

# Winning the War on Interference



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- JOE FALASCHI,  
GENERAL MANAGER,  
E-VERGENT



## Challenge

### E-VERGENT PROVIDES BROADBAND

connectivity to 3,000 business and residential customers in Northern Illinois and Southern Wisconsin. The territory is served by 160 Access Point locations, and includes both rural and urban locations. “Our customers, both business and residential, want faster Internet connections,” says Joe Falaschi, General Manager, E-vergent. “The business traffic dominates the network during the day and residential customers are the heavy users in the evening.”

As more and more devices are in use, noise levels are rising and making it difficult to find clear and usable spectrum, which affects the performance of all systems. “We have equipment from multiple vendors in our network, and we use a little bit of everything,” says Falaschi. “We like to use the right technology for the job. We have some older PMP 100 FSK equipment; we use PMP 450 in the bigger urban sites. Typically, when we have 100 or fewer subscribers on all sectors, we have had a great experience using ePMP™.”

Rising noise levels were causing customers to lose speed, and trouble calls started rolling in. “When we saw the performance of our 802.11n systems struggling with interference, we switched to the more robust and GPS-synchronized ePMP system.” While they saw significant improvement and a reduction in self-interference with ePMP, the ambient noise levels were still affecting network performance.

E-vergent took the opportunity to combat interference.

## Solution

“WE VOLUNTEERED TO TRIAL THE NEW EPMP 2000 ACCESS POINT BECAUSE WE HAD interference and wanted to see what could be done,” says Falaschi.



The ePMP 2000 Access Point (AP) includes Hypure™ technology, which uses smart Beamforming and Intelligent Filtering in addition to the GPS synchronization, frequency re-use, and scalability of the ePMP 1000 AP. In addition, because the ePMP 2000 AP is compatible with existing ePMP Subscriber Modules (SM), simply changing the AP brings higher levels of performance to the whole network without dispatching to the customer locations.



To get a complete view of the difference, an ePMP 2000 AP was installed at the same tower location as an ePMP 1000 AP. This would provide exact measurements of performance when E-vergent cut from one system to the other. Because the only element that was changed was the AP, there were no visits to customer locations needed.

ePMP 2000 Distribution Network Solution	
Frequency	5 GHz
Throughput	100 Mbps in a 20 MHz channel
Hypure Technology	Smart Beamforming and Intelligent Filtering for interference mitigation

## Results

**“WE IMMEDIATELY SAW BETTER PERFORMANCE, MOSTLY ON THE UPLINK CONNECTIONS,” SAYS FALASCHI.**

“Prior to the change, we were seeing MCS levels around 2, 3, or 4 and had lots of off-channel interference. We immediately saw MCS levels improve to 10 to 15 and saw a gain in the power levels. Of course, this gave us higher throughput to all customers.”

On-channel interference for both the ePMP 1000 and 2000 was measured at -80 dB. Off-channel interference was seen as high as -30 dB. This off-channel noise can severely impact other systems, but it does not affect the ePMP 2000 with Hypure technology.

The installation and operation of the ePMP 2000 AP were simple. “When the Cambium engineers explained Smart Beamforming and Intelligent Filtering, I was impressed with the technology. I was more impressed when I saw that all of the technology operated automatically behind the scenes. There were no specific configuration requirements, and the whole system just worked. It was like the noise just went away.”

## Next Steps

**AS A SERVICE PROVIDER WHO WORKS WITH MANY DIFFERENT TYPES OF EQUIPMENT, E-VERGENT PLANS TO USE** ePMP 2000 as it expands the network. “We are in a growth mode right now,” says Falaschi. “With ePMP, we know that we can provide reliable service in a noisy environment better than anyone else. That means fewer trouble calls, better customer satisfaction, and more customers saying that they are pleased with our service.”