



Cambium Networks™

# ONE NETWORK

for the Oil and Gas Industry





## Meeting the **CONNECTIVITY DEMANDS** of the Oil and Gas Industry

Modern oil and gas operations require integration across IT and OT organizations, regardless of downstream, midstream, and upstream applications. Cambium's ONE Network offers a broad range of fixed wireless, fiber, Wi-Fi, switching, and security technologies within a single management platform, enabling the right tool for the right job.

Operators face myriad challenges while adapting to rapidly changing market price and demand conditions:

- **Interference in unlicensed bands**
- **Improving operational efficiencies and safety in hazardous environments**
- **Need for higher capacity at facilities driven by video data**
- **Lack of support for legacy devices in fields**
- **Aging infrastructure to support new technology**
- **Lack of skilled workforce**
- **Cost justification per asset/well**



**Operators need to deliver real-time monitoring, measurement, and analytics that optimize performance, safety and efficiency while delivering fast return on investment with a long sustainable lifecycle.**

Cambium's wireless solutions enable applications in exploration, drilling, field-area networks, pipelines, refineries, and throughout the oil and gas value chain. Cambium technology integrates video, voice, email, and data traffic alongside SCADA and other process data from RTUs, sensors, and control points—on a single all-IP network featuring centralized end-to-end administration.



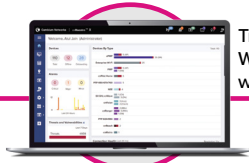
# Why Is Cambium the RIGHT CHOICE?

**Cambium’s approach to delivering connectivity solutions aligns with these goals and applications providing:**

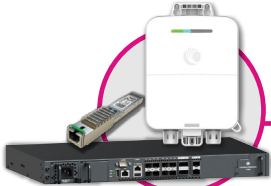
- **Broad range** of purpose-built wireless technologies to cover indoor and outdoor spaces from short-range to long distances
- **High capacity**, ranging from multiple Gbps to narrow-band SCADA at kbps
- **Secure solutions** designed to meet stringent oil/gas IT security requirements
- **Scalability**—efficiently use available spectrum to build dense networks even in the presence of high noise floors
- **Economical deployments** with low TCO (Total Cost of Ownership)
- **Central management** with cnMaestro™—all Cambium products are managed from a single pane of glass
- **Reliability**, with more than 10 million radio modules deployed in 150 countries in some of the world’s harshest environments
- **Long lifecycles**— radios designed for long lifespans and backwards compatibility for elegant migration
- **ONE Network**—single supplier with common management, training, and support
- **Global team** of highly-skilled strategic partners for design, engineering, support, installation, and logistics services

# ONE Network for Oil & Gas Operators

**cnMaestro X™**  
Single-Cloud Dashboard



True cloud management for Wi-Fi, Ethernet, and broadband, with MSP control



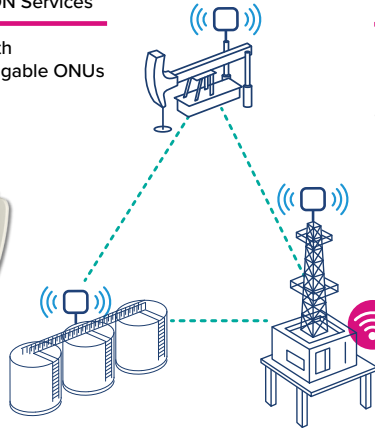
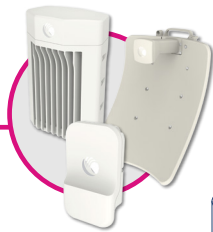
**Fiber to the Field**  
10 Gbps Symmetrical PON Services

GPON and XGS-PON with indoor/outdoor and pluggable ONUs

Now including ATEX/HAZLOC and C1D2

**Wireless Backbone**  
Multi-Gigabit 60 GHz

High-density distributed wireless networks that deliver fiber speeds in ultra-reliable mesh/PTP/PMP topologies



**Long-Range Backhaul**  
Fixed Wireless

High-capacity licensed microwave and ruggedized PTP/PMP unlicensed solutions for scale and reliability



**Indoor Wi-Fi**  
Multi-Purpose Usage

Right-sized solutions, including software-defined radios for offices, classrooms, hospitality, public spaces, high density areas

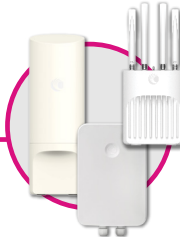


**Switching**  
Wireless-optimized Ethernet

8/24/48 ports GE, PoE+ and SFP+ with integrated policy-based automation

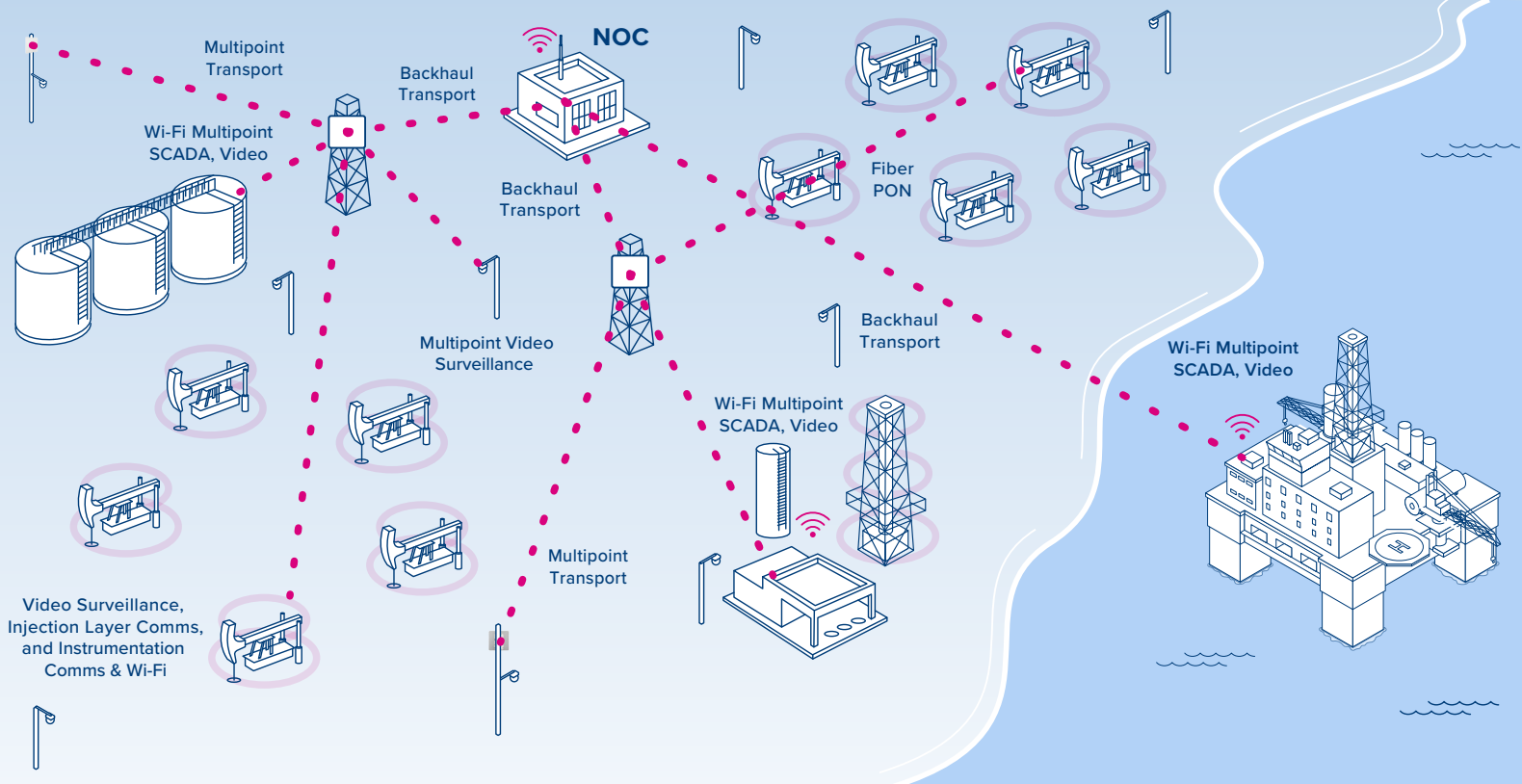
**Outdoor Wi-Fi**  
Superior flexibility and range

Optimized integrated antennas  
Integrated mounting



## Cambium Networks Industrial Solutions

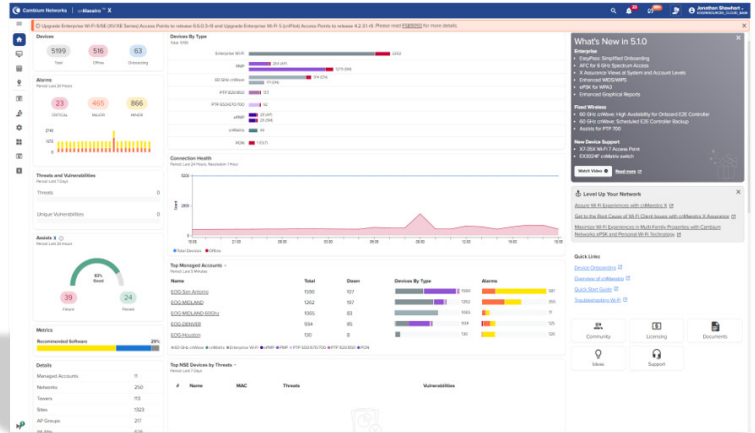
Management	Wi-Fi Access Points	Ethernet Switches	Fixed Wireless	Security & SD-WAN
<ul style="list-style-type: none"> <li>• End-to End Management</li> <li>• Cloud or on-premises options</li> <li>• Wireless Network Planning</li> </ul>	<ul style="list-style-type: none"> <li>• Indoor Wi-Fi 6/6E</li> <li>• High density Wi-Fi 6/6E</li> <li>• Wall/desktop mount Wi-Fi 6</li> <li>• Outdoor Wi-Fi 6/6E</li> </ul>	<ul style="list-style-type: none"> <li>• Gigabit Ethernet</li> <li>• Multi-gigabit Ethernet</li> <li>• Ruggedized Gigabit Ethernet</li> </ul>	<ul style="list-style-type: none"> <li>• High-density distributed 60 GHz</li> <li>• Point-to-multipoint distribution in 3/5/6 GHz</li> <li>• Fiber PON for fiber to the field and campus environments</li> <li>• Point-to-point backhaul with licensed microwave and 5/6 GHz</li> </ul>	<ul style="list-style-type: none"> <li>• Firewall and IoT Security</li> <li>• SD-WAN edge</li> <li>• LAN vulnerability assessment</li> <li>• Network services</li> </ul>



## Cambium has been delivering solutions to the oil and gas industry for many years across widely varying applications including:

- » Transport for SCADA and process control data
- » Remote facility connectivity
- » Field-area network (FAN) broadband connectivity
- » Fiber (GPON) to the well pad
- » Migration from serial to all-IP networks
- » IT/OT convergence
- » Video surveillance and security
- » Voice services
- » Indoor and outdoor Wi-Fi access networks
- » Refinery turnarounds
- » Temporary deployments
- » Lease kill
- » Offshore and over-water communications

# Proven Solutions in Oil and Gas — Texas Operator Leverages Cambium’s ONE Network



A large oil services organization in the West Texas Permian Basin leveraged a broad set of Cambium technologies to solve connectivity challenges—from carpeted space Wi-Fi to the most remote well pads and tank batteries. The entire network is managed with a single pane of glass using cnMaestro Network Management.

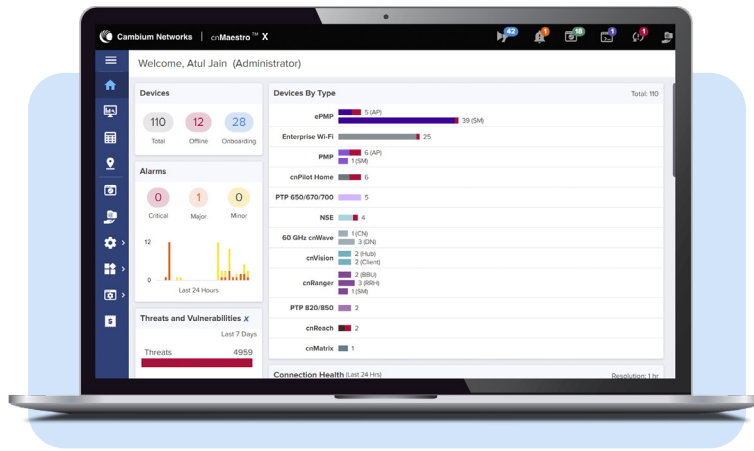
## Elements of the ONE Network:

- 120+ licensed microwave links
- 100+ unlicensed sub-5 GHz PTP links
- 1,000+ 60 GHz nodes
- 290+ 3/5/6 GHz PMP sectors
- 80+ enterprise Ethernet switches
- 500+ indoor Wi-Fi Access Points
- 2,200+ Outdoor Wi-Fi access points
- GPON fiber to well pad

## Applications:

- Pad-/facility-level communications
- Migration from narrow-band serial to broadband TCP/IP
- Video surveillance (employee safety and flare monitoring)
- Indoor/outdoor Wi-Fi guest access (7,000 users per day)
- Methane and gas monitoring
- Legacy mesh network upgrades
- Connectivity for drilling rigs and trailers
- Fiber backups and alternative runs





## Simple and Sophisticated Management

cnMaestro X offers elastic scalability and a single-pane-of-glass management to deliver secure, end-to-end network and wireless lifecycle management to simplify operations and ongoing maintenance on the wired and wireless network. The solution includes:

- **APIs and Webhooks:** Restful APIs and webhooks for integration with existing OSS/BSS systems and event monitoring
- **Long-Term Historical Data:** 2-year data retention for FWB and 1-year data retention for Enterprise and IIoT devices
- **Advanced Captive Portal Capabilities:** 500 portals, 30,000 max vouchers, 1-year client login history

### Client Lifecycle Management with cnMaestro X + Assurance

To simplify operation, the system manages the complete lifecycle of your Cambium network—onboarding, configuration, troubleshooting and reporting.

#### Key benefits:

- Single console for the network— Wi-Fi, switching, security, and fixed wireless
- Simple and easy-to-navigate user interface for fast time to productivity
- Powerful troubleshooting tools for rapid problem resolution
- Flexible integration and extensibility via APIs and webhooks



**Centralized integrated communication systems deliver real value to energy providers. Incremental improvements are time consuming and can only get you so far—but by focusing on solving centralized management of the end-to-end network, we reduced the total project timeline by 25%.”**

– Peter Cappiello, CEO, Future Technologies Ventures (a Premier Cambium Networks integrator partner)

# cnMatrix Hardened Switches for Industrial Networks



## cnMatrix TX2000 Series

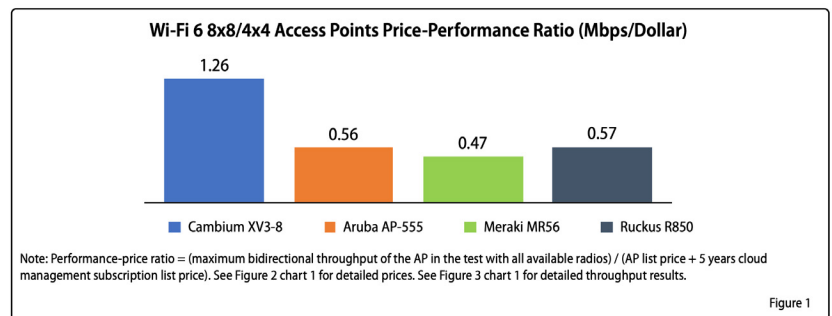
- PoE & passive PoE, high-power PoE (90W) options
  - 802.3af/at/bt: Up to 90W
  - Passive 54V: Up to 90W
  - Passive 24V: Up to 15W
- Integrated Cambium Sync: Dual sources
- Low-voltage passive PoE
- Extended temperature range: -10°C–65°C
- 802.3af/at
- Removable/redundant PS
- Ideally suited for PMP 450m, 450i, ePMP™ networks and 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 temperature range: -10°C–65°C
- 802.3af/at
- Fixed internal power supplies
- Ideally suited for ePMP networks

## Proven **BEST IN CLASS** Total Cost of Ownership



The Tolly Group, an independent testing analysis organization, tested Wi-Fi 6 access points and concluded that Cambium Networks’ products outperformed Aruba, Meraki (Cisco) and Ruckus in performance and total cost of ownership.

Read the report here:

<https://www.cambiumnetworks.com/resource/the-tolly-group-tests-wi-fi-6-cambium-networks-delivers-highest-performance/>

# Cambium's ONE Network meets the connectivity demands of the oil and gas industry.

- » Purpose Built
- » Reliable
- » Sustainable
- » Single-Pane-of-Glass Management
- » Proven TCO
- » Trusted Support



**Cambium Networks™**  
Connectivity That Just Works

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