



Overcoming Extreme Terrain for Reliable Wireless Connectivity in the Calakmul Jungle

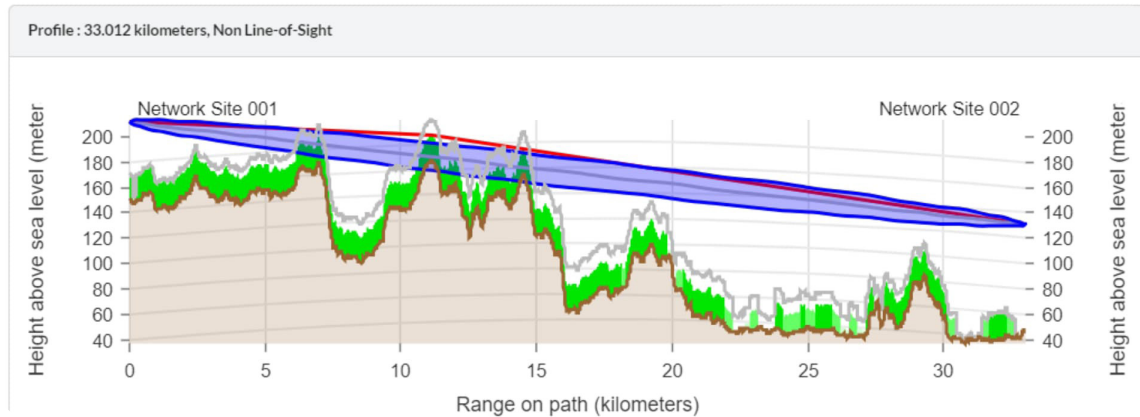
Customer Overview

An Internet Service Provider (ISP) in the Calakmul Jungle, a dense and remote region of Mexico, faced a significant challenge in providing reliable broadband connectivity to its customers. This ISP was tasked with establishing wireless connections in an area characterized by thick vegetation, unstable terrain, and uneven landscapes with obstructive small mountains. Their goal was to deliver high-speed internet to homes and businesses within this difficult terrain.

Business Challenge

The ISP needed to deploy a wireless broadband network across rugged terrain where direct line of sight between communication towers was obstructed by natural barriers such as dense foliage and mountainous areas. Their primary challenge was establishing stable and high-capacity connections in these conditions, compounded by the technical difficulties of mounting equipment on towers 80 meters (262 feet) and 60 meters (196 feet) tall. The lack of infrastructure and the unstable ground further complicated the installation process. To meet customer demand for high-speed internet, the ISP required a solution that could reliably penetrate these physical obstructions and deliver a strong, consistent signal.





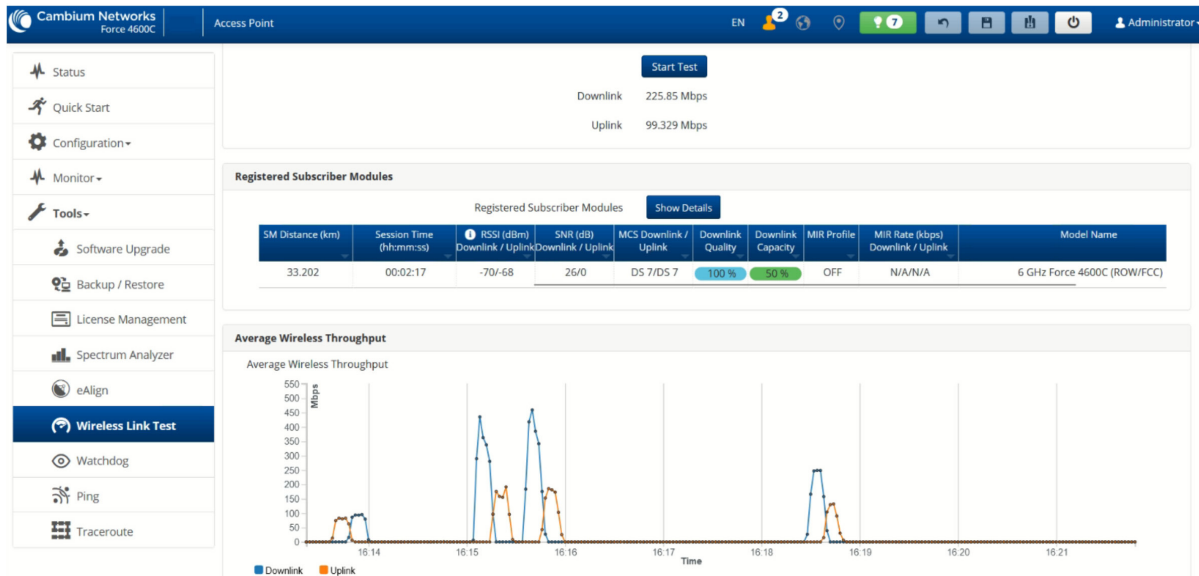
Technology Solution

To address the unique demands of this challenging environment, the ISP turned to Cambium Networks' suite of advanced wireless technologies. Key Cambium products used in the project included:

- **Cambium Networks ePMP 6 GHz Force 4600C:** A high-capacity, low-latency wireless subscriber module designed for point-to-point and point-to-multipoint broadband.
- **NetPoint NP6 Antennas:** High-performance antennas that demonstrated resilience in overcoming dense vegetation and small mountainous obstructions.
- **LINKPlanner Simulation Software:** Predicted optimal alignment configurations and helped fine-tune antenna placement for maximum signal performance.

Despite initial signal strength issues, with alignment efforts supported by Cambium's tools, the team was able to improve signal quality significantly—from -84 dBm to between -66 dBm and -70 dBm. This alignment allowed the network to reach an impressive performance of nearly 600 Mbps, even under difficult conditions.



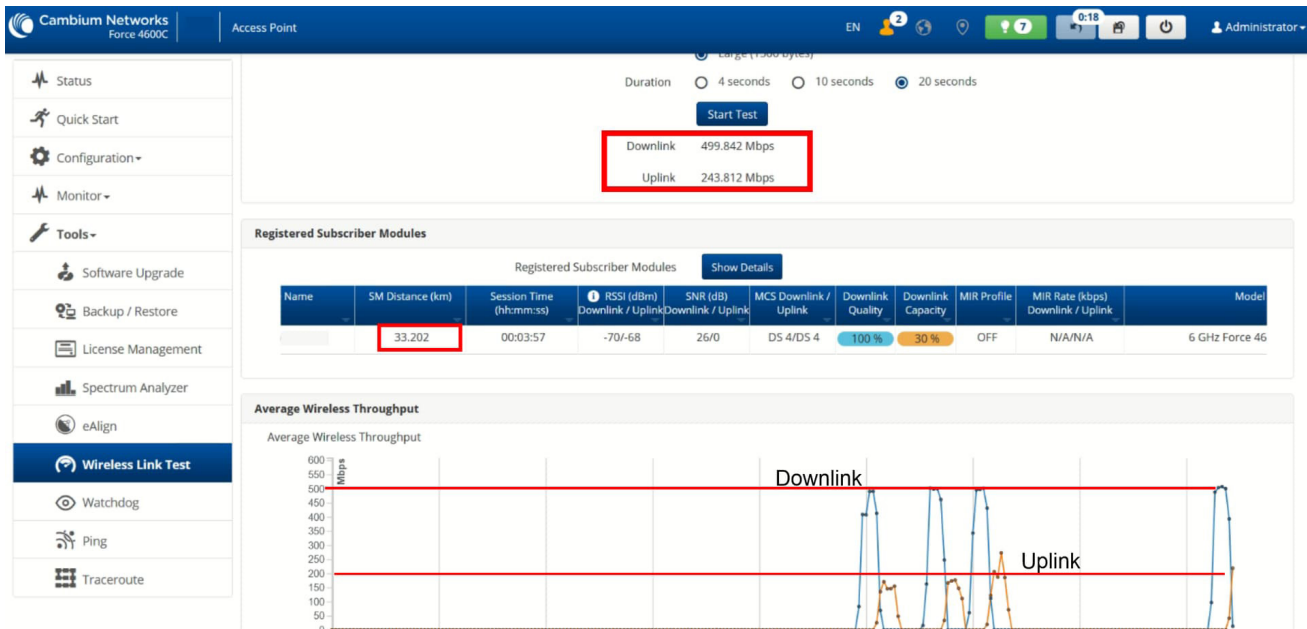


MCS	Mode	Code Rate	Payloads	Max IP Throughput (Mbps)	Fade Margin (dB)	Mode Availability (%)	Receive Time Mod (%)	Max IP Throughput (Mbps)	Fade Margin (dB)	Mode Availability (%)	Receive Time in Mode (%)
MCS13	4096QAM	0.83	Dual	602.34	-36.67	0.0000	0.0000	612.06	-36.67	0.0000	0.0000
MCS12	4096QAM	0.83	Dual	544.05	-31.67	0.0000	0.0000	544.05	-31.67	0.0000	0.0000
MCS11	1024QAM	0.83	Dual	505.19	-25.67	0.0000	0.0000	505.19	-25.67	0.0000	0.0000
MCS10	1024QAM	0.75	Dual	446.90	-21.97	0.0000	0.0000	456.61	-21.97	0.0000	0.0000
MCS9	256QAM	0.83	Dual	398.32	-17.27	0.0000	0.0000	408.04	-17.27	0.0000	0.0000
MCS8	256QAM	0.75	Dual	359.46	-16.27	0.0001	0.0000	359.46	-16.27	0.0001	0.0000
MCS7	64QAM	0.83	Dual	301.17	-11.97	0.0011	0.0000	301.17	-11.97	0.0011	0.0011
MCS6	64QAM	0.75	Dual	272.03	-9.97	0.0042	0.0000	272.03	-9.97	0.0042	0.0030

Field Results

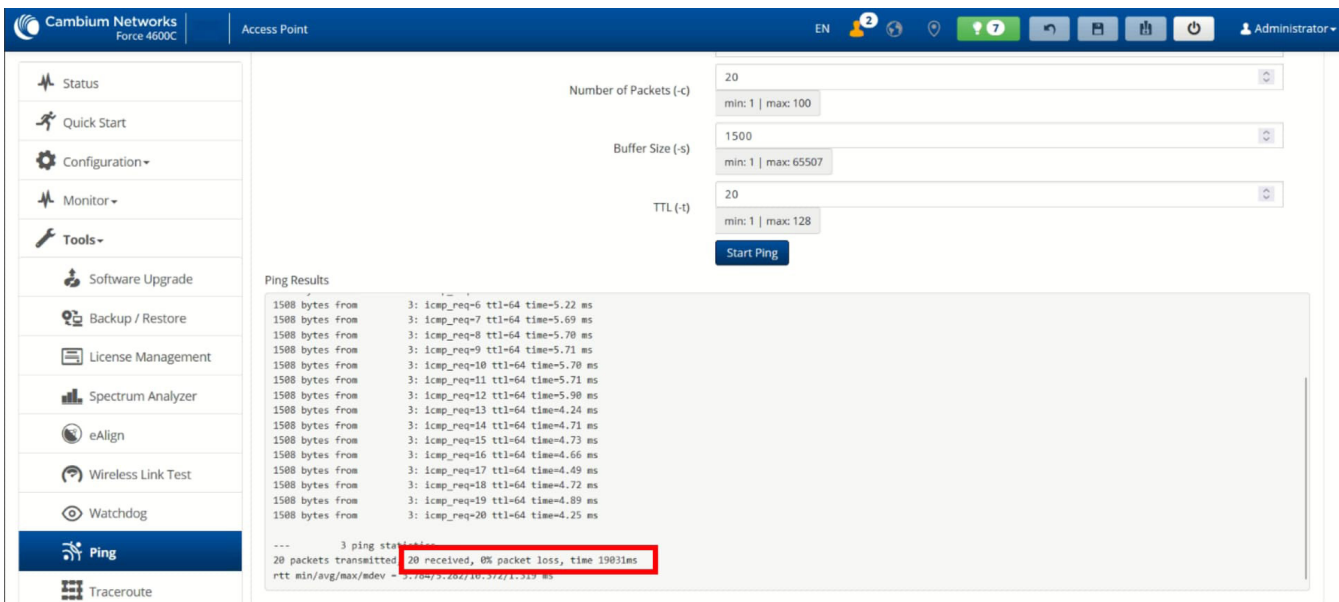
The field results demonstrated the ability of Cambium’s equipment to perform in extreme environments. Despite the lack of direct line of sight and the challenging landscape, the NetPoint NP6 antennas successfully provided a robust connection. Initial connectivity was achieved with a signal level of -84 dBm, but through careful alignment, the signal improved to the optimal range of -66 to -70 dBm.

Most notably, the system overcame significant natural obstacles, including dense foliage and mountainous terrain, to achieve nearly 600 Mbps of throughput. This was far beyond the initial expectations of the ISP, showcasing the reliability and strength of Cambium Networks’ technology.



Business Value

By implementing Cambium Networks' solution, the ISP was able to overcome extreme environmental challenges and deliver high-speed internet to its customers. The network's performance not only exceeded initial expectations but also allowed the ISP to plan for future growth. As the ISP considers increasing tower heights to further improve signal quality, they anticipate being able to offer speeds of up to 2 Gbps in the near future. This upgrade will open the door to acquiring new customers and increasing revenue streams.



The company's representative commented, "I can recover part of the investment; I am ready to look for at least 100 new customers." This confidence in the technology highlights the long-term value of Cambium's solutions, which enabled the ISP to extend its reach and provide reliable service even in the most challenging environments.

Cambium Networks' ONE Network Advantage

Cambium Networks' ONE Network platform played a critical role in simplifying the management of this complex network deployment. The platform's integrated wired and wireless management capabilities allowed the ISP to focus on growing its business rather than dealing with network complexities. The unified approach of ONE Network streamlined operations, reduced deployment time, and minimized maintenance efforts, delivering both reliable performance and cost efficiency.



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.