



Case Study

Conterra Telecom Services - Bridging the Digital Divide

Over the past 5 years, Ceragon (former Nera) has been a provider of its wireless transmission expertise, services and world class licensed radios to Conterra, which allowed creating a high speed communication network between rural US educational institutions.

Background

Conterra is a national carrier that provides high quality, high capacity backhaul and wide area network transport services for mobile communications carriers, school districts and government entities throughout the United States.

U.S. public and private educational institutions have for many years been under e-Rate, a federally funded program that provides up to \$2.25 billion per year in discounts on telecommunications services, Internet access, and internal networking. After 13 years of e-Rate support, nearly 100 percent of classrooms in rural school districts now have Internet connection, but many connections are slow (T1-based).

Typical Situation: A school district may have from a handful of locations to as many as 30 locations where they need to provide high capacity broadband services (20-100Mb/s per location). In rural areas, many of these locations will be very distant from CO/School District HQ which is typically the only location that has a high speed broadband connection. Each school is connected with a T1-line shared between telephone- and Internet- services.

The Challenge: Higher Capacities at an Affordable Expense

The rise in online video and other bandwidth-intensive applications required a substantial upgrade in the networks connecting rural educational institutions. Rural schools needed to go beyond their existing T1 lines at an affordable expense. Expanding the leased lines capacity or trenching a fiber was not an option, since it incurred extremely high costs and long deployment terms.

The Solution: A Reliable, High Capacity Solution

The only feasible and cost-effective way to provide the required capacity to each site was wireless microwave solution. Expanding the leased line capacity is in most cases prohibitive due to the cost of leasing higher capacity or trenching a fiber, or it will take too long waiting for the network carrier to get things done. In these situations, wireless microwave is ideal as it is reliable, price competitive, quick to install and can easily offer 100Mb/s or more to each site. With Evolution Series radios, Conterra has been able to provide schools with the required capacities, simultaneously creating room for future growth.



- Conterra utilizes Evolution Series high capacity radios in 56 school districts (representing more than 500 K-12 schools)
- Over 650 Ceragon microwave links are in service. This number is continuously increasing.
- Used frequency bands: 6, 11, 18 and 23 GHz
- Capacity per link is 20Mb/s to 600Mb/s
- All radios monitored by Netmaster NMS

Implementation

Microwave links with capacities from 25 to 600Mb/s are used to aggregate traffic from the most remote schools towards a central location in the school district. Some links are also carrying a few T1's to transport legacy services, and thereby off-loading the copper requirements (reduce T1 lease cost to the CLEC). Most of the microwave links used are software upgradeable to higher capacity, allowing grow-as-you-go future-proof thinking. The network is leased to the school district at a very favorable rate (Mb/\$) compared to similar capacity on leased T1-circuits.

Licensed Point-to-Point Radio

Evolution Series radio is designed to provide the ultimate reliability with up to five 9's availability, boasting more than 25 years Mean Time Between Failures (MTBF). Critical services, such as 911, are protected by the built in T1-ring design. Interference protection is achieved by using licensed spectrum, thereby eliminating unexpected network behaviour as other equipment is turned on.

Conclusion

Conterra has an ongoing relationship with Ceragon (former Nera) over the past 5 years as the provider of its wireless transmission systems and professional services to serve rural US educational institutions. The competitive advantage of this relationship translates into:

- Bridging the digital divide. It is a tremendous upgrade to go from a T1-connection to a 100Mb/s connection (full duplex). Students, teachers and administrators now have high speed Internet Access for services such as distance learning, sharing of tools, server-locations, backup etc.
- Reliable network. The network meets carrier-grade standards with connection reliability of up to 99.999% available uptime. This allows all users to trust the connection and "forget about it". Using professional services for survey, design, installation and commissioning has been a key to a successful deployment of a reliable network.
- Low maintenance. All radios (in all states) are monitored from a central location (NOC). Good cooperation, joint efforts in problem resolution as well as Ceragon's exceptional customer care service have been crucial in defining success of Ceragon and Conterra relationship.
- Future-proof network. The Evolution Series deployed in 2007 offers a flexible mix of traffic (T1, Ethernet and SONET). Easy re-configuration and capacity upgrade based on software licenses allows the customer to grow as the network evolves. Built-in T1-cross-connect and T1-protection switching allows the operator to carry critical phone-services along with voice- and data- traffic (Ethernet-traffic).



Evolution Series™ radio
4-40 GHz
10 Mb/s – 1.6 Gb/s
Ethernet & T1

About Conterra Ultra Broadband, Inc.

Conterra Ultra Broadband, headquartered in Charlotte, NC, is a facilities-based, FCC common carrier that provides high quality, high capacity backhaul and wide area network transport services for mobile communications carriers, school districts and government entities throughout the country. Conterra primarily utilizes licensed microwave frequencies to augment and extend seamlessly existing fiber backbones and rings in locations where the economics of deploying fixed-wire media for last-mile broadband connections are unfavorable. The largest end-users of Conterra transport services include Verizon Wireless, Sprint, Alltel, Verizon Business and DukeNet Communications as well as dozens of K-12 school districts. For more information about Conterra, visit www.conterra.com

About Ceragon

Ceragon Networks Ltd. (NASDAQ: CRNT) is the premier wireless backhaul specialist. Ceragon provides high capacity LTE/4G wireless backhaul solutions that enable cellular operators and other wireless service providers to deliver voice and data services, enabling smart-phone applications such as Internet browsing, music and video. With unmatched technology and cost innovation, Ceragon's advanced point-to-point microwave systems allow wireless service providers to evolve their networks from circuit-switched and hybrid concepts to all IP networks. Ceragon solutions are designed to support all wireless access technologies, delivering more capacity over longer distances under any given deployment scenario. Ceragon's solutions are deployed by more than 200 service providers of all sizes, and hundreds of private networks in more than 130 countries. Visit Ceragon at www.ceragon.com.

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