

# Campus Area Network Multi-Gigabit Wireless Connectivity

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CAMPUS AREA NETWORKS NEED RELIABLE, HIGH-SPEED CONNECTIVITY. COUPLED WITH THE FREE DESIGN AND INSTALLATION TOOLSET, THE VALUE AND LOWEST TOTAL COST OF OWNERSHIP FOR A TECHNOLOGY PARTNER LIKE CAMBIUM NETWORKS APPEARS INTO CLEAR VIEW.

## Campus Area Networks

**Everyone and everything needs to be connected.** Whether it's a classroom, an office building, video surveillance cameras or a smart city, reliable high-speed connectivity is a must. Network operators need to determine the best technology to provide the capacity and coverage while meeting economic constraints. Connectivity is needed in many campus locations such as universities, hospitals, large enterprise complexes and high schools with multiple buildings & temporary classrooms apart from the main structure. From an operator's point of view, Campus Area Networks (CAN) are usually described as a collection of Local Area Networks (LAN) interconnected across a limited amount of geography, which are normally close in proximity to one another.

Footprints in these Campus Area Networks can be dynamic. Most of these campus environments have some legacy cabling and fiber. As campuses grow, changes may include the addition of new buildings, parking facilities & lots, manufacturing facilities, and even landscaping & beautification projects. All of these changes introduce risk and change control of a wired Campus Area Network.

Generally, most newer campuses are using wireless due to the significant cost savings of wireless compared to structured cabling and trenching of fiber optics. Many of these campuses have used microwave or sub-6 GHz PTP technology for building and asset connectivity, which offers up to 600 Mbps. These networks are becoming stressed as new high-bandwidth applications such as video conferencing, video streaming applications and video surveillance cameras become more prevalent. The game is now changing.

## The Next Generation of Wireless Fiber

The new IEEE 802.11ay standard emerges as the new IEEE 802.11 WLAN standard. It significantly improves performance compared to IEEE 802.11ad, including new TDMA MAC/PHY, channel bonding, network synchronization and more client nodes per sector. Cambium Networks' cnWave platform is based on the 802.11ay standard. 802.11ay uses TDMA/TDD MAC/PHY control, which provides lower latency and jitter with guaranteed throughput for high-density deployments. In addition, synchronization is supported, which enables advanced scalability through intelligent spectrum reuse technology, previously not available in the 802.11ad standard. Cambium Networks' 60 GHz platform also supports channel bonding capabilities which effectively double the capacity. cnWave also supports the ability to connect more client nodes (up to 15 nodes per sector), which doubles the number of nodes from 802.11ad technology. With TDMA MAC/PHY, channel bonding, synchronization, more nodes and mesh support, the 802.11ay-based wireless solution now has an increasingly robust business case for implementation over fiber.

cnWave introduces mesh support based on the Open/R protocol. This technology introduces new design options for reliable self-healing networks previously not supported in 802.11ad. Network operators can now be assured that the networks that they design have built-in transport redundancy for maximum reliability and uptime. This reliability fortifies the network backhaul. It also exemplifies the compelling business case for high-capacity wireless deployments with fiber-like performance and, in all cases, wireless cannot be cut. This innovation highlights that further investment in 802.11ad-based equipment and networks is not a favorable option.

## Next-Generation Access Networks

By doubling the network capacity with cnWave, Campus Area Networks will be able to provide multi-gigabit wireless area networks that take full advantage of the capabilities in the Wireless Local Access Network (WLAN) with the 802.11ax standard, commonly referred to as Wi-Fi 6. Cambium Networks' portfolio of Wi-Fi 6 XV2-2 Access Points are available today and can be powered by Cambium Networks' full line of enterprise-grade cnMatrix switches. Both platforms display enterprise-grade features and performance but with a disruptively affordable price tag.

Automating capabilities in the network reduce the time and improves the consistency of provisioning networks. Cambium Networks' cnMatrix switching platform offers wireless-aware advanced features such as policy-based automation and zero-touch provisioning through Cambium Networks' feature-rich, centralized network management platform, cnMaestro. It is in the inherent nature of Cambium Networks' cnMaestro to view and manage the entire network fabric of backhaul, distribution, switching and access platforms through one pane of glass. Coupled with the free design and installation toolset, the value and lowest total cost of ownership for a technology partner like Cambium Networks appears into clear view.

Wi-Fi, Switching and Fixed Wireless Broadband			
Enterprise Wi-Fi & Switching	cnMatrix EX-Series Switches		<ul style="list-style-type: none"> <li>8/16/24/48 Ports, 4 x SFP+</li> <li>PoE options: 400 W - 1000 W</li> <li>Enterprise-grade L2/L3 functionality</li> <li>Policy Automation &amp; Zero-Touch Provisioning</li> </ul>
	Wi-Fi 6 XV2-2		<ul style="list-style-type: none"> <li>802.11ax Wi-Fi 6 Indoor Access Point (AP)</li> <li>4x4 MU-MIMO</li> <li>Cambium Networks' first 802.11ax indoor AP</li> </ul>
Fixed Wireless Broadband	LTE		<ul style="list-style-type: none"> <li>Fixed LTE</li> <li>Integrated RAN and EPC</li> <li>2.5 and 3 GHz CBRS</li> </ul>
	PMP 450m		<ul style="list-style-type: none"> <li>14x14 cnMedusa Massive MU-MIMO</li> <li>3 GHz CBRS and 5 GHz</li> <li>3-5x capacity compared to PMP 450i</li> <li>Most spectrally efficient solution on the market today</li> </ul>
	ePMP 3000		<ul style="list-style-type: none"> <li>4x4 MU-MIMO &amp; 80 MHz channel support</li> <li>Higher capacity and spectral efficiency</li> <li>6 GHz development underway</li> </ul>
	60 GHz		<ul style="list-style-type: none"> <li>Gigabit throughput</li> <li>Software-defined radio</li> <li>802.11ay/Terragraph-certified</li> <li>Wireless fiber solution</li> </ul>

### ABOUT CAMBIUM NETWORKS

Cambium Networks empowers millions of people with wireless connectivity worldwide. Its wireless portfolio is used by commercial and government network operators as well as broadband service providers to connect people, places and things. With a single network architecture spanning fixed wireless and Wi-Fi, Cambium Networks enables operators to achieve maximum performance with minimal spectrum. End-to-end cloud management transforms networks into dynamic environments that evolve to meet changing needs with minimal physical human intervention. Cambium Networks empowers a growing ecosystem of partners who design and deliver gigabit wireless solutions that just work.

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