# Texas Agency Saves With Fiber LAN

A state agency found that replacing its copper Ethernet LAN with a passive optical LAN reduced costs for equipment, real estate, power and maintenance – and, of course, provided more bandwidth.

By Ryland Marek / *3M Communication Markets Division*

**W**ith the ever-rising use of Internet-based apps, videoconferencing and wireless LANs, the demand for enterprise broadband shows no sign of slowing anytime soon.

To keep up with this growth, IT departments need solutions that offer better network performance. In government agencies, IT departments need more enterprise broadband from fewer parts that use less energy in more compact spaces at a competitive price.

Impossible? The Texas State Board of Plumbing Examiners (TSBPE) found a way.

The state agency became one of the first in central Texas to consolidate and better organize its information technology by choosing to install a passive optical local area network instead of a traditional, copper-based network. Passive optical LANs are cost-effective, fiber-to-the-desktop enterprise solutions that are changing IT directors' minds about how to design, install and maintain networks.

Large government and enterprise LAN customers attracted to the benefits of significant cost savings are adopting passive optical LANs at a fast pace. Depending on network design, a passive optical LAN can offer up to 70 percent reduction of equipment and infrastructure costs, up to 80 percent reduction in power costs because there is no active component required on every floor in a telecom room, and up to 90 percent reduction in space and material requirements.

## AN OFFICE MAKEOVER LEADS TO A NETWORK UPGRADE

The work the TSBPE does is important. The agency helps protect the health and safety of the citizens of the state of Texas by ensuring that drinking water, air and medical gases are not contaminated and that Texans live and work in safe conditions with properly installed plumbing systems.

When the TSBPE began retrofitting its headquarters in March 2015, plans called for moving a data closet that housed communications and data equipment to a smaller space. The building's entire network also needed to be recabled, and that was going to be very expensive. Traditional networks, or Ethernet LANs, typically require a core switch/router, a distribution switch in each building and multiple stacked workgroup switches on every floor – not to mention a lot of copper cable.

The TSBPE needed an IT solution that would be affordable, more efficient and flexible and would work as reliably as plumbing.

## A BETTER WAY

AWS Communications, a 3M-qualified installer of passive optical LANs based in Austin, Texas, suggested a better way: a passive optical LAN solution, or POLS, which is manufactured by 3M. AWS devised a plan to deliver a flexible, expandable IT solution at a fraction of the cost of a typical copper-based Ethernet LAN configuration.

"We determined that for the same cost and

a lot less labor, we could upgrade them to a 3M passive optical network," says Bobby Mack McClung, chief executive officer of AWS Communications. "The 3M solution would also save them energy and maintenance costs and give them a lot more capacity for future bandwidth."

Passive optical LANs are called passive because a single fiber supports miles of connectivity. Passive optical splitters distribute converged services directly from a main switch to the terminals without using electricity. There's no need for active electronics between the main equipment room and the work-area terminals – in other words, no more distribution and workgroup switches that are costly to install and operate. In fact, depending upon the network design, as much as a 70 percent reduction in equipment and infrastructure can be achieved.

So instead of recabling the entire building with copper twisted pair, AWS used a passive optical LAN with a single fiber to support miles of connectivity and to deliver voice, video and data at gigabit speeds to Ethernet end points, such as user devices, access points, wireless controllers, application servers and printers. TSBPE would get high-performance (gigabit) broadband to the desktop at a fraction of the cost of typical copper-based Ethernet LAN configurations.

Passive optical LANs offer many benefits beyond budget considerations. When it comes to power consumption, a passive optical LAN is a more efficient option than a traditional LAN in more ways than one. Power consumption is much less with passive optical LANs. A passive optical LAN requires less equipment and uses less energy than structured cabling, which translates into less energy consumption and lower deployment and operating expenses.

By eliminating the need for layers of aggregation switches, which cuts the thousands of kilowatt-hours used by the power and cooling systems that go along with them, an enterprise can achieve, depending upon the network design, as much as an 80 percent reduction in power costs. At the end of the day, a passive optical LAN might

use only 1 kWh for every 5 kWh a traditional LAN uses. Multiply that by thousands of users and the cost per kWh, and the difference is substantial.

Let's look at a larger enterprise situation. Consider an office building with 2,000 employees. A traditional LAN would require 18 7-foot-tall equipment racks with 90 rack units of space. A passive optical LAN, on the other hand, can accommodate up to 7,000 employees using only one equipment rack with nine rack units. In other words, what used to fill up multiple communications closets may now require none at all, allowing enterprises to reduce operating expenses by cutting overhead costs such as rent and HVAC. It also equates to fewer things to manage, maintain and worry about.

Security is also better with a passive optical LAN. A typical copper Ethernet LAN emits electromagnetic signals that can be intercepted by hackers. A

passive optical LAN does not, and it also supports security mechanisms such as AES (advanced encryption standard) 128-bit encryption.

"We had to move our data closet to a different location in the building. AWS Communications and 3M worked together to help us upgrade our network using passive fiber optic networking. We gained much more capacity for future use at about the same cost as replacing the old copper cabling. We are very happy with the results," says Lisa Hill, executive director of the Texas State Board of Plumbing Examiners. ❖

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