

Finding Middle-Mile Connections

The biggest challenge municipal networks face may be connecting to the public internet. Here's a guide to overcoming that challenge.

By Offir Schwartz / Capcon Networks

Rural municipalities often face uphill battles in modernizing their broadband connectivity to meet the needs of their communities. Because of their lower population densities compared with urban areas and the high cost of building networks with lower economic value, these communities often fail to attract investment from service providers.

When rural towns decide to tackle the problem by building their own networks, they must deal with many more challenges than larger, denser cities. One is connecting their networks to the outside world in a cost-effective way.

Geography is one of the biggest challenges in connecting or sourcing the middle mile for rural towns. Most urban communities have several wholesale service providers to choose from – typically, the local exchange carrier and cable MSO may have fiber within 1,500 feet, and several other competitive providers and pure-play wholesale fiber providers may also have fiber nearby.

But the more rural an area is, the fewer options exist. Middle-mile providers avoid remote communities with low residential and business density for the same reason last-mile providers stay away: Compared with building in urban markets, the prospect of expanding into rural communities is expensive and unattractive.

The disadvantages inherent to rural towns – geography, low population density and lack of fiber density – compound one another to make sourcing middle-mile transport unusually difficult for rural municipalities. In addition,

incumbents that might provide backhaul generally aren't thrilled with the prospect of losing market share. They may view municipal network initiatives as competitive threats and resist working with municipalities on sourcing middle-mile transport and/or lobby to fight them in their quest to modernize.

The good news is that despite these challenges, over the last several years costs for backhaul services have decreased and are no longer major deterrents for municipalities. Instead, navigating tricky relationships, finding fiber resources and managing the overall complexities in the fight to modernize have become more problems of logistics and expertise – still often a daunting task for most municipalities that already face many challenges and complexities in building and operating fiber networks.

BUILDING A MIDDLE-MILE BLUEPRINT

To determine the best options for high-speed internet access to a community, the following steps are considered best practices.

- 1 Create a hit list.** Local exchange carriers such as AT&T, Verizon and Frontier can sometimes serve as viable options for the middle mile. If they are, exhaust those options first, then create a list of all potential options, not only in your immediate service area but also well beyond, including in adjacent counties.
- 2 Zoom out geographically and get creative.** With a list of targets in striking

distance, uncover business sales contacts at those providers to start conversations that might persuade them to build to your town, meet in the middle, connect at their location or find a hybrid solution.

- 3 Go through the process of elimination.** When you establish contact with the providers on your hit list, decide which are viable options and narrow your list to a few providers. Then start conversations about how to reach a deal.
- 4 Get the wheels in motion.** If you uncover a viable middle-mile solution that includes your upstream needs as well, it's time to start planning. Determine whether your upstream provider will invest in a point of presence or whether you want to leverage existing points of presence, and decide how to make that connection. Negotiating and collecting agreements, pre-engineering, validating network design and uncovering potential hang-ups along the route will help smooth the deployment of services.
- 5 Consider peering options.** No middle-mile solution should be weighed without consideration for internet peering. Weigh your options for networks to connect to and strategies to use for keeping bandwidth costs low. If you have a forecast of bandwidth usage from your feasibility study, now is the time to plug in those figures to see whether connecting to public peering exchanges or privately peering with popular content providers, such as Google, Netflix or Hulu, is worthwhile.

CHOOSING A PARTNER

Fortunately, municipalities don't have to go it alone. Like any other project, a fiber initiative consists of multiple steps that need to be coordinated to work successfully, and a municipality should bring on the right partner for each step. Often, "it takes a village" to get the job completed. When embarking on an FTTx initiative, a municipality should adopt a startup mentality and build a team to achieve its goals.

Incumbent local exchange carriers may be able to serve as middle-mile providers for municipal networks. If those options aren't viable, begin looking further afield.

The right partner to help connect a municipal network to the internet should possess the following attributes:

Knowledge and expertise

It's important to find a provider that has the tools to uncover buried treasures. Industry insiders that have access to tools not readily available enable municipalities to quickly identify potential connection points within a specific radius, then connect to the next closest points, and so on. Sophisticated partners can shorten engineering cycles by quickly eliminating middle-mile options that at first glance may seem viable but, to the trained eye, are not.

When faced with resistance from the incumbent provider and limited fiber in the immediate area, a city in Texas turned to Capcon Networks in its search for middle-mile solutions.

Capcon Networks' reliable databases of fiber in the area were used to uncover and source fiber that was close to the city's point of presence, making it possible for the provider to build to it. In addition, our existing wholesale relationship with the incumbent provider abstracted the end user and ultimately led to a successful multivendor middle-mile solution. The solution leveraged the incumbent as well as a pure-play fiber provider that met the client's economic model and technical requirements for network diversity.

Long-standing relationships

Another key consideration is having established relationships and the ability to leverage them in a way that makes the most sense for the municipality. Partners often serve as good buffers between incumbents and

GETTING STARTED

- 1 Use your resources!** Talk to other municipalities or neighboring towns that have done it before. Often they can and will point you in the direction of fiber assets that were previously unknown to you and could offer a potential solution.
- 2 Consider yourself a service provider now.** ISPs rarely, if ever, go at it alone, and neither should you. Work with experts in the field who can demonstrate a proven track record of success. At least three successful projects constitutes a good measure for a proven track record.
- 3 Persuade them to build to you.** Building an ROI use case for why a transport provider should build to you is a worthwhile exercise. If you can show a provider the revenue potential along the route you are requesting, they just may absorb the build costs.
- 4 Educate yourself about different types of transport options.** Understanding the economic and technical differences between dark fiber, lit fiber and Ethernet transport services may help you decide what direction to take when building your middle-mile network.

A knowledgeable partner can help find fiber assets that a municipality couldn't find on its own, enabling the municipality to design its network more cost-effectively.

municipalities. Partners that provide the most value have relationships with hundreds of regional access providers and maintain databases of available fiber assets that are otherwise unknown. With solid relationships and contacts in place, partners can help determine which hubs are nearby and talk with local technicians on the ground to uncover valuable information about where to splice, where to gain network diversity and what other nearby fiber may be used to complete a circuit.

A city in Tennessee required diverse transport east and west. Though some believed it would not be possible to get the network diversity needed, conversations with local engineers revealed that utilizing a certain building in the area would, in fact, provide that network diversity. Finding and tapping Capcon Networks' existing relationships and resources helped save money for the municipality.

White-glove user experiences
Connecting a network upstream

requires coordination and planning on several fronts. Splice meets, cross connects, right-of-entry agreements and permitting often require multiagency coordination. Managing delivery dates and coordinating installs impact project budgets. Integration can be difficult and stressful.

Partners that prioritize customer service and project management are key to ensuring smooth implementation and making network deployment less stressful. Having a team that understands the needs, can do the analysis and can work with multiple agencies to tie it together and lead the project is a huge benefit. ❖

Offir Schwartz is president and founder of Capcon Networks, which delivers advanced connectivity solutions to service providers. Contact him at offir@capconnetworks.com.



ofs
A Furukawa Company

INVISILIGHT® ILU SOLUTION

Installation Made Easy
with our
EZ-Connect® Module

SPEAK WITH THE EXPERTS!
Broadband Communities 2019 SUMMIT
Booth #313

Or visit us at www.ofsoptics.com