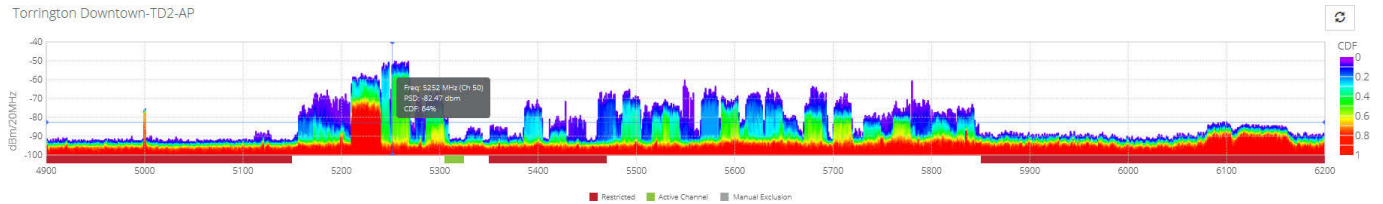VISTABEAMHD
COMMERCIAL INTERNET

Deploying Gigabit Wireless in Rural America

Vistabeam is a pioneering wireless service provider with coverage that spans 40,000 sq miles (103,600 sq kilometres) across three states and 97 towns. Vistabeam installed their first customer in Torrington in May of 2004. Before that, Matt Larsen, CEO of Vistabeam, set up one of the first dialup Internet providers in Torrington in 1997 and introduced wireless Internet access to Torrington in 2000 through his company Scottsbluff Networx. Vistabeam's roots in Torrington run long and deep, and providing great service to the residents and businesses in the area has always been a primary objective. Vistabeam is continuing that commitment with the launch of VistabeamHD to the Torrington business community. VistabeamHD is a new kind of wireless, capable of speeds of up to 1Gbps and backed by a redundant network with multiple routes into Goshen County. When fiber cuts take other providers down, businesses, residents and schools suffer. The Vistabeam network is designed to survive fiber cuts, with seven independent routes into Goshen County and local support in place to make sure any outage is a short one. VistabeamHD delivers fiber-level speeds and low latency needed for commercial and industrial applications, backed by a reliable network and local support.

Challenges

In 2017 Vistabeam ran into an increasingly crowded spectrum problem in 5GHz that made it extremely challenging to deliver effective high-speed business internet connections. They began to deploy IgniteNet 60GHz PtP systems to feed micro-pop style deployments to fight the noise and win the market. As noise further increased, the 5GHz spectrum couldn't be used for critical business customers any longer.

Solution

Understanding the situation Vistabeam was facing in Torrington, IgniteNet reached out to Matt Larsen, CEO, to deploy the latest MetroLinq 10G Omni and MeshLinq products to rise above the noise and deliver next generation internet services to businesses in Torrington. Business internet connections are critical for Vistabeam's clients so it was important to build redundancy and adaptability into the design which is where the MeshLinq came into play. Utilizing Trill, the MeshLinq allows for an adaptive ring to be constructed within the network. In the event of power outage or loss of connection the Trill bridge will re-route traffic for all nodes to ensure there is always a path to the internet.


Network rollout

The first step for creating the right design was to plan the network layout with Andrew Wicker and the network infrastructure team at Vistabeam and secure strategic rooftops and work out installation details for several locations across the business district of Torrington. With the available roofs, 4 locations were chosen based on coverage needs and customer density. With the node locations selected, the link distances were analyzed to determine the correct PtP antenna size to use for the ring topology to be deployed. Using IgniteNet's LinqPath, expected rain fade was calculated for Torrington and the ML-60-19 was chosen to ensure 99.999% uptime for the PtP radio system (the longest connection was calculated to be 0.32 miles (513 meters) and the 99.999% reliability distance for a minimum of 1Gbps connection is 0.44 miles (705 meters) for this area).

To ensure interference-free operation between the PtP and PtMP systems it was determined that the PtMP systems would operate on channels 1/2/3 and the PtP systems would all run on channel 4 – all of which are unlicensed channels in the US.

The ability to merge PtP and PtMP into the same infrastructure with no interference, high capacity, and redundant paths allowed Vistabeam to build a future proof, multi-gigabit network with all the essential ingredients that service providers need: no interference, very high capacity, very low latency, highly secure, and cloud-managed for easy and cost-effective remote monitoring and troubleshooting. The network design is also extremely expandable as well since more clients can be connected to the MetroLinq 10G Omni base-stations and even higher numbers of subscribers will be supported in the future through firmware updates.
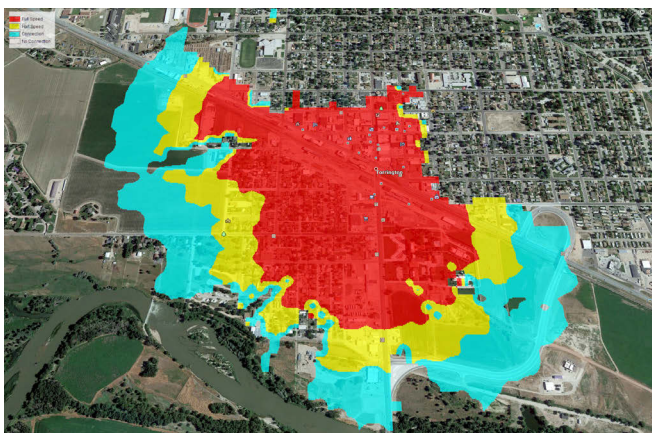
Coverage maps

Below images represent network coverage maps when connecting MetroLinq 10G Omni with different type of clients.
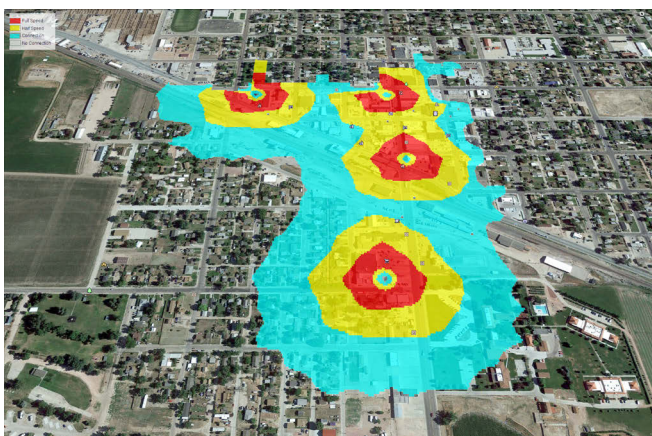
ML-60-LW as client
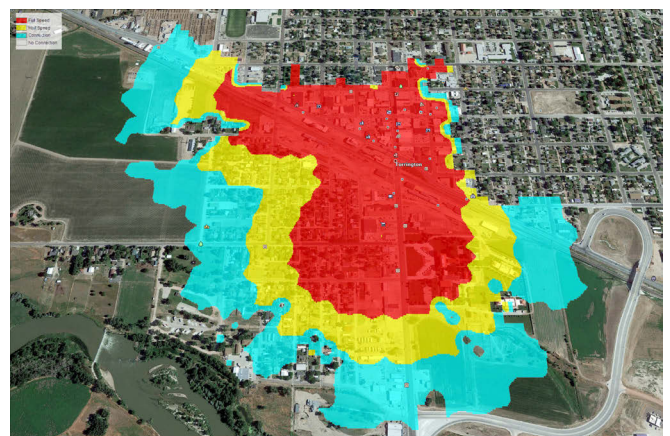
ML-60-19 as client

**ML-60-35 as client**

- ● **Red**   2.5Gbps
- ● **Yellow**   1Gbps min
- ● **Blue**   300Mbps min

Future Growth - Same Infrastructure

Vistabeam can add more 60GHz clients to the MetroLinq 10G Omnis in order to extended coverage into new areas (residential or business). The table below summarizes network base-station deployment cost and potential capacity that can be provided to the surrounding wireless clients.

The above calculation shows the cost benefit of 60GHz mmwave technology versus fiber. It is difficult to find accurate cost comparison ratios, since prices vary in different states, but an average cost to connect a customer with fiber is around 2,500 USD and IgniteNet can improve return on investment multiple times without sacrificing performance.

Total cost to deploy 60GHz MetroLinq wireless vs Fiber client (USD)
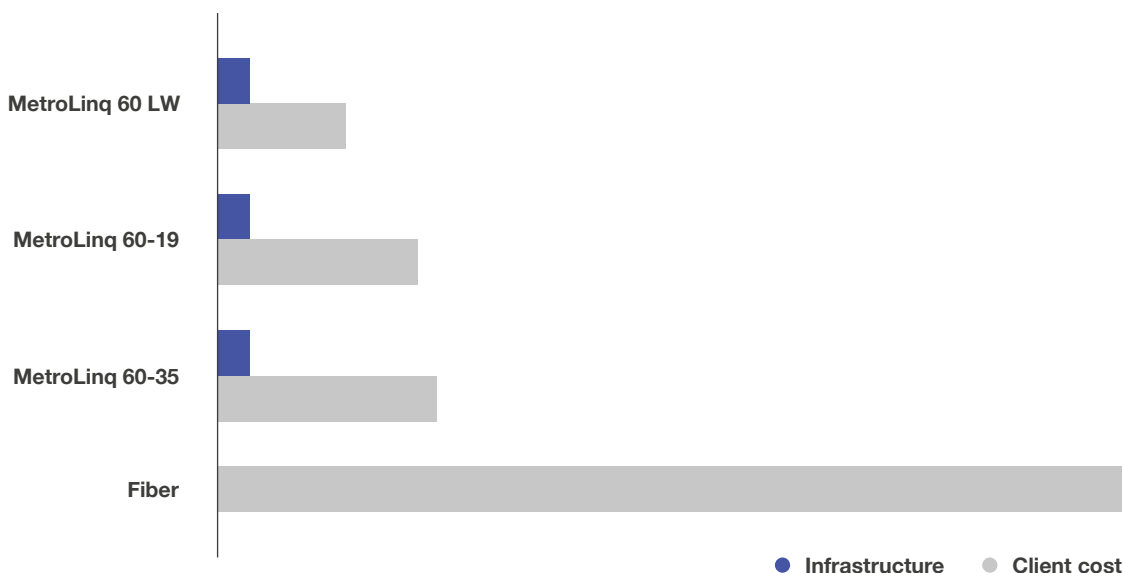
Time to deploy 60GHz MetroLinq wireless vs fiber (Days)

Besides the significant cost advantages of IgniteNet's MetroLinq platform compared to fiber, there is also a significant time savings as well. The time to deploy fiber to the city would take months or even longer depending on permits and build time requirements. With the MetroLinq platform, gigabit internet can be setup and deployed in a couple of days.