

CIENA OPTICAL ETHERNET METRO AREA NETWORK (MAN) TRANSFORMS ELECTRICITY AND TRIPLE PLAY SERVICES FOR CLARKSVILLE CITIZENS

What Our Customers Are Saying

“The scalability, functionality and ease of management of the Ciena solution are vital to our ability to provide high-quality and increasingly more innovative and advanced services to our customers, both in utilities and telecommunications.”

Christy Batts
Division Manager
of Telecommunications
CDE Lightband

Electricity is the one utility most people really need. But electricity is not always easy to deliver, nor must it be just a boring commodity. The Clarksville (Tennessee) Department of Electricity took a novel approach to managing the local electricity supply—introducing new services, transforming the customer experience, and cutting operational costs. Deploying a fiber optic network across its whole area of operation, the utility enabled an Advanced Metering Infrastructure (AMI), as well as a range of high-performance triple play communications services. The new, innovative network is based on Ciena’s Carrier Ethernet Service Delivery (CESD) Portfolio.

Challenges

The Clarksville Department of Electricity (CDE) developed a program to deliver AMI, high-speed broadband, telephony, TV, and Fiber To The Home (FTTH) services directly into homes via an Ethernet MAN. The CDE initially sought a more cost-effective and efficient way of monitoring and controlling electricity supply to its customers.

The city is home to the 101st Airborne Division at Fort Campbell and 10,000 students at the Austin Peay State University—populations that experience a high rate of turnover, around four percent a year. Every time a Clarksville property changes hands, the electricity must be switched off and then on again for the new occupants, with each disconnection or reconnection costing the CDE \$35. Because of Clarksville’s unusually high population churn, the CDE incurred this cost far too often to ignore, leading the utility to seek a way to manage this process that did not require sending a serviceman to a property every time the supply needed to be changed.



The solution was a city-wide Ethernet MAN, including fiber optic connections linked directly to the electric meters on the sides of homes and office buildings. The CDE could use the network to connect and disconnect the power supply remotely, but this solution only used a small portion of the network’s increased capacity. The CDE realized it had an opportunity to widen its offerings dramatically, using the same infrastructure to provide triple play communications services. The company created a new telecom division, separate from the utility business, which started operating under the brand CDE Lightband.

According to Christy Batts, division manager of telecommunications for CDE Lightband, “There was a huge cry in the community for more competitive broadband services and, by increasing the number of products we offer, we too realized we could improve customer service, off-set the cost of building the network, and use the extra revenue to develop new services for the city’s diverse and expanding population.”

To help build the network infrastructure, the CDE turned to Ciena. “There are lots of vendors offering some great technologies, but what was essential to us was scalability,” said Batts. “We felt that Ciena was the only company that could provide the scalability we knew we would need, cost-effectively and in a way that was simple to deploy and manage.”

Summary

Challenges

- High-occupancy turnover drove up the number of requests for power connects/disconnects
- High cost of purchasing additional power at peak times
- Growing demand from Clarksville residents for better-value broadband services

Solution

- Ciena’s CESD solution, providing an Ethernet MAN with FTTH
- Wireless access technology for remote metering operations

Benefits

- Provides high-performance residential triple play services, at \$20 to \$25 a month less than competitors
- Enables basic broadband service from 10 Mb/s, scalable to 1 Gb/s
- Reduces operational costs
- Supports utility and telecom business for multiple, diverse services on a single network, with scalability to meet future demand for more complex services

Solution

Alongside its electricity supply infrastructure, the CDE built an Ethernet MAN—an IP network comprising 125 miles of fiber optic cable around Clarksville—based on Ciena’s CESD products. The network uses Ciena switches to connect individual properties through 37 hubs. At each connected property, a Ciena platform serves as an interface between the fiber optic network and the electricity control unit mounted outside the property. This enables the CDE to monitor electricity supply and switch the supply on and off remotely. Inside the property, Cat5 Ethernet cabling enables services such as broadband, TV, and telephone to connect to the network.

Part of the infrastructure also involves utilizing wireless connectivity, which further helps reduce the cost of running the utility network. The CDE uses a radio frequency technology called ZigBee to control and gather information from meters at properties that do not subscribe to the triple play services and are not fiber-connected. In these cases, properties with FTTH act as network access points for meters in the local area. The Ciena solution combines the benefits of connection-oriented networks, which deliver deterministic and consistent performance, with the low-cost, simple-to-deploy, multiservice features of Carrier Ethernet technology. This combination enables the CDE and CDE Lightband to carry several different services—remote meter management alongside triple play—over a single network infrastructure, and offers the ability to add more services in the future.

Benefits

The Ciena solution has enabled the CDE to transform the way it manages its electricity supply, and is expected to help reduce operational costs by as much as \$4 million a year, eliminating the need for servicemen to perform manual connects and disconnects. Furthermore, the Ciena-based network allows CDE Lightband, the telecom arm of the utility, to provide a variety of new broadband services that offer better performance and value than competitive offerings.

Because Ciena’s Carrier Ethernet solutions have helped reduce operational costs and provide support for multiple services over a single infrastructure, the CDE can offer very competitive pricing. For instance, the CDE’s triple play package costs \$20 to \$25 per month less than competing services, on average.

Scalability is another key benefit of Ciena’s technology. Broadband to the home can be increased to as much as 1 Gb/s. For instance, one customer has requested 1 Gb/s service to support 12 televisions on his property.

Scalability is also essential in helping the CDE handle future demand effectively. “It’s all about being able to scale,” says Batts. “Managing demand with the Ciena products is very simple and easy. We can respond to growth very quickly without a lot of reconfiguration. We can easily add Ciena switches to the network and we’re ready to connect more customers in a very short time. Also, we’re able to monitor many different aspects of our systems, through network management software, which means that we know immediately if the customer is experiencing any kind of service disruption. We can be proactive instead of reactive, and as a result offer a better service.”



About the Clarksville Department of Electricity

The CDE provides electricity to 58,000 customers in Clarksville, the fifth largest city in Tennessee. The CDE maintains 892 miles of power lines, and its service area includes all of the 96 square miles located within the boundaries of Clarksville. The CDE is an independent company, but is regulated by and comes under the jurisdiction of the Clarksville municipal government.

The same fiber network that supports both AMI and FTTH plays an equally critical role in the future economic growth and development of Clarksville. Various local initiatives employ the network to deliver new services to the local community, including:

- **Austin Peay University** — increasing distance learning offerings for students, requiring more Internet bandwidth.
- **A large chemical manufacturer** — building a high-tech facility in the region, requiring high-performance network connectivity. In addition, the new employees and their families will receive on-demand for residential and business electricity and triple play services.
- **Clarksville residents** — demanding seamless delivery of more sophisticated services (such as High-Definition TV) to their homes.
- **Local police, security stations, and city developers** — installing CCTV facilities to reduce crime in local parks and utilize remote monitoring for the development of a new marina in the city.

These developments illustrate that fast, simple scalability is essential to enabling the CDE to support the needs of the community.

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