 5-year support for one EX3028R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-RNW-EX3028R-P-1	Cambium Care Advanced Add-on to cnMaestro X, 1-year support renewal for one EX3028R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-RNW-EX3028R-P-3	Cambium Care Advanced Add-on to cnMaestro X, 3-year support renewal for one EX3028R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-RNW-EX3028R-P-5	Cambium Care Advanced Add-on to cnMaestro X, 5-year support renewal for one EX3028R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW

EX3052R-P Cambium Care Advanced Ordering Information	
Part #	Description
CCADV-SUP-EX3052R-P-1	Cambium Care Advanced, 1-year support for one EX3052R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-SUP-EX3052R-P-3	Cambium Care Advanced, 3-year support for one EX3052R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-SUP-EX3052R-P-5	Cambium Care Advanced, 5-year support for one EX3052R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-EX3052R-P-1	Cambium Care Advanced Add-on to cnMaestro X, 1-year support for one EX3052R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-EX3052R-P-3	Cambium Care Advanced Add-on to cnMaestro X, 3-year support for one EX3052R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-EX3052R-P-5	Cambium Care Advanced Add-on to cnMaestro X, 5-year support for one EX3052R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-RNW-EX3052R-P-1	Cambium Care Advanced Add-on to cnMaestro X, 1-year support renewal for one EX3052R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-RNW-EX3052R-P-3	Cambium Care Advanced Add-on to cnMaestro X, 3-year support renewal for one EX3052R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW
CCADV-UPG-RNW-EX3052R-P-5	Cambium Care Advanced Add-on to cnMaestro X, 5-year support renewal for one EX3052R-P. 24x7 TAC support, SW updates, and NBDS advance replacement for HW

cnMatrix EX30xxR-P & EX30xxRM-P Series Switches

EX3052R-P Cambium Care Pro Ordering Information	
Part #	Description
CCPRO-SUP-EX3028R-P-1	Cambium Care Pro, 1-year support for one EX3028R-P. 24x7 TAC support, SW updates
CCPRO-SUP-EX3028R-P-3	Cambium Care Pro, 3-year support for one EX3028R-P. 24x7 TAC support, SW updates
CCPRO-SUP-EX3028R-P-5	Cambium Care Pro, 5-year support for one EX3028R-P. 24x7 TAC support, SW updates
CCPRO-SUP-EX3052R-P-1	Cambium Care Pro, 1-year support for one EX3052R-P. 24x7 TAC support, SW updates
CCPRO-SUP-EX3052R-P-3	Cambium Care Pro, 3-year support for one EX3052R-P. 24x7 TAC support, SW updates
CCPRO-SUP-EX3052R-P-5	Cambium Care Pro, 5-year support for one EX3052R-P. 24x7 TAC support, SW updates

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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