Cambium Networks™

Wireless Connectivity
Solutions for Water Utilities

AS AUTOMATION, REMOTE MONITORING, AND THE USE OF VIDEO SURVEILLANCE RISES, the need for higher capacity data networks is accelerating. The fact that these services are required across the entire operating area magnifies the challenge. Reliance on traditional copper circuits is not an option – the circuits cannot support the required data rates, and service providers are retiring the copper circuits as fast as they can due to maintenance costs. Fiber technology has high installation time and costs. Public networks with 4G offer some relief, but likely do not provide the necessary coverage and come with administrative burdens and high subscription costs.

Private fixed wireless data networks offer secure scalable communication networks for the water industry, and are increasingly becoming the network of choice.

Private fixed wireless data networks can be architected to:

- Meet the geographic coverage required
- Deliver the data rates required to meet discreet applications
- Provide secure connectivity

Wireless Backhaul Transport

Multipoint Wireless Transport

RESERVOIR   EXTRACTION   STORAGE

RF Spectrum
Licensed spectrum at 450 and 900 MHz, operating in 25 kHz channels is an appropriate choice for low capacity Supervisory, Control and Data Acquisition (SCADA), programmable logic controller (PLC), and Digital Water Meter (DWM) networks. Unlicensed spectrum at 5 GHz is readily available and an ideal solution to transport video surveillance and provide broadband access at remote sites. Shared Access Spectrum at 3.5 GHz, is an ideal solution that mitigates the high cost of licensed spectrum while providing protection from potential interference.

Network Design
A hybrid network composed of a high capacity microwave core, with licensed and unlicensed spurs, and licensed and unlicensed distribution access solutions; using narrow and wideband radios can meet the operational requirements water utilities have today; and be flexible to accommodate future growth and expansion. Further, private networks avoid the recurring costs and operational complexity of subscription services from 3G/4G operators, provide complete control over traffic prioritization and service level agreements, and remain entirely behind the utilities firewall to ensure maximum information assurance.

A trusted wireless IP-based communications infrastructure enables water utilities to:

- Improve service quality
- Maximize operation efficiency and reduce communications costs
- Reduce service outage time and repair expenses
- Enable the transition from legacy communications methods
- Minimize security risk
- Leverage one network for multiple applications
- Capacity and flexibility to accommodate future roadmap capabilities
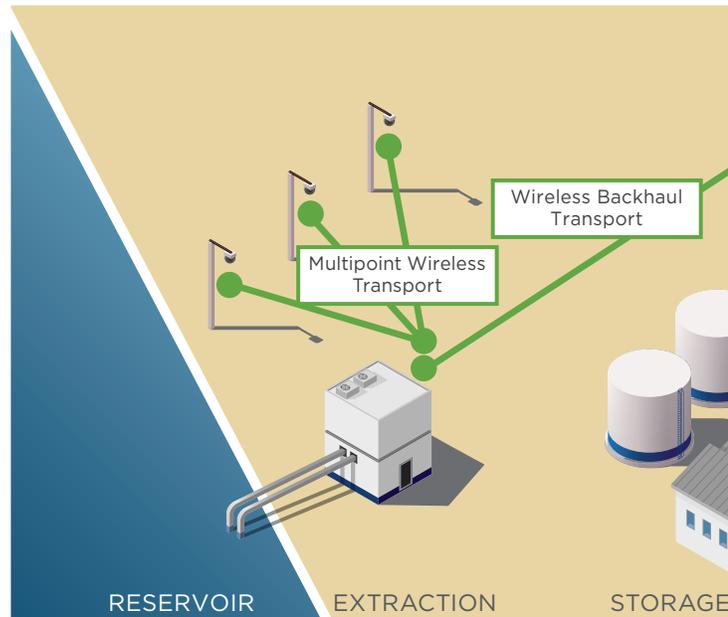
Coverage
Communications coverage can be customized to meet the needs of the water utility. Operators and Planners can quickly and confidently design the network to reach urban, suburban, and rural locations with the throughput, reliability, and security required to support the applications needed with minimal investment in communications infrastructure.

Integration
Cambium solutions integrate voice, video, and Internet traffic such as e-mail and web traffic alongside SCADA and PLC data from remote stations, sensors, and control points on a single all-IP network managed from a single centralized end-to-end view of the network.

Field Communications with Wireless Broadband
Maximize efficiency and minimize costs with a private IP network tailored to meet the specific needs of the business. Wireless broadband is rapidly deployed and enables utilities to connect the people and things from any place in the operation. A private wireless network provides highly reliable communications for concurrent applications and yields the highest level of connectivity at the lowest cost.

POTABILIZATION   **DISTRIBUTION**   **WASTEWATER TREATMENT**
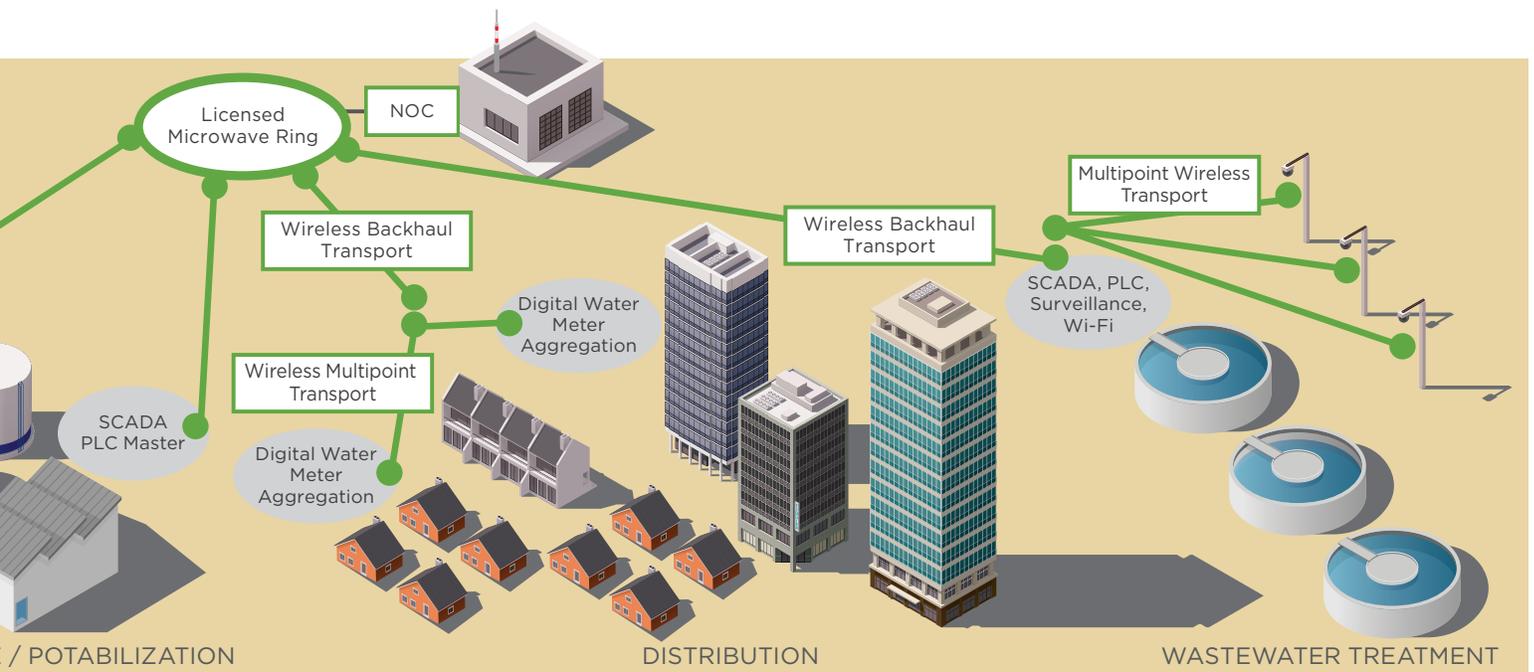
Applications

Digital Water Meter Aggregation Backhaul – Establish a reliable backhaul communications infrastructure that connects Smart Metering.

Transport for SCADA and PLC Process Control Data – Deploy high-speed connectivity for multiple purposes in substations for SCADA, PLC, data transfer, and security. Provide low latency real time monitoring and control of facilities.

Video Surveillance – Reduce downtime and losses due to vandalism by monitoring sensors and deploying 24/7 video surveillance at high value locations

Remote Office Connectivity – Equip remote locations with high-speed connectivity for data, VoIP, and streaming video.

Long Range Point-to-Point Wireless Backhaul
- Licensed Microwave and Unlicensed Backhaul

Wide-Area Point-to-Multipoint Wireless Access and Sensor Data Aggregation
- Licensed and Unlicensed Wide Area Networks

Wi-Fi Access Layer Networks
- Indoor Enterprise Class Wi-Fi
- Outdoor Hotspot and Enterprise Class Wi-Fi

Single Pane of Glass Network Management
- Bird's eye view of Field Area Network
- Rapid on-boarding and provisioning of new nodes
- End-to-end performance and fault management
- Ease of management and reporting
- Centralized firmware and software management
- Lifecycle and inventory management

The Cambium Difference

- **Spectral Efficiency** – Provide the highest amount of information transfer in the least amount of scarce spectrum with industry award winning throughput.

- **Non-Line-of-Sight and Line-of-Sight Performance** – Optimize total network performance by selecting the technology that provides the highest performance in diverse terrain by tailoring the network to meet the needs of each specific location.

- **Licensed and Unlicensed Spectrum** – Leverage the investment in licensed spectrum where needed in populated areas while gaining the best use of the unlicensed spectrum in rural and remote locations to minimize total spectrum cost.

- **Security** – Maintain system availability and minimize cyber threats with a rich set of features to encrypt the traffic, secure the management and audit the changes in the communications network.

- **Scalability** – Connect up to thousands of individual locations with a synchronized network that enables RF frequencies to be re-used throughout the network to provide the highest level of connectivity in the least total amount of spectrum.

- **Reliability** – Deploy wireless broadband with confidence that it will work right the first time and continue to work 24/7 over the long haul.

- **Total Cost of Ownership** – Minimize the total cost of network ownership with one IP-based wireless network comprised of licensed and unlicensed backhaul and access components that can be rapidly deployed and perform reliably with minimum maintenance cost.

- **Sustainability** – Solutions designed to operate for years from a supplier with a proven track record of stability and sustainable product evolution.

Cambium Networks™

ABOUT CAMBIUM
NETWORKS

Cambium Networks is a leading provider of wireless broadband solutions offering connectivity worldwide. Through its extensive portfolio of reliable, scalable, and secure Wi-Fi and wireless broadband point-to-point (PTP) and point-to-multipoint (PMP) platforms managed by cloud-based software, Cambium Networks empowers all service providers - enterprises; governmental and military agencies; oil, gas and utility companies; internet service providers; and public safety entities - to build powerful communications networks that reach users from 250 kilometers across mountain tops down to the last meter on their devices, and intelligently manage their infrastructure through end-to-end network visibility and actionable analytics. Headquartered outside Chicago and with R&D centers in the U.S., Ashburton, U.K., and Bangalore, India, Cambium Networks sells through a range of trusted global distributors.

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