



# Ciello Improves Broadband Quality with Guidance from Calix Network Consulting

## **CHALLENGE**

San Luis Valley Rural Electric Cooperative (SLVREC) had been powering the homes, schools and businesses of the San Luis Valley for decades, but the residential and business subscribers were underserved when it came to widespread access to another essential service: dependable and affordable high-speed broadband services.

In 2015, to help bridge this digital divide, SLVREC launched Ciello, a wholly owned subsidiary that would augment the co-op's electric services with some of the fastest broadband available anywhere. Since its inception, Ciello has grown rapidly building out more than 650 miles of fiber in its 8,000 square mile operating area and providing fiber-to-the-home and fixed wireless broadband services to over 5,800 broadband subscribers.

As a result of the Covid-19 pandemic and significant growth in the number of people working and learning from home, Ciello has seen a further surge in demand for its broadband services. "We went from an idea to fifty-eight hundred subscribers in just a few years," observes Monroe Johnson, Ciello's chief technology officer.

This rapid growth came at a cost, however. To keep up with demand and provide a superior broadband experience, Ciello also needed to address several technical and operational challenges including:

- Cost effectively increasing transport bandwidth;
- Reducing broadcast storms on its existing flat Layer 2 network design;
- Addressing IPV4 exhaustion
- Improving network security, and
- More efficiently authenticating subscribers on their network.

To proactively address these challenges, Ciello realized it needed a knowledgeable partner that could augment its technical team and provide guidance on an array of topics to help grow the business and improve network reliability, availability, and security.

## **SOLUTION**

To ensure the success of its expansion plans and address the specific issues it was seeing in the network, Ciello turned to Calix Network Consulting Services.

"The depth of networking experience and the broad view of the industry that the Calix team brought us is something we don't have ourselves," says Johnson. "One of the ways in which Calix Professional Services helped us with our IP strategy overall was in the way we authenticate users. We also created a clear migration path to dual stacking, operating both IPV4 and IPV6 in our



## **COMPANY**

Ciello  
Parent Company  
San Luis Valley  
Rural Electric Cooperative

## **WEBSITE**

[www.ciello.com](http://www.ciello.com)

## **LOCATION**

Monte Vista, CO

## **SERVICES**

High-speed Internet, VoIP

## **SUBSCRIBERS**

5,800



network. Calix Professional Services helped us identify which protocols, for instance, MPLS would be helpful within our overall network strategy.”

As part of Calix Network Consulting’s field proven approach, it conducted a deep dive assessment of Ciello’s current network architecture and identified immediate opportunities to reduce network outages, increase service availability, streamline operational workflows, and increase subscriber security.

“We talked a lot about redundancy and our various transport links out to the world,” adds Johnson. “And of course, a big thing for us has always been the reliability. We all realize that lots of things can happen to a network, and we want to get to the point where we can take those things in stride and minimize the impact to various customers.”

In addition to implementing network performance best practices, the Calix Network Consultant worked with the Ciello team to help them take advantage of the benefits of moving IP Layer 3 further out to the access network, as well as implementing MPLS for greater reliability, resiliency, and scalability. To accomplish this, the Network Consultant helped Ciello integrate the Calix AXOS E9-2 Intelligent EDGE System into its existing network consisting of the AXOS E7-2 Intelligent Modular System.

## **RESULTS**

After working with the Calix Network Consultant, Ciello saw immediate improvement in overall subscriber Quality of Service (QoS) and a reduction in outages. The Calix Network Consultant helped segment the network logically to reduce the impact of broadcast storms on broadband availability, and improved network security by adding options to Ciello’s existing network configuration to restrict malicious peer-to-peer communications and prevent IP and MAC address spoofing used for man-in-the-middle attacks. In addition, the Calix Consultant helped Ciello move from PPPoE for authentication to DHCP, which made it easier to restore quickly from power outage events with little to no manual intervention.

As CTO Monroe Johnson says, “The depth of experience and expertise of the Calix Network Consulting Services team were tremendously important during this whole process.”

In addition, unlike other consultants they had worked with in the past, the Network Consulting experts from Calix did more than provide their expertise and guidance. They also passed on their knowledge to the Ciello team so that in future they would be equipped to address a wide variety of problems themselves.

“The industry knowledge that Caix has helped us gain, and that we have in turn dispersed throughout the organization, is a big deal,” Johnson said. “I would highly recommend that other electric cooperatives who are thinking of getting into this business turn to Calix Professional Services. Other cooperatives who have been in this business for several years may also find themselves in a similar situation as ourselves. We realized there were upgrades that needed to happen, recurring issues needing to be resolved and efficiencies that could be gained. Turning to Calix Professional Services in these situations will also be well worth the time and money and I am sure the outcomes will be very positive!”