

# CAMBIUM'S PMP 450 SOLUTION HELPS JAB WIRELESS OFFER THEIR SUBSCRIBERS MORE VALUE



PMP 450 SMs with Reflector Dishes

A highly-successful wireless service provider currently serving thirteen states, JAB Wireless, Inc. chose the Cambium Networks Point-to-Multipoint (PMP) 450 wireless broadband access network solution to meet their subscribers' rapid data-usage growth.

## SITUATION

JAB Wireless has grown rapidly, providing high-value broadband services to its subscribers. Currently, the Company supports a wide base of residential subscribers in Idaho, Wyoming, Utah, Colorado, Texas, Oklahoma, Wisconsin, Illinois, Nevada, Kansas, Iowa, South Dakota, and Minnesota, plus commercial and government enterprises. The Company's service model offers pricing comparable with DSL and less than cable, while delivering superior performance.

Simultaneous with their network coverage growth, JAB has seen massive data-usage growth from their subscribers due to the fast adoption of the Internet for streaming video. As a result, their Canopy® 100 Series FSK systems were at capacity. They needed higher throughput that would provide a solid upgrade path to their 5,000 Access Points.

According to Bret Westwood, vice president of network operations, "Netflix and other entertainment options have significantly increased residential usage patterns. Subscriber requirements have evolved from bursts of high-bandwidth throughput to much more sustained sessions. We need a high-capacity, flexible, and cost-effective upgrade path that allows us to provide reliable, high-speed access to support the increasing volume of streaming video." That upgrade has to integrate with JAB's existing systems, maintain high reliability and low latency, and get the maximum performance out of their Access Points.

In addition, JAB's numerous network acquisitions had created an infrastructure with a wide variety of disparate networks. Successful integration of these networks mandated that any new system support dense access-point configurations, provide high spectral efficiency, and support solid edge-design practices.

## CUSTOMER PROFILE

### JAB Wireless, Inc. Denver, CO

- Broadband service provider
- 142,000 residential and commercial subscribers
- Coverage in 13 states

### Cambium Product

#### Access:

- PMP 100
- PMP 430
- PMP 450

#### Backhaul:

- PTP 230
- PTP 500
- PTP 600

### Benefits

- High throughput
- Spectrally efficient
- 5.4 and 5.8 GHz dual-band
- Easy, fast upgrade path

**"We have seen subscriber usage increase more than 500% over the last six years. Last year alone, usage increased 68%. These increases are due to the fast adoption of the Internet for streaming video. Just a few years ago, streaming video accounted for 30% of all usage. Now it dominates at more than 60%. With these statistics, it is easy to see that the Internet is the new TV."**

– Bret Westwood, Vice President of Network Operations, JAB Wireless

## SOLUTION

JAB's existing wireless networks consisted of various Canopy Point-to-Multipoint (PMP) 100 and 430 Access Points and Subscriber Modules. In addition, JAB had installed Cambium Point-to-Point (PTP) 230, PTP 500, and PTP 600 Series links for backhauling data from the residential access points.

Each PMP 450 AP can deliver more than 90 Mbps throughput capacity, while each SM has scalable throughput up to 60 Mbps. The system's 5.4 and 5.8 GHz dual-band functionality provides much more spectrum in which to operate, offering more options to add capacity on a tower or rooftop. In addition, the next release of the system offers the ability to communicate simultaneously with installed FSK and OFDM SMs over the same channel – a feature that will let JAB leverage their existing PMP 100 and PMP 430 systems.

When Cambium Networks announced the release of their Canopy PMP 450 Solution, JAB was one of the first service providers to deploy the system. Because the PMP 450 offered the high throughput, reliability, and spectral efficiency needed, they installed an Access Point (AP) and Subscriber Modules (SMs) for system integration testing. Based on the successful test results, JAB Wireless plans to deploy the PMP 450 as their "go-to platform" to add capacity to their existing network infrastructure.

Efficient GPS synchronization provides precise timing that allows JAB to configure dense networks with virtually no self-interference. In addition, the PMP 450 has high spectral efficiency: It can transmit 90 Mbps of throughput in a 20 MHz channel, where many comparable systems require a 40 or 50 MHz channel. Because the PMP 450 is a software-defined radio, JAB can future-proof their network by easily adding new features as they become available.

With assistance from Cambium's technical support team, JAB was able to get the PMP 450 solution operating quickly. "It's nice to be able to use the same interface as our existing equipment, have the same easy installation process, and get faster speeds for our customers," reported Eric Bingham, installer.

## RESULTS

The PMP 450 system has met all of JAB's requirements. From the start of the field test, the system connected easily and speed tests showed a dramatic increase over their current solution.

| JAB WIRELESS FIELD TEST RESULTS |                |                             |              |                                      |                      |
|---------------------------------|----------------|-----------------------------|--------------|--------------------------------------|----------------------|
| Range                           | Rx Level (dBm) | Bridge Link Test Throughput | RF Link Test | Noise Level from Spectrum Scan (dBm) | Signal to Noise (dB) |
| 0.25 mi (0.4 km)                | -59            | 84 Mbps                     | 90.0 Mbps    | -95                                  | 35                   |
| 2.30 mi (3.7 km)                | -63            | 88 Mbps                     | 90.6 Mbps    | -90 H and -92 V                      | 27                   |
| 4.50 mi (7.2 km)                | -72            | 57 Mbps                     | 57.0 Mbps    | -64 H and -75 V                      | 16                   |

In customer service operation, the system is delivering 70 Mbps download and 20 Mbps upload aggregate throughput with 7 to 8 milliseconds latency (round trip). This performance is more than adequate to meet their subscribers' high-throughput requirements for sensitive voice and video applications.

- AP total aggregate throughput > 90 Mbps
- Individual SM total throughput > 50 Mbps
- SMs simultaneously transfer data, video and voice services
- SM connectivity to line-of-sight (LOS) and near-line-of-sight (nLOS) locations

With the addition of the PMP 450 system, JAB continues to add value to their subscriber services. The PMP 450 has helped to optimize their network with a lot of throughput in a small amount of spectrum.

## SATISFIED CUSTOMERS

When JAB asked their subscribers to comment on their new usage plan, they received enthusiastic responses such as:

- "I noticed a huge difference, especially in YouTube™ and Netflix."
- "My new plan is much better than the previous plan."
- "Our usage experience has been great."
- "We're very satisfied with the speeds."
- "We have noticed a significant difference with the new plan."

PMP 450 AP in JAB's Network



**"I didn't think WISP Internet could be this fast!"**

– Jake Freeman, Installer



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