

Frequently Asked Questions About the Implementation of cnWave

60 GHz products are expected to deliver the performance and reliability of fiber in places they had not before. There is a high level of interest for delivering broadband wireless internet service for urban, suburban, enterprise and industrial environments. Cambium Networks' 60 GHz design architecture will use the 802.11ay standard for higher capacity and better channel access and mesh support. The design, which incorporates Terragraph's mesh technology, developed by Facebook Connectivity, will be able to achieve superior network reliability at lower costs.



Q: How well do the access points (AP) handle clients with different signal levels? How varied can signals be on an AP before we see an impact on performance?

A: cnWave works on TDMA, and each node is Tx and Rx on a specific assigned time. With Automatic Transmit Power Control (ATPC), cnWave can accommodate different signals for individual links. This works whether the link is a PTP or PMP configuration.

Q: If we have a loaded cell and one of the CPEs has a bad connection, how does the AP behave in terms of airtime fairness and throughput?

A: Standards have played a role in propelling the market, but they have also created an image that all products are the same. The difference is in how a manufacturer achieves compliance to a standard and the additional capabilities they offer above the standard. cnWave products have ATPC, which will adjust Tx power level accordingly to match fading conditions. The airtime algorithm is being built, which can handle conditions such as burst data, MCS drop, bad connection, etc.

Q: Given the Layer 3 routed nature of a Terragraph network, is there a suggested model for service providers to deliver L2 services (such as IPoE or PPPoE)?

A: cnWave supports IPv6 for all configurations.

Q: What sort of NMS is offered by Cambium Networks? What will it allow operators to monitor and control in a Terragraph network?

A: cnMaestro, Cambium Networks' end-to-end network management system, will be supported for all radios. This will allow for easy management of the network.

Q: Can the Terragraph platform be modeled in cnHeat?

A: cnHeat plans to include network planning tool as part of the roadmap.

Q: What is the security system like in 802.11ay?

A: cnWave products provide AES 128 encryption.

Q: Is the GPS antenna built in, or is it separate equipment?

A: cnWave V5000 has a built-in GPS.

Q: Rather than using a cloud connection, can this work in an on-premises Wireless LAN scenario?

A: cnWave needs an end-to-end controller. This end-to-end controller can be either the on-premises or the cloud version.

Q: What is the approximate convergence time of the mesh protocol when a distribution node (DN) goes down?

A: Mesh support is an almost hitless mesh path configuration. The time to reroute the network is less than 100 milliseconds.

Q: What is the latency per hop?

A: The latency is less than one millisecond.

Q: What range can be safely achieved from an AP to a subscriber in 60 GHz?

A: The 60 GHz range depends on link availability, frequency band, rain rate and oxygen level. PTP links can support 1,000 to 2,000 meters, and PMP links can support 200 to 700 meters.

Q: Can multiple meshes (perhaps from different operators) operate within the same channel?

A: Due to oxygen absorption, 60 GHz signals will face once a certain range is exceeded. Additionally, cnWave products also support beamforming and Golay code, which help the radio with enhanced performance under interference.

Q: What is the maximum capacity in Mbps?

A: The maximum capacity of the V5000 is 7.6 Gbps without channel bonding and 15 Gbps with channel bonding.

Q: Does Terragraph backhaul use only 802.11ay?

A: Terragraph technology is based on the 802.11ay standard.

Q: Will Terragraph support synchronization technology? Are you considering fronthaul? Will it be able to pass and manage to keep clocks to 5G stations?

A: cnWave products will support 1588v2 transparent timing in the future.

Q: What are Cambium Networks' plans to implement dual-stack (both IPv6 and IPv4) to customers?

A: Currently, IPv6 stack is implemented. For local access, we support IPv4.

Q: What happens if I'm connecting my 16th CPE?

A: Only 15 subscribers can connect to each sector. The 16th CPE will not connect to the AP.