Case Study :: Transportation

The City of Napa

Boosting Bandwidth with Carrier Ethernet over Copper Solution

The City of Napa, located in northern California's world famous wine region, like many municipalities requires secure, high availability bandwidth for voice and data applications including emergency response, law enforcement, traffic management, and other public services. The number of broadband links required, as well as the bandwidth needed over those links,continues to increase as automation grows and telemetering and surveillance use increases. That growth can create a need for more bandwidth than is available or cost effective using the existing and available legacy telecom infrastructure.

The bandwidth constraints for the City of Napa reached the breaking point when the City needed a much faster two-way connection with the County than the existing T1 circuits they used could provide. "We wanted a connection from our public safety office to Napa County's public safety office; initially, we used slow T1 connection devices," according to Jay Palompo, systems administrator for the City of Napa. But that legacy T1 solution was limited to a transmission rate of only 1.5 Mbps per T1, a mere 768 Kbps per copper pair (consideringeach T1s uses two pairs).

The City of Napa needed much faster data communications, but the T1s would not scale efficiently to offer enough bandwidth and do so cost effectively. In addition, the City not only needed more bandwidth, it also needed to minimize its capex investment and operational expenses. This led the City to search for a reliable Carrier Ethernet solution that could use the existing copper cable plant efficiently as a simpler, quicker, and more cost effective alternative to investing in fiber.

After considering several options, the City of Napa chose to solve its needs by selecting the Actelis Networks Carrier Ethernet over Copper solution - which provides high speed broadband by logically bonding multiple copper pairs into reliable, high performance links. The City selected the Actelis solution due to its unmatched combination of speed, security, and high availability, and due to its seamless integration with the City's existing Ethernet LAN, for its distance capabilities, and for the simplicity of installation and ease of maintenance.

"We saw the Actelis solution as ideal to increase speed, bandwidth and reach, so we moved quickly to deploy EADs from Actelis," says Palompo. "We found that we had more than one copper pair connecting us with the County, so we loaded up all available eight pairs."

The Actelis Ethernet Access Devices (EADs) connect the two LANs together over point-to-point links to provide nearly 45 Mbps of symmetrical bandwidth between the City and County. This increased the bandwidth over each pair by over 400% compared to what T1 technology offered – even over significant distance. "We have a server based at our end, and now we can exchange data with the County at lightning speeds," according to Palompo.

Communication for County Sheriff's Department

The Actelis Ethernet over Copper solution also provides the County of Napa with high speed access into the City of Napa's computer-aided vehicle dispatch system, which has enabled the County Sheriff's Office to communicate with police cars patrolling the community.

"All of that traffic traverses the Actelis system sitting between Ethernet LANs on either end. Because of California Department of Justice regulations, we have a firewall on our end to allow ports to be opened up to them as needed," explains Palompo. "The point here is, access to vehicle dispatch and control must be restricted to authorized personnel within the county, which is one reason private and secure connections are necessary.

Requirements

- High speed, secure connections
- Using existing copper infrastructure
- Economical alternative to fiber
- Quick, easy deployment and management

Equipment Used

- ML EADs series in point-to-point
- ML2300 aggregation switches in point-to-multipoint
- MetaASSIST™ management system

Benefits

- High performance, low cost
- Quick, easy to deploy
- Utilize existing copper facilities
- Highly secure transport
- Fiber-like qualities

Actelis Networks™

Case Study :: City of Napa

"But the traffic is not all one way," adds Palompo. "We have access to the County's criminal database, the CJIM (Criminal Justice Information Management) system. This allows us to run queries on criminals, and we can add criminals to their database. So, here again, tight security is necessary."

Solution Extended for Internal City VoIP Traffic

The Actelis platform was first deployed for the link between the City and County, but the success has led to its adoption for other applications for both entities. The next application for which the City exploited the Actelis solution was to carry Voice-over-IP (VoIP) traffic between City Hall and the Corporation Yard, which is the base for the City's parks, street cleaning and other public services.

ML2300 Central Office Aggregation Switch

"Instead of adding more links, we deployed an Actelis ML2300 aggregation switch, including a modem card, to handle 16 lines. We then split the modem card into two parts, one for the eight copper pairs to the County, and for now, four pairs to the Corporate Yard for VoIP traffic over the ELAN," says Palompo. With this configuration, the City created two separate sub-networks serving entirely different applications - one for voice and one for data…while sharing one Carrier Ethernet over copper platform to achieve cost synergies.

Traffic Flow Management and Traffic Monitoring

The Actelis Carrier Ethernet over Copper solution has the benefit of increasing bandwidth while being reliable and making very efficient use of the widely available copper infrastructure. As a result, the City of Napa was able to meet all of its requirements without using all its available copper pairs. That left extra copper plant available for future use of Actelis' solution to address emerging applications of interest such as traffic monitoring and management all The City's copper infrastructure reaches the places where equipment such as traffic light control hardware and cameras are located, and Actelis could take more bandwidth to more of those places more cost effectively using fewer pairs than competing copper-based solutions – while being far quicker and more cost effective than fiber.

Actelis Networks connects critical communications functions for the City and County of Napa, California.

"It's possible our electrical department may introduce this for stoplight management, and also to backhaul streaming video for traffic cameras," says Palompo. The County of Napa has also been impressed with the Actelis solution when accessing the City's public safety services. "We introduced Actelis to them and they're very interested. In fact, the County's potential requirements are more extensive, involving a larger copper-wire infrastructure covering a much greater geographical area than the City of Napa."

Performance Reliability and Manageability are Critical

The real proof of any Carrier Ethernet solution lies in its performance and manageability after installation. Ideally, it should be so reliable that the people responsible for administering it can almost forget it is there. This has been the case for the City of Napa. "We've had a very positive experience. We've never had to reboot or restart it, except when we brought up the Corporate Yard for testing. It's relatively simple to set up and we adapted to it very quickly" according to Palompo.

Reliability, ease of installation and management, scalable high performance bandwidth, and the ability to span the required distances more quickly and more cost effectively than fiber or other copper-based solutions make Actelis ideal for municipalities like the City of Napa.

Corporate Headquarters
Americas Sales Office
47800 Westinghouse Drive
Fremont, CA 94539, USA
t. +1 510-545-1045 or toll-free in U.S. 1-866-ACTELIS

Company and General Information: info@actelis.com
Asia Pacific Sales: apacsales@actelis.com
Central and Latin America Sales: calasales@actelis.com
Europe, Middle East and Africa Sales: emeasales@actelis.com
North America Sales: nasales@actelis.com

Learn more at www.Actelis.com.