

Case Study

Mercury Broadband

Customer Needs

Rural areas in the U.S. suffer from a shortage of affordable broadband services. This lack of high-speed internet is often due to the low population density and high cost of reaching users in those areas. The unserved and underserved need broadband speeds in these hard-to-reach areas. Mercury Broadband wants to reach as many subscribers as possible, using the right technology for each problem – wired, wireless, or hybrid solutions.

The Solution

Samsung partnered with t3 Broadband - a Kansas-based company that helps service providers design and engineer their networks. t3 Broadband believes that broadband is the economic driver for communities and will oversee the project engineering, including using CBRS spectrum with Samsung's Massive MIMO antennas and radios to meet the areas' comprehensive coverage and high throughput needs while laying the groundwork for an easy upgrade to 5G.

Results

Samsung and t3 Broadband will help Mercury deploy their new CBRS-based Fixed Wireless Access (FWA) network in several states. The new solution adds customers and increases speed and spectral efficiency while reducing Operating Expenses and Capital Expenses.

"Samsung and t3 Broadband have delivered a solution that will make a real difference for our customers in rural areas, enabling us to offer them the best in broadband connectivity."

Garrett Wiseman
Chief Executive Officer
Mercury Broadband

Advancing rural connectivity



64T64R Massive
MIMO CBRS Radios



CBRS 4T4R
Radios



CDU50
baseband units

The Customer Need

Economic Way to Deliver High-Speed Internet to Rural Communities

Mercury Broadband began as a Kansas-based internet provider to rural customers. They grew organically, providing fiber and wireless telecommunication services in multiple states throughout the American Midwest. It's in their DNA to provide service to underserved rural areas.

The digital divide is vast in rural parts of the US, with a lower percentage of people possessing high-speed broadband. Without broadband access, residents cannot participate in many activities common in many parts of the country, such as telehealth visits, online education, in-home streaming entertainment, and work-from-home opportunities.

Mercury Broadband has a difficult task. They want to expand their footprint, providing high-speed internet service to small populations over large areas, and laying fiber in these areas is not always cost-effective to every customer. Also, spectrum is a finite resource and utilizing it efficiently is key to success, so Mercury needed a creative solution to effectively supply wireless services to consumers.

"t3's primary focus is to help our customers achieve their goals in their rural communities. Samsung provides great tools for realizing t3's objectives."

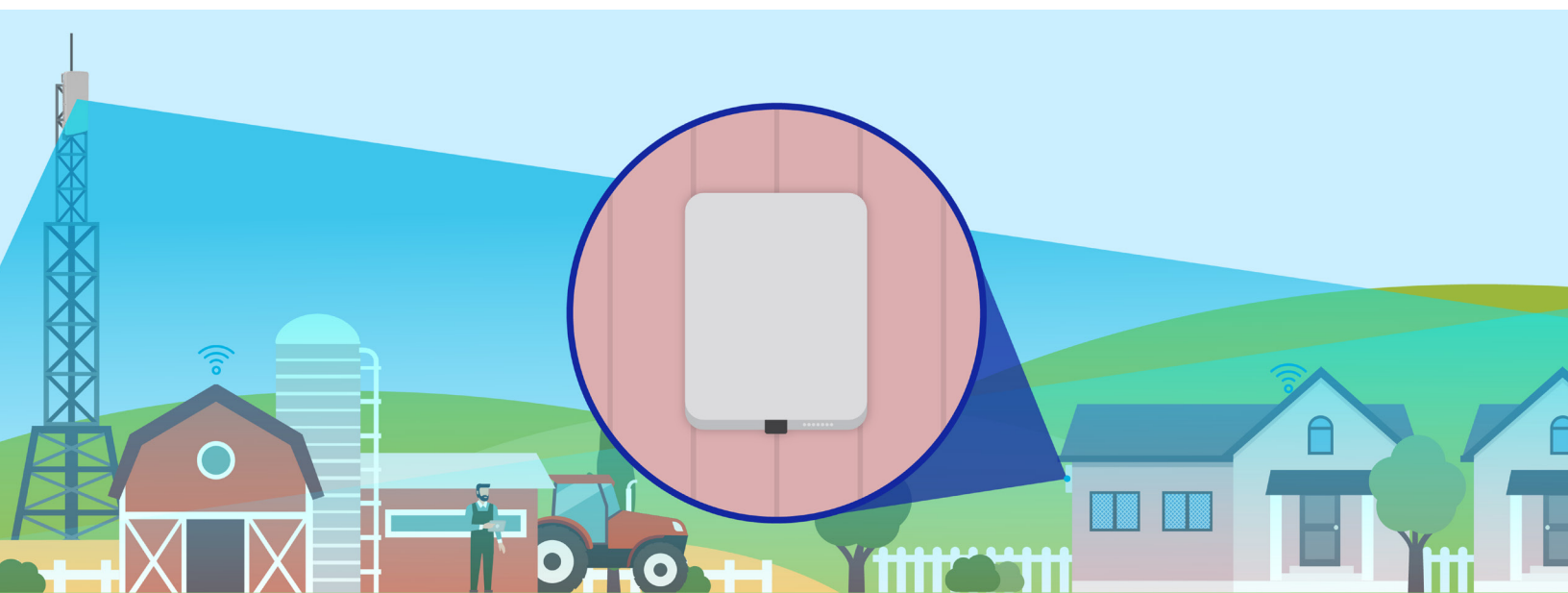
Chris Crowe
CEO
t3 Broadband

The Solution

Fixed Wireless Access Using CBRS

After evaluating many options, Mercury chose shared CBRS spectrum, a mid-band frequency running from 3.55-3.7 GHz. Mid-band frequencies are desirable due to their ability to carry a lot of data and over long distances. The former means they can meet the FCC throughput requirements, while the latter means they can economically cover the necessary area.

The CBRS band is unique in the US. It is the only shared spectrum in the country, and, when not being used by an incumbent or by an operator or enterprise that purchased the rights to use it in a specific geographic area, it is free for anyone to use.



CBRS is available in the rural areas where Mercury plans to use it to provide coverage, thus ensuring lower costs for their customers.

Mercury had teamed with t3 Broadband with great success in the past. They had built a long-term partnership with t3 Broadband performing RF design, tuning and optimization, and helping Mercury overcome complex engineering challenges. Together, Mercury and t3 Broadband performed extensive tests with many CBRS RAN vendors to find the right manufacturer to solve Mercury's rural broadband challenge.

"Our CBRS solutions bring powerful, reliable 5G connectivity to the areas that need it most, and we look forward to teaming with t3 to boost wireless connectivity in even more communities across the U.S."

Imran Akbar
Vice President and Head of
New Business Team
Networks Business, Samsung
Electronics America



They selected Samsung for several reasons:



Stability of the service



Increased bandwidth and speed compared to non-tier-1 vendors



More robust equipment than competitors



Much better cell edge performance



Advanced capabilities, 5G-ready



Solid reputation



Works as intended and requires a lot less handholding

One further reason that Mercury and t3 Broadband chose Samsung was its extensive experience with CBRS. Having decided on using the free band, Mercury and t3 Broadband wanted someone with the expertise to help them make the new network a success.

Samsung has a broad Massive MIMO portfolio, including the 16T16R, which supports both CBRS and C-band and the 32T32R and 64T64R antenna and radios.

Samsung also offers the CDU50 baseband unit. The CDU50 provides increased performance compared to the prior model while supporting all LTE and 5G NR network frequencies in one unit. It also supports both DRAN and CRAN configurations, providing Mercury cost reduction and enhanced flexibility in managing its network.



The Results

Satisfied Customers with Enhanced Services

With Mercury Broadband, backed by the strength and expertise of Samsung and t3 Broadband, subscribers in the Midwest will be able to more than double their throughput, with a 119% increase in speeds on average across sites seen in trials compared to other vendors and past implementations. Subscribers will also enjoy using a new application which provides a suite of services for both consumers and enterprises, enabling them to manage, control, and better utilize the various devices and applications within their home or office. The app manages services across cameras, smart TVs, phones, and tablets, monitoring privacy, visibility, and security.

Mercury has seen an increase during tests in spectral efficiency, i.e., the amount of data delivered over a spectrum band, using Samsung's Massive MIMO antennas and radios engineered and supplied by t3 Broadband. This means increased coverage, bandwidth speeds, and reliability, especially at the cell edge where customers can maintain a more robust connection than other solutions. Mercury will see reductions in OpEx and CapEx costs by reducing the number of towers forecast for use while still maximizing service to all customers.

The service will include new services for businesses and provide smart home experiences, such as an advanced managed Wi-Fi solution that will allow consumers to address a range of functions—from home security to appliances—via a single device.

Mercury Broadband plans to expand its footprint over numerous states within the next several years, aided by its partnership with Samsung and t3 Broadband. Working together, Mercury, t3, and Samsung are helping to shrink the rural divide.

"Everyone should have access to stable, high-speed Internet service, no matter their location."

Garrett Wiseman
CEO
Mercury Broadband