Cambium Networks™

Wireless Broadband - My View

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I'm an owner-operator of Cyber Broadcasting. We're a Wireless ISP located southwest of Chicago out in the rural area, mainly small towns and farming area. Our wireless core coverage area is really two counties, Grundy County and Will County, but extends out and touches about seven counties total. We have approximately 2,000 wireless internet customers. We also do satellite television sales and service, and provide VoIP services for both residential and business.

As we got into it and started working, especially with business and residential customers, we found people needed other services as well – and that got into cameras and access control, cellular repeaters, and things like that. We pretty much expand into any technology that seems interesting. It always plays off our Internet service.

I retired early out of corporate America. When I moved out of the suburbs and tried to come down to a rural area to enjoy my retirement, I found there was no internet. I learned about WISPs and started one. I purchased three other local WISPs and just started expanding into all underserved areas. When I hit a border with a neighboring WISP, I'd stop expanding and form alliances to coordinate frequencies, work together, pass each other customers, and just become a community.

Over the years, we've expanded into all underserved areas we could in our two main counties. When we started to hit a plateau in growth, we got into private cable operation, providing television services for Multi-Dwelling Units (MDU) and video surveillance systems.

The network equipment we have today really runs the gamut because of the legacy equipment out there from our growth and acquisitions. Since we started in 2003, we migrated to the Canopy series of products, which is now owned by Cambium. The majority of our legacy products are Cambium PMP 100 series. We still have some other old stuff, but as we come across opportunities to remove it, we replace it with Cambium.

Everything new we're putting in is either the PMP 450 series or the ePMP 1000/2000. We tend to put the 450 in all of our core towers which are really large towers – they're very tall, see very far, have a lot of repeaters transmitting off of it and we can actually subscribe a lot of customers off of them. Our preference is the 5 GHz band, or 3.65 GHz, with PMP 450.

We've started deploying the PMP 450i 900 MHz product in more of our micro POPs. We have a lot of trees in the area, so we have a lot of customers with non-line of sight connections. Our biggest concern about using the 900 MHz band is the local electric utility's smart grid, which may interfere with our 900 MHz equipment. We're using the ePMP 1000 and 2000s for all of our line of sight repeaters and micro POPs.

Why did we end up going with Cambium as our preference? We think the quality of the product is just superb – better than anything else – and equally well thought through. It's just a good quality product. We don't worry about putting too many people on an AP like we do with the other vendors' older legacy stuff.

The key factor for us is GPS synchronization. All of our towers are close to each other, so we have to keep everything synchronized. When we get out into little areas the synchronization helps, especially if we're doing something like a little lake subdivision that has 300 lots. We have PMP 100 series in there using 5 GHz and 900 MHz. Now we're deploying the ePMP 2000 in the same area, so we can actually deliver more bandwidth to everybody. With the filtering it can do, it plays very nicely with the Canopy 5 GHz product on the same tower. We'll be adding more micro POPs in these areas to get all our customers migrated off of the lower throughput non-line of sight equipment. Our plan is to install the ePMP 2000 equipment on the outskirts surrounding this entire subdivision. It'll all play together nicely.

We're now getting started with the cnMaestro™ management system. It's just so much easier talking with a customer now – being able to show them exactly how many gigabits of data they're using, and their actual speed.

We recently did a partnership with Convergence Technologies. Basically, they built the network, but we're selling the services to supports, and adding customers. Our biggest growth area is actually on their network, which uses all Cambium PMP 430 and 450 Access Points. The advantage to our company is that it allows us to perform as a service provider. Convergence helps us seek out and develop new, higher revenue business customers. Their network is physically closer to Chicago, so our full-time outside salesperson that calls only on businesses has access to a larger hunting area.

Cyber also has towers in very underserved, rural areas – and in some cases very poor areas. There is a lot of demand for connectivity in these areas.

If you could start over again, what would you change?

I wish I could have predicted this extraordinary customer demand for bandwidth. I would have over-built the network, as we're constantly upgrading backhauls and fiber to supply additional bandwidth.

When we started, we just put in a 20 Mbps backhaul. Over time, we doubled it, doubled it again, and even doubled a third time. Now, we're adding high capacity licensed backhauls coming off of the fiber drops. We're already upgrading those licensed backhauls because we're blowing through that capacity as well.

When Cyber first started in 2003, customers were just basically ecstatic that we got them off dial-up and could provide them half a Mbps up to meg and half. Now they consider that early maximum basically dial-up speeds. They are just constantly wanting more – and strong demand makes for a growing business.

What type of structures, physical structures, and configurations are you using at your micro POP locations?

Our core towers are typically water towers, grain elevators, communication towers, radio station towers, cell towers – things like that. We consider anything that's taller than 200 feet a core tower. We can do a lot with that.

How was your experience with Cambium equipment in near line of sight and non-line of sight rural areas?

The new PMP 450i 900 is really spectacular. We're delivering six, 10, 12 Mbps to these customers from the same locations. We're seeing that the 900i is really helping us solve the current problem of customers wanting to be able to run Netflix. It's working out really, really well.

Actually, demand for bandwidth is growing everywhere. We source our broadband from three fiber links. We do this because we aim to have three different providers in three different geographic areas. Our concern is that even if we lose a fiber, we're sure that our network can handle the load. This configuration enables us to provide carrier class - or close to carrier class - services. We're finding demand is very strong.

Social media is a contributor to demand growth, but Netflix is the biggest driver. People streaming video for an hour or two every night to watch TV shows or movies consumes a significant amount of bandwidth.

All that old legacy equipment, whether it's non-Cambium or the old Cambium equipment, cannot keep up with streaming video. We're constantly adding and upgrading Access Points (AP) and Customer Premise Equipment (CPE) to meet demand. We're installing as many micro POPs as we can, getting rid of the old non-line of sight repeaters, and adding more line of sight repeaters.

These network upgrades come at a cost. Keeping up with the throughput needed for streaming video is causing constant reinvestment for our customers. As everybody in this business knows: it's a great business if you can go out there and invest one time into a customer. The customer pays that initial investment off in one year, but stays with you for two, three, four, 10 years; for the service provider, it's all "pure profit." When you reinvest in the customer, you're starting the clock over, so it's still the same customer, but now you had to reinvest – so you have to recoup the investment before profits come in.

Our biggest challenge here, besides finding the manpower to run around and upgrade everybody, is raising the capital required to purchase equipment. Basically, every penny we have coming in right now is reinvested in new equipment to provide more bandwidth to our customers. The real positive of this for us as a service provider is that customers are increasing their speed packages – and their monthly subscription rates – constantly. The Average Revenue Per User (ARPU) goes up concurrently.

Customers want the higher speeds to stream video. They see the value and are willing to pay for it. Five years ago, nine out of 10 people wanted the cheapest service we had, which was $39.95 a month. Now nine of 10 customers that call in want to know what the fastest thing they can have and they don't care about the price. It's really dramatic change in the pattern of our customers.

When deploying PMP 450i at 900 megahertz do you use sectors or an omni-directional antenna?

The 900i is a dual polarity AP. We're currently putting the 900i at existing micro POPs where we can have the Canopy 900. We have to do some fancy footwork in order to fit everything up there because you can't shut off all your customers on one day. We have to reconfigure the tower equipment, which is typically four sectors of 900, configure it into an omni, and then install the 900i in an omni configuration so we can start migrating customers over. Once we get a certain threshold point, we can force the 900 customers off, and then switch out the 900i omni to sectors. It's sort of a little bit of a transition game of moving people over.

We typically find that every customer we talk to is generally happy to switch to higher speeds.

Our price has been the same since 2003, but we have higher speed packages people can upgrade to and that's what's driving the RPU up. We're not raising prices. We're giving people more service – more product – for a higher price.

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