During the global pandemic, teleworking and remote learning have risen dramatically, driving Internet usage to unprecedented levels. Not surprisingly, this is placing an enormous strain on service provider networks. All signs point to these usage patterns becoming the new normal, permanently altering the way we will live, work, learn and play. So what's a service provider to do?

Federated Telephone Cooperative, based in Chokio, Minnesota, was beginning to experience similar challenges in its network as a result of more and more subscribers working and learning from home. To ensure that its network could meet the current and future needs of its subscribers, Federated decided the time was right to invest in its access network.

THE SOLUTION

Federated was looking for a simple and cost-effective solution that would increase bandwidth and reduce the risk of network bottlenecks. The cooperative also wanted to make it easier to manage and maintain its access systems, which are spread throughout a service area spanning over 3,000 square miles.

Fortunately, the bottlenecks in traditional Layer 2 access networks are one of the easiest locations in the network to upgrade, especially where existing access systems are aggregated together. Why? First, adding more bandwidth at these locations will make a big impact on the quality of service delivered to subscribers over existing access technologies. Second, it's at these aggregation points that service providers can reduce the amount of fiber and the number of upstream router ports required, and in turn lower the cost of network upgrades.

In its existing FTTH network, Federated had a 180-mile 10G ring that connected all of its remote offices. Increasing network capacity and improving performance would require the 10G ring to be upgraded to a 40G ring. In addition, the older FTTH platforms in the network, which had 1G uplinks, would need to be replaced with new platforms that were capable of supporting 10G uplinks.
To meet these requirements, Federated chose to deploy the latest innovation to the Calix AXOS E7-2 Modular System—the Calix 10GE-12 Aggregation Line Card. This solution, which enables both subscriber interfaces and standards-based 10GE transport and aggregation, allowed Federated to increase bandwidth and capacity without costly network upgrades.

**THE RESULTS**

By successfully deploying the Calix Intelligent Access EDGE aggregation line card solution, Federated Telecom saw the capacity of its ERPS rings increase from 10G to 40G.

With the support of Calix Professional Services, Federated was able to complete its upgrade quickly with no network downtime and no service disruption for subscribers. These upgrades addressed current network performance issues and position Federated to easily accommodate future growth in IP traffic, which the company views as critical to its long-term success. “In our IP network, we’re seeing a one percent increase in data traffic month over month, so our IP network has really become the core of what we do,” says Tom Lorenz, Operations Manager at Federated.

By capitalizing on the 12 ports of 10G Ethernet available in its network, Federated can aggregate up to 24 systems at one E7-2 location to create an efficient and optimized dense fiber uplink into its services edge. This will deliver a higher concentration of traffic and require less fiber in its outside plant. Because fewer router ports are used, this results in a substantial reduction in Federated’s overall network expenses.