

# e<sup>+</sup> Mid-Atlantic Broadband Communities Corporation (MBC) Lifts Up Rural Communities

**With help from ePlus, MBC deploys new backbone network to deliver higher-bandwidth connectivity to rural communities in southern Virginia.**



## Business Challenge

In today's modern world, people need digital access to learn, to work, and to thrive. Otherwise, they fall behind. That's not something the leaders at (MBC), a nonprofit, middle-mile broadband provider in South Boston, Virginia, could allow to happen in southern Virginia.

MBC operates a 2300-mile open access fiber optic network, providing wholesale optical transport, dark fiber, and colocation services to carriers, ISPs (Internet Service Providers), data centers, and other telecom providers. The network supports 200 cell towers, 650 customer locations, and 15,000 near-net locations.

Digital access relies on high-bandwidth connectivity. But to provide higher bandwidth to its customers, MBC needed to upgrade its metro backbone network, because their existing 10G Ethernet ports were almost maxed out, and the network equipment was unable to support higher densities and capacities.



"We provide transport for all the major carriers in our area," said Mark Petty, vice president of network operations at MBC. "We saw the growth of 5G network throughout our area footprint, and we knew we needed to grow."







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### Solution

Making a large-scale change to a backbone network is a complex project. It requires special attention to technical requirements, careful planning, thorough testing, and solid execution. To help make it happen, MBC turned to ePlus and Cisco.

The new design needed to satisfy several requirements. It had to replace the existing metro network, support MBC's forecast in bandwidth growth beyond 10G to 100G, 200G, and 400G utilizing the same platforms through software and optic additions, and do it at the lowest 5-year total cost of ownership (TCO).

Working with the team at MBC, ePlus helped design a network backbone that would be built with Cisco Network Convergence System (NCS) 540 and 5700 routers as well as Cisco 400G Digital Coherent Optics QSFP-DD ZR+ and QSFP-DD High-Power (Bright) ZR+ transceiver modules. In addition, ePlus performed lifecycle, capacity, and support analysis on the solution to ensure the design met requirements.

Before MBC would accept the new network design, however, it had to be field tested. But product availability was an industry-wide struggle at the time, and many components of the new network had long shipping lead times.

ePlus, in partnership with Cisco, developed test cases for acceptance of the network and procured loaner equipment. This included obtaining new to the market loaner coherent ZR+ optics from Cisco to test reach between the routers at different bandwidth capacities (100G, 200G, and 400G).

MBC, Cisco, and ePlus teamed in performing tests for several months, executing use cases on the loaner equipment without disrupting the existing network. This testing on the MBC fiber network proved the future ability of the solution to support higher bandwidth needs, expedited the turn up of the network implementation when shipment of the ordered solution arrived, and eliminated the need for purchasing additional amplifiers where distances between routers using older optics was not supported.

With confidence in the capability and cost-effectiveness of the new design, MBC replaced its existing metro network with the new Cisco solution.





## Business Outcomes

### ***Higher Performance, Lower Cost***

Based on a 5-year total cost of ownership, the Cisco design delivering 400 Gigabit Ethernet connectivity priced the same as 100G upgrades priced just a couple years ago. In addition, coherent optics provides better power efficiency that eliminates the need for amplification, lowering total costs even further. And the new design is easier to manage and offers more capability, providing simpler traffic flows while increasing routing and service flexibility.

All these benefits together have increased performance and lowered cost. In fact, the new network's performance is factors above the previous one, from having newer technology embedded in the hardware design, as well as newer software and protocols to drive better efficiencies in usage and resiliency.

The throughput, size of the chassis, lower power requirements, options on port speeds, flexibility and scalability to expand, optical distances, and ease of management were all key factors in MBC's decision to implement the new Cisco network.

"We did a full evaluation and looked at total cost of ownership for five years," Petty said. "The Cisco solution was far superior technology-wise than the other products we saw on the market, and price-wise was certainly much better."

### ***Enabling Economic Advancement***

MBC's fiber network supports 41 rural communities. It provides a foundational support service, enabling national carriers and internet service providers to connect with their residential, businesses, school, and healthcare customers, enabling digital access and key services to reach these communities.

By upgrading their metro network backbone, MBC is able to deliver more bandwidth to these communities than ever before, unlocking the potential for new economic development and for advanced learning opportunities to reach underserved areas. This lifts up the communities by opening new channels for economic and social advancement through technology.

### ***Strong Foundation for the Future***

As technology evolves and demand for 5G services grows, future opportunities will be linked even closer to high-bandwidth connectivity. By putting in place a 400G metro network, MBC has created an infrastructure that will support the needs of its communities today and for many years to come.

"Economic development is one of our key missions," Petty said. "We view ourselves as a very integral part of the critical network infrastructure that's continuing to be deployed across southern Virginia."





# Why ePlus?

ePlus offers decades of experience helping network providers design, build, and manage complex fiber networks. Using a transparent, consultative approach, ePlus engineers engaged with MBC to understand their business and technical requirements, which enabled them to design a high-performing, cost-effective solution (leveraging their strong partnership with Cisco) that was reliable and easy to manage.

“ePlus engaged in our architectural conversations,” Petty said. “They brought a strong knowledge base to those conversations, experience working with Cisco, and brought in resources when we needed them. During the pandemic, ship dates were crazy. The ePlus team working with Cisco went over and above to arrange demos, get us equipment, oversee all the moving parts, and keep our project moving forward.”

**To learn more about ePlus, visit [eplus.com](https://eplus.com).**



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