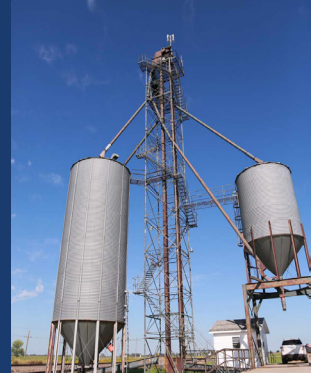


Extending the Network to Reach New Markets



“We saw the opportunity to expand outside our traditional footprint. We wanted to optimize performance and reliability by using the licensed spectrum. What we achieved is astounding. It is good business for us and our wireless customers are excited to see the change that broadband brings.”

- MATT IHLAND -
DIRECTOR OF
OPERATIONS,
RED RIVER
COMMUNICATIONS

Overview

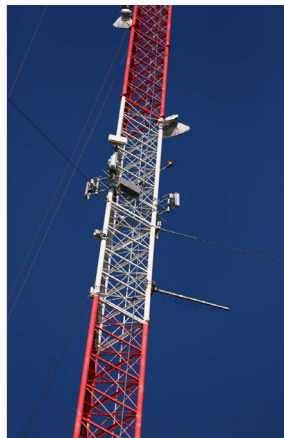
FARMERS IN NORTH DAKOTA NEED CONNECTIVITY TO RUN THEIR BUSINESS. RED RIVER

Communications is expanding their coverage area and offering high-speed connectivity by deploying reliable wireless connectivity in the licensed spectrum.

Challenge

A DECADE AGO, A GRAIN COMPANY THAT SAW THE NEED TO CONNECT FARMERS BUILT

a network that provided 3 Mbps speed operating in the 900 MHz unlicensed spectrum. As demand for broadband grew to outstrip the network capacity, Red River stepped in. Deeply experienced in Fiber to the Home (FTTH) networks serving thousands of customers over a wide area, Red River saw the opportunity to extend their network to a new area and provide high-speed connectivity.



PTP Backhaul Link

For Red River, this would:

- Expand the service area to new locations
- Develop a new revenue stream
- Leverage their expertise as a service provider

The opportunity would have to be a viable business. The investment strategy would require upgrading the existing tower locations to provide increased capacity, reliable service with increased speeds, and deliver a 5 year payback on their investment in the business and infrastructure improvements.

Solution

TO ENSURE THAT THEY WERE ABLE TO PROVIDE CONSISTENTLY RELIABLE SERVICE IN

the radio spectrum, Red River’s strategic plan included using the licensed spectrum. This would provide exclusive use to the RF bands, eliminate interference from another operator, and provide consistent network performance. Leveraging the tower locations of the previous system, Red River deployed higher speed technology to provide connectivity.



PMP 450 Access Points

Backhaul Infrastructure

POINT-TO-POINT (PTP) 800 LICENSED

microwave backhaul connections provided a consistent 368 Mbps speed to the tower locations.

- Frequency: 6-38 GHz licensed spectrum
- Throughput: 368 Mbps



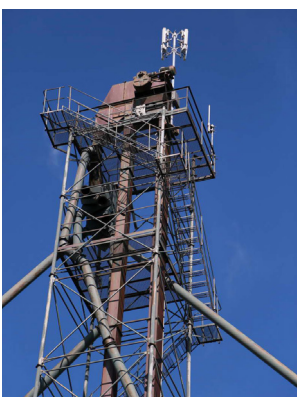
PTP 800 Licensed Microwave

Wireless Access Network

POINT-TO-MULTIPOINT (PMP) 450 LAST MILE WIRELESS NETWORKS

comprised of Access Points (AP) at the tower locations and Subscriber Modules (SM) at the business and residential locations were deployed.

- Frequency: 3.65 GHz licensed spectrum
- Throughput: 125 Mbps per AP



PMP Access Point

Results

IN THE FIRST PHASE OF THE DEPLOYMENT,

Red River changed out a section of the older wireless broadband equipment to the new Cambium Networks PTP 800 backhaul and PMP 450 access network. "Farmers rely on broadband connectivity," says Matt Ihland, Director of Operations. "They count on data transfer to run their business. They are thrilled to see higher speeds and a higher quality service, and we're thrilled to see the cost

difference and how rapidly wireless broadband can be deployed."

In the one segment of the network that was upgraded, the wireless broadband network consistently outperformed the DSL alternative offered by another carrier. While the network segment served 385 customers when purchased by Red River, word of mouth spread and the subscriber base in the area quickly grew to 500 customers before marketing efforts were launched. The plan is to continue to grow the subscriber base over the next 12-18 months and continue to deploy PTP 800 and PMP 450 across the coverage area.

"With this new revenue stream and the growth of the subscriber base, the investment is outperforming our expectations," says Ihland. "We are on schedule of our 5 year payback target. Even better, we are adding satisfied customers every week."

About Red River Communications

Connecting 4,000 customers over a 3,000 square mile (8,000 square km) area, Red River provides broadband connectivity to farmers in North Dakota.

CHALLENGE

Increase the throughput of a legacy wireless broadband network, and establish a sustainable business in a new territory.

SOLUTION

- Licensed Microwave backhaul to bring high capacity to the area.
- Licensed fixed wireless broadband access networks to distribute high speed connectivity.

Why Red River chose Cambium Networks:

High Throughput – for data transfer, voice and streaming video.

Licensed Spectrum – in both the PTP backhaul and PMP access networks.

Low Latency – to support sensitive VoIP and streaming video applications.

Proven Reliability – to minimize downtime and maintenance labor costs while maximizing customer satisfaction.