Cambium Networks™

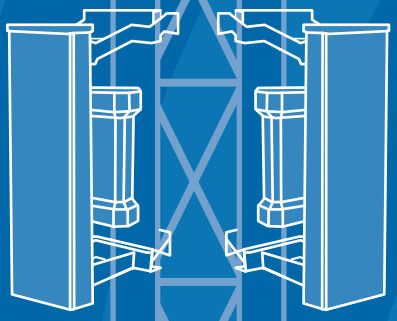
CANOPY POINT-TO-MULTIPOINT PMP 450

THE FUTURE OF **BROADBAND ACCESS**







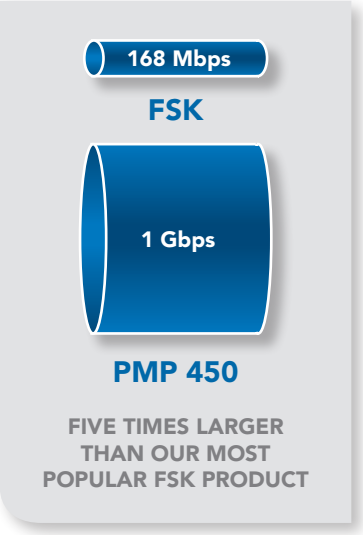



GROW YOUR NETWORK WITH CANOPY PMP 450

EXPAND CAPACITY AND COVERAGE AND ENABLE NEW SERVICES

What do service providers want? You want to grow and provide new services to more subscribers. You want to build a successful network with a sustainable future. You want to grow bigger and better and more profitable.

GIGABIT THROUGHPUT FOR GROWTH



From the largest enterprises to the smallest residences the key requirement is throughput. The new Canopy PMP 450 platform shatters the bandwidth barrier that can keep you from maximizing your network's potential and your competitive advantage. By delivering more than 540 Mbps of throughput per ring of APs on a tower, the PMP 450 gives your customers the speed they need for everything from streaming video to gaming to real-time data access to video conferencing and much more. Two rings of PMP 450 Access Points provide more than 1 Gbps of low latency throughput.

MULTI-MEDIA SERVICES GROWTH

The new Canopy PMP 450 is designed for growth. Your growth. It lets you efficiently and cost-effectively offer popular multi-media services that maximize growth. High-speed data and cloud access. Video on Demand. Reliable fixed voice and VoIP. It helps you grow by providing consistent and reliable coverage across large service areas, allowing you to deliver in-demand services to urban, suburban, rural and remote locations. For revenue optimization, the system also supports tiered service models with a software defined Subscriber Module that can be upgraded to support throughput from 4 Mbps to 55 Mbps.



PMP 450 APPLICATIONS

- **INTERNET ACCESS**
- **VOICE AND VoIP SERVICES**
- **VIDEO ON DEMAND**
- **LEASED LINE REPLACEMENT**
- **VIDEO SURVEILLANCE**

FASTER, SIMPLER GROWTH

Canopy PMP 450 growth is fast and easy. No trenches to dig. No copper or fiber to put in the ground. No weeks or months of waiting. The Canopy 450 deploys in hours and works with your existing systems, so there are no expensive, labor-intensive, time-consuming forklift replacements. Time-to-market is greatly reduced, and network performance remains consistent as subscribers are added. You can reach customers months before they could be reached by wireline technology. Most important, you won't lose your investment in your current technology. You can serve more customers with fewer modules and install equipment on your existing towers. You'll have the scalability that enables your network to grow and keep pace with your business.

Gbps PERFORMANCE IN A SOFTWARE-DEFINED **RADIO PLATFORM**

The Canopy PMP 450 is our 4G wireless access network platform. Designed for fixed outdoor applications, our technology combines the best of wireless broadband technologies. The result is a connectivity solution optimized for rate, reach, reliability, throughput and, above all, cost.

PLATFORM FOR GROWTH

As Cambium Networks' wireless access network platform of the future, the Canopy PMP 450 is designed to grow with you by aggressively adding new capabilities quickly and consistently.

Our PMP network access points and subscriber modules are software-defined radios. This capability enables us to rapidly develop our radios in a wide range of frequencies to operate in either the licensed or unlicensed spectrum. This software flexibility also gives you the ability to add new features via over-the-air upgrades that eliminate costly replacements and dispatches to deliver them to the field. With software upgrades, you can take advantage of today's powerful capabilities by deploying connectivity now, while ensuring that you can add new applications and capabilities as they become available. In addition, you can take advantage of seamless interoperability between all Cambium PMP products and solutions, allowing you to increase capacity without replacing remote modules.

The Canopy PMP 450 platform is modular in design. Each AP provides more than 90 Mbps of actual throughput. Service providers can add modules and select antennas to configure the network to meet customer demand for connectivity.



INDUSTRY INNOVATORS

At Cambium Networks, we are pioneers and innovators in fixed outdoor wireless broadband solutions optimized to operate in the licensed and unlicensed spectrum. We are the industry leader in point-to-multipoint access network solutions and point-to-point microwave backhaul broadband solutions. With more than 4 million nodes shipped to thousands of networks in more than 150 countries, Cambium Networks is uniquely positioned to develop and deliver breakthrough wireless solutions — like the Canopy PMP 450 platform — to service providers around the world.



CAMBIUM NETWORKS FAST FACTS

Industry leader in Point-to-Multipoint and Point-to-Point IP Wireless Broadband Solutions

Deep heritage of RF experience

Uniquely positioned to deliver breakthrough Wireless Solutions to broadband operators globally

TRIPLE-PLAY GROWTH: **VOICE, VIDEO AND DATA**

Service providers know that access is never an end in and of itself. Your customers don't want high-speed access; they want the powerful, advanced applications it makes possible. They want triple-play services, and the Canopy PMP 450 is designed to help you provide today's high-demand voice, video and data services efficiently and cost-effectively.

IN-DEMAND BROADBAND CAPABILITIES OF THE PMP 450

STREAMING VIDEO

Today's killer application is video, which accounts for about 60% of Internet traffic. The Canopy PMP 450 is designed to help you become a provider of Video on Demand (VOD) and near-VOD content ranging from streaming movies to IPTV to interactive gaming. In addition, the system enables you to offer government and enterprise customers mission critical applications such as video conferencing and remote video monitoring.



CUSTOMER SCENARIO

To gain a significant competitive advantage, a service provider uses the Canopy PMP 450 platform to become a movie and streaming video provider to its residential customers. The result is more satisfied, more loyal customers and substantial new recurring revenue streams.

SHARING LARGE FILES

Your customers rely on data, and the Canopy PMP 450 enables you to deliver fixed business and residential broadband, providing the high levels of bandwidth they need and want. The Canopy PMP 450 platform also enables you to offer your customers streamlined access to the cloud.



CUSTOMER SCENARIO

A large medical center needs to share imaging files among physicians and staff in the hospital and throughout the medical campus. The Canopy 450 platform enables seamless transmission of extremely large, crucial files such as CT scans and MRIs. The center also uses the Canopy network to securely send patient medical information.

ENTERPRISE-WIDE VoIP

The Canopy PMP 450 platform lets you offer the highest quality voice services for every type of customer, ranging from reliable fixed wireless voice services to residential and business customers to efficient and cost-conscious VoIP services for enterprise and government applications.



CUSTOMER SCENARIO

A new major manufacturing company needs to provide voice service that links all the buildings on its campus. Leveraging the Canopy PMP 450 platform, the team deployed an advanced VoIP system that wirelessly connects every part of the operation, and combines call clarity and reliability with cost-effectiveness.

PUSHING THE WIRELESS ACCESS NETWORK PERFORMANCE **ENVELOPE**

The Canopy PMP 450 platform offers advanced capabilities that enable service providers and their customers to take maximum advantage of the breakthrough voice, video and data applications coming to market at an ever-increasing pace. The platform is 4th generation Canopy technology, leveraging our industry leading PMP expertise to deliver a powerful set of advanced features.

GPS SYNCHRONIZATION. The Canopy PMP 450 platform leverages Cambium's proven GPS synchronization capability to minimize self-interference to offer exceptional scalability, and provide maximum spectral efficiency and the exceptionally low latency demanded by VoIP, gaming and video applications.

LOS AND nLOS CONNECTIVITY. The Canopy PMP 450 platform provides 2x2 MIMO that delivers line-of-sight (LOS) and near-line-of-sight (nLOS) connectivity over challenging terrain at extreme distances.

DUAL BAND OPERATION. The Canopy PMP 450 is a dual-band system designed to initially operate in both the 5.8 and 5.4 GHz unlicensed frequency bands.

FREQUENCY FLEXIBILITY. The Canopy PMP 450 platform operates initially in the following frequencies:

- 5.8 GHz FCC
- 5.8 GHz ETSI soon to come
- 5.4 GHz FCC and ETSI soon to come

The platform can be deployed in both licensed and unlicensed frequencies, and offers service providers exceptional flexibility through its ability to be easily re-banded in virtually any preferred frequency.

ADDED SECTOR CAPACITY. As a service provider, you want the ability to add capacity and subscribers in new coverage areas and increase capacity in existing coverage areas without replacing your existing network. The Canopy PMP 450 enables you to enhance capacity based on demand, allowing you to deliver your services to new customers and accelerate development of new revenue streams.

HIGHER THROUGHPUT. Cambium Networks has designed the Canopy PMP 450 platform to deliver the consistent and exceptionally high throughput virtually every new and existing customer demands: more than 90 Mbps per sector and more than 1 Gbps per tower.

INTEGRATED NETWORK MANAGEMENT. For optimum network management, the Canopy PMP 450's Wireless Manager is designed to manage any SNMP-enabled devices. Its northbound interface allows the network to integrate seamlessly with your existing network operations center.



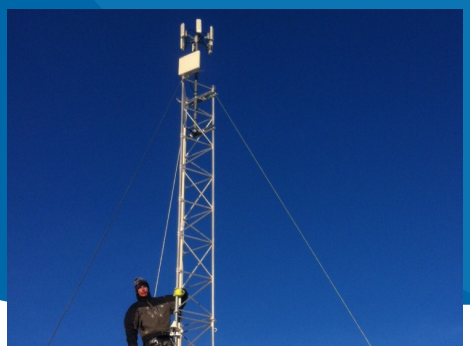
PMP 450 KEY SYSTEM FEATURES / ADVANTAGES	
HIGH-EFFICIENCY CANOPY MAC	Purpose-built protocol enhances payload capacity while efficiently utilizing available spectrum.
2X2 MIMO WITH MIGRATION TO MU-MIMO	Higher throughput and larger link budgets with planned migration to MU-MIMO using existing remote modules.
SEAMLESS OPERATION WITH PMP 100 AND PMP 430	Migration path unique to the Industry. Capacity increase at your discretion.
SIGNIFICANT TOWER BANDWIDTH	Allows end users to stream video content with additional bandwidth to support voice and data.
VERY LOW LATENCY PERFORMANCE	Network loading has minimal effect on performance. Effectively supports voice and video transport.
GPS SYNCHRONIZATION	Timing synchronization to GPS pulse allows extensive frequency reuse while minimizing self-interference.











CANOPY SYSTEMS **BENEFITS** AT A GLANCE

- Low-cost, low-complexity, low-maintenance infrastructure
- Purpose-built and optimized for fixed outdoor applications
- GPS Synchronization for scaling while maintaining high performance and customer satisfaction — from small to region-wide deployments
- Consistent throughput and low latency
- Rapid deployment
- Support for video, data, voice and control applications
- nLOS and LOS performance
- Proven deployments for 10 years in all environments across the globe

ABOUT CAMBIUM NETWORKS

Cambium Networks provides world-class wireless broadband access and microwave solutions for Service Providers, enterprise customers, military, government, and municipal networks around the world. It currently has more than 4 million modules deployed in thousands of networks in over 150 countries. Our innovative technologies provide reliable, secure, cost-effective connectivity that's easy to deploy and proven to deliver outstanding metrics. Cambium's ecosystem of partners, development engineers, and support teams work together to design and deliver innovative, forward-looking solutions that provide data, voice and video connectivity when and where it's needed.

To learn more about how the Canopy PMP 450 platform can enable growth for your business, contact us at **888.863.5250** or visit us on the web at **www.cambiumnetworks.com**.

Cambium Networks™ www.cambiumnetworks.com

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