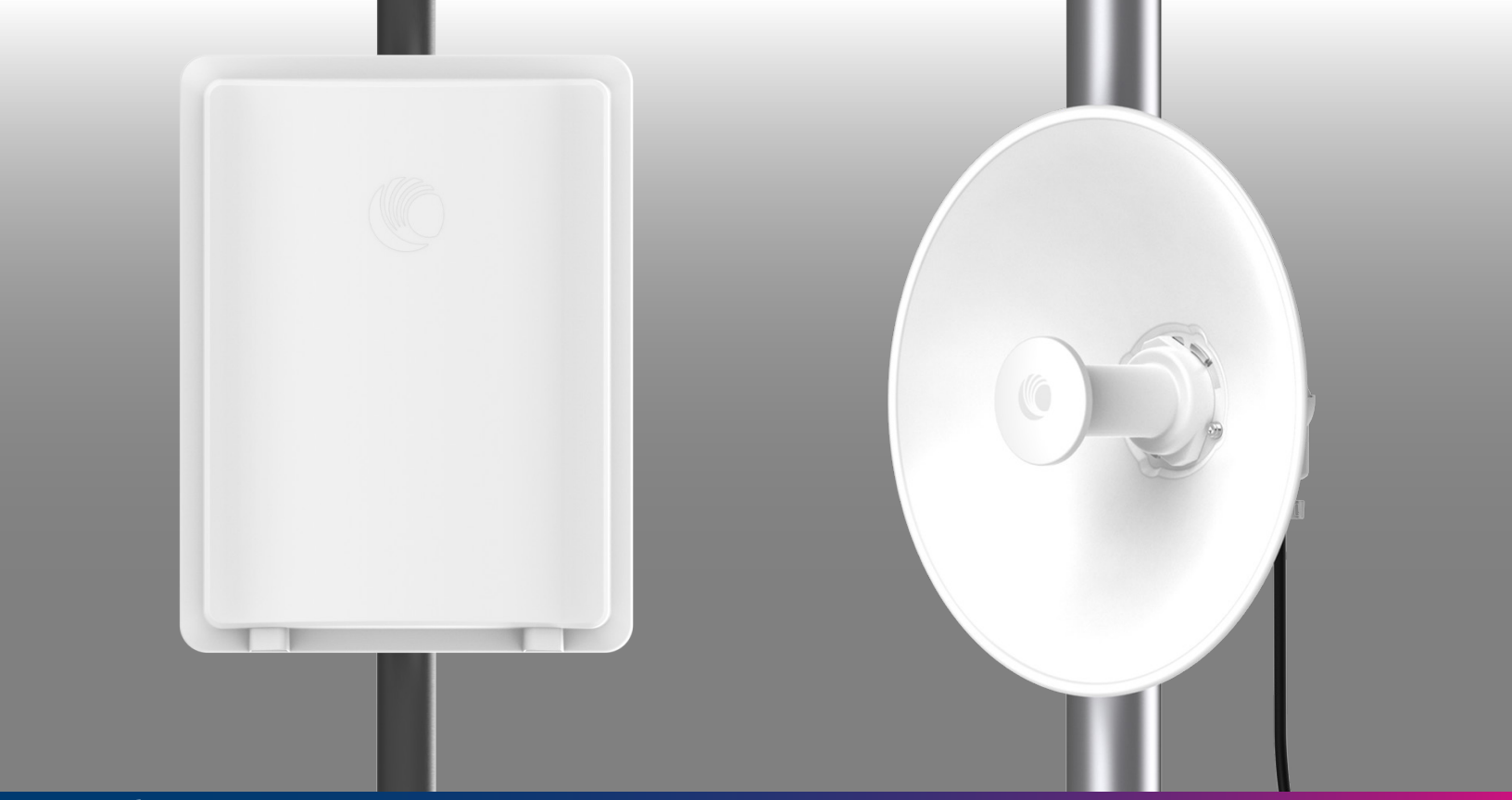

Cambium Networks™

CASE STUDY

Enhancing Rural Connectivity: Canadian WISP Achieves Superior Performance with ePMP 4500 Series

Customer Overview

Omni Wireless, a Wireless Internet Service Provider (WISP) in Canada operates a rural network encompassing 8 towers and supporting over 400 subscriber modules (SMs). Serving a mix of residential and business customers over wide geographic areas, the WISP faced growing demands for higher throughput and reliability to keep up with user expectations.

omni WIRELESS

Business Challenge

Operating in rural and semi-urban areas, Omni Wireless encountered challenges with limited bandwidth, range, and reliability. The legacy ePMP 3000 AP with 40 SMs (mainly Force 300-25) were approaching its capacity limits as demand grew, especially in supporting higher modulation rates over longer distances. This created constraints in delivering consistent, high-speed connectivity, especially with increased client demand for streaming and high-bandwidth applications. To address these, the WISP needed a solution capable of higher throughput,

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Technology Solution

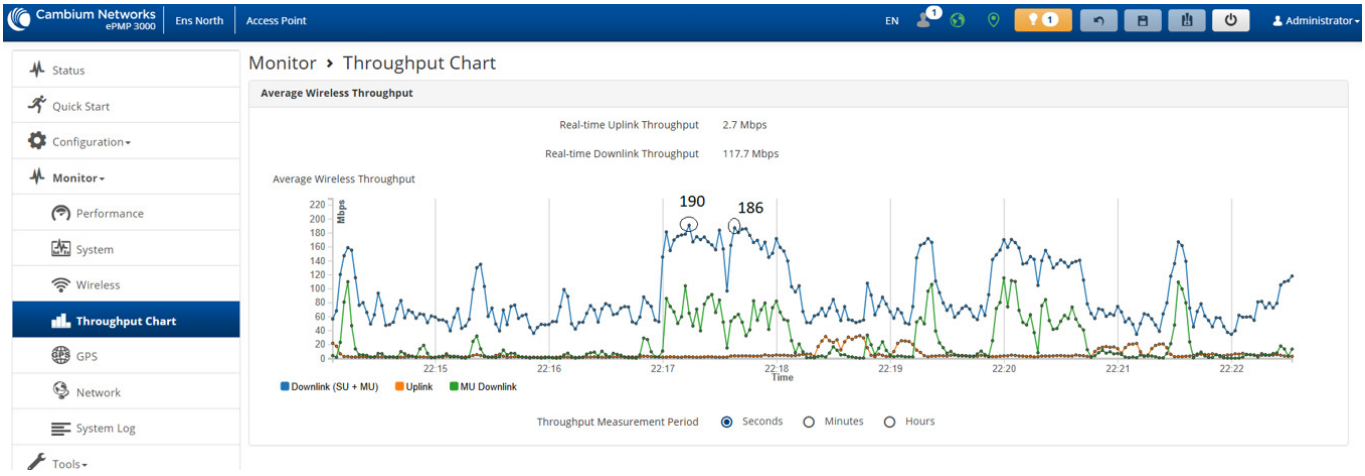
Cambium Networks provided a comprehensive upgrade using the **ePMP 4500 Access Point (AP)** along with **Force 4525 Subscriber Modules (SMs),** selected for their ability to improve capacity and modulation stability even over long distances. The solution leveraged key features that set the ePMP 4500 and Force 4525 apart in scalability and performance:

- **ePMP 4500 Access Point**
  - 5 GHz, 8x8 MU-MIMO with beamforming for higher capacity and interference mitigation.
  - Up to 4 Gbps throughput per sector, supporting up to 120 SMs.
  - Compatibility with previous Force 300 SMs for backward interoperability.
  - Managed through Cambium Networks' cnMaestro™ for centralized, real-time monitoring and maintenance.
- **Force 4525 Subscriber Modules**
  - High-capacity, low-latency design with 2x2 MIMO and an integrated 25 dBi dish.
  - 1024QAM for improved modulation and throughput.
  - Designed for point-to-point and point-to-multipoint (PMP) use with interoperability with the ePMP 4500 AP.
  - Managed by Cambium's cnMaestro™ and compatible with LINKPlanner and cnHeat for network optimization.

Field Results

The WISP tested the new setup in a live network environment, systematically upgrading to 10 Force 4525 SMs and finally to all 40. Cambium provided active support in gathering before-and-after performance data for a neutral and detailed comparison. Key metrics from the testing period showed substantial improvements:

- **Download and Upload Speeds:** The WISP recorded peak throughput increases from 190 Mbps UDP and 186 Mbps TCP on the ePMP 3000 to 358 Mbps UDP and 354 Mbps TCP on the ePMP 4500 setup.



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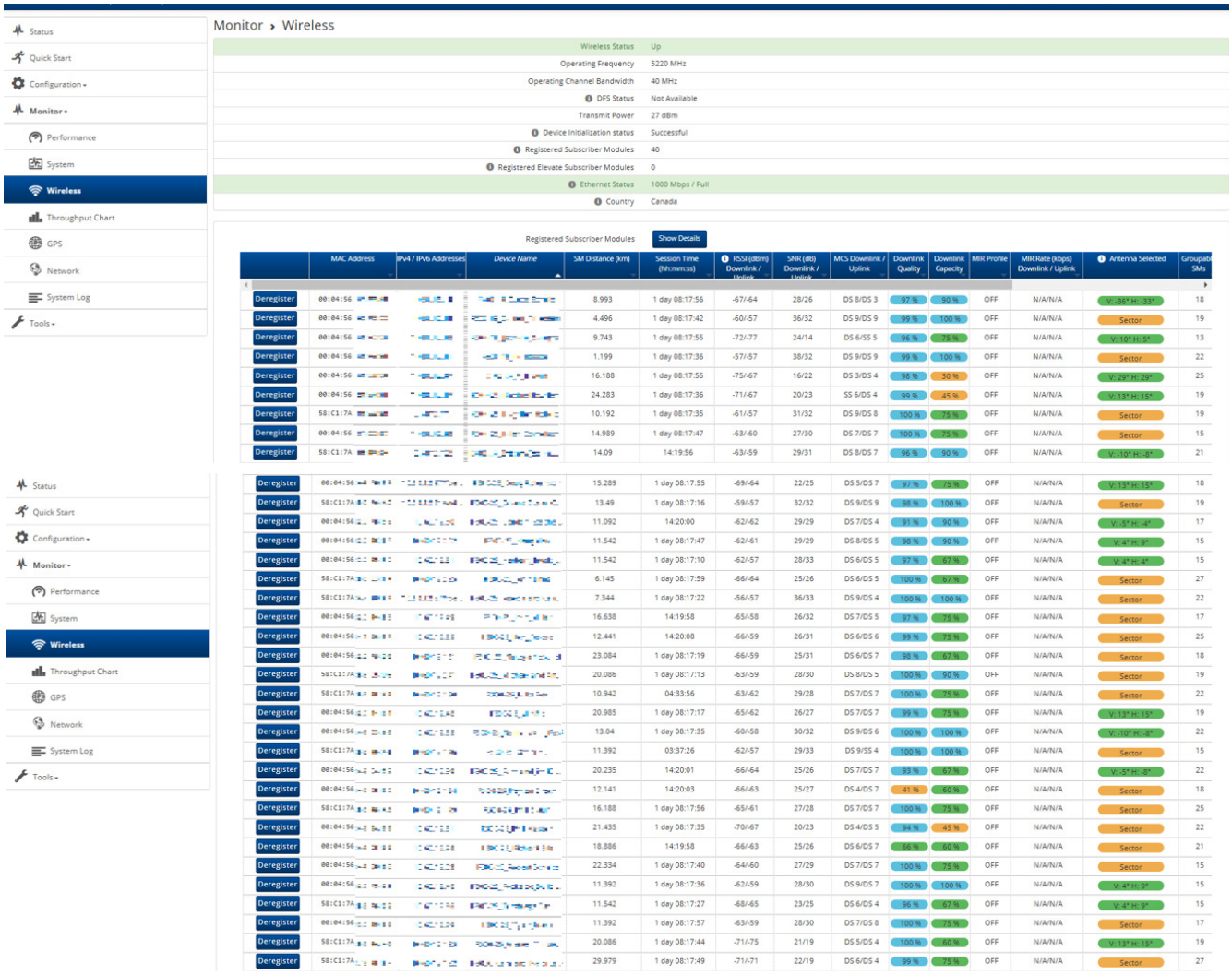
- **Modulation Coding Scheme (MCS) Gains:** With Force 4525 SMs, MCS rates showed significant improvements even at a distance of 23 km, with the farthest SM reaching DL MCS 10/9, up from 7/6 on the previous system.



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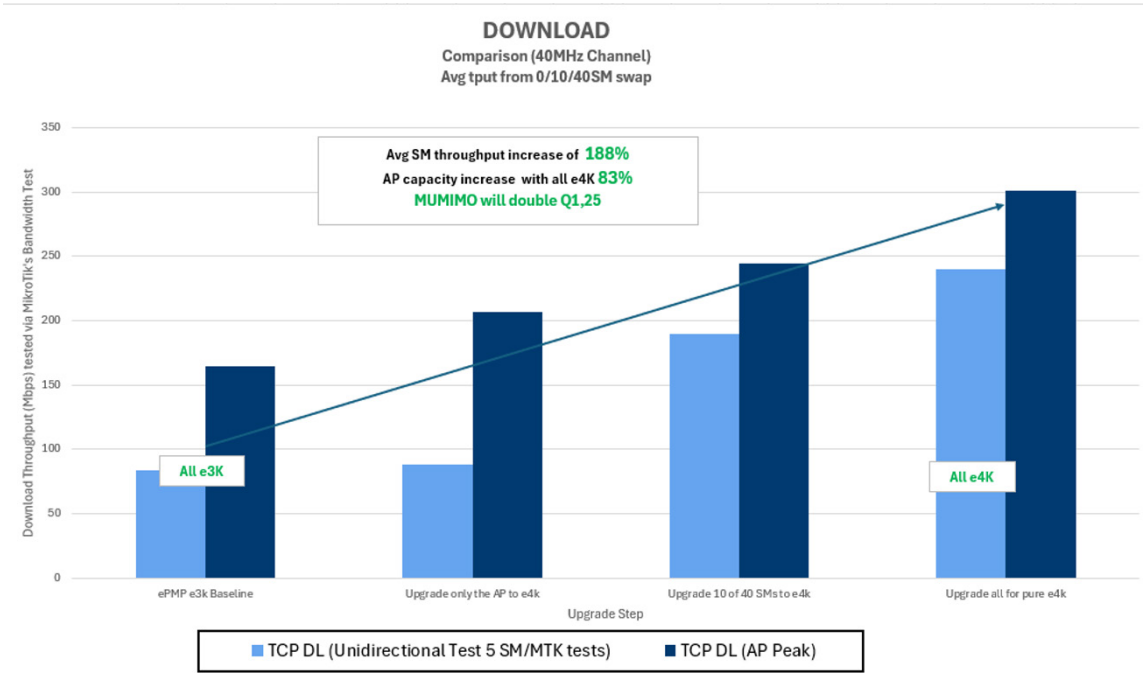
- **Network Utilization:** Beamforming and 8 Tx and Rx chains on the AP allowed for higher modulation in both DL and UL, improving overall network utilization and providing more balanced bandwidth to all connected SMs.
- **TCP Consistency:** TCP throughput closely matched UDP throughput for all SMs, even those positioned at the 23 km range, demonstrating an even distribution of bandwidth without degradation over distance.

Business Value

The WISP's upgrade to Cambium's ePMP 4500 series enabled it to meet the evolving demands of its user base with increased capacity, range, and reliability. This upgrade provided multiple business benefits:

- **Enhanced Customer Satisfaction:** With the ability to deliver higher speeds and stable connectivity over longer distances, customer satisfaction increased, reducing churn rates.
- **Operational Efficiency:** cnMaestro™ and LINKPlanner tools enabled centralized network management, reducing time spent on manual monitoring and troubleshooting. This allowed the WISP to allocate resources toward expansion rather than day-to-day maintenance.
- **Future-Proofing:** With the ePMP 4500's backward compatibility and high capacity, the WISP can easily scale its network to add more users without major equipment changes.

"The ePMP 4500 series has exceeded our performance expectations, especially in terms of modulation improvements and range. Our team has seen clear gains in network efficiency and customer feedback has been very positive. With the 4500 lineup we are able to offer 100 and 150 Mbps packages to our customers with full confidence," stated Matthew Haughian, CTO of Omni Wireless Inc.



The ONE Network by Cambium Networks simplifies these advancements further, allowing service providers to streamline their entire network ecosystem. By bringing connectivity solutions under one platform, WISPs can focus on growth and customer experience rather than managing network complexity.

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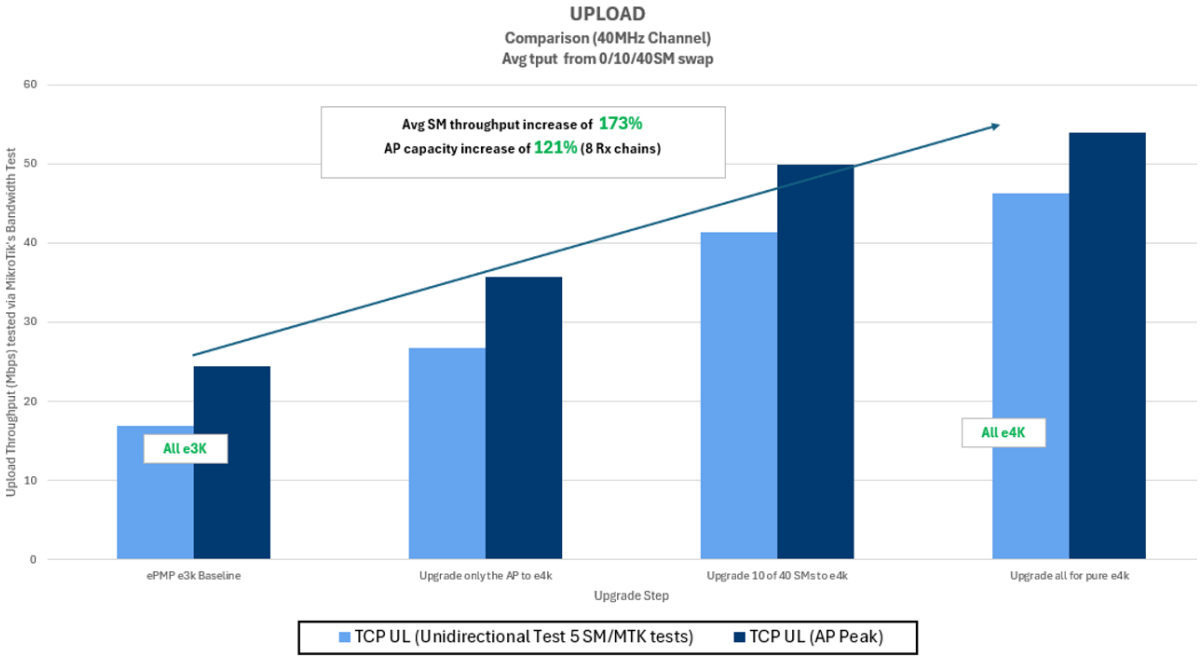

About Cambium Networks

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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