

# Passive Optical LAN Enables Operational Savings: Idaho Falls' Thunder Ridge High School



A high school in Idaho adopts a passive optical LAN system to reduce operational costs. Our thanks to Dave Lawes, RCDD, PMP, account manager for System Tech, and John Hoover, director of marketing at Tellabs, for helping gather information for this profile.

By Sean Buckley / *Broadband Communities*

**T**hunder Ridge High School in Idaho Falls, Idaho, faced a challenge common in every school district: how to control costs while giving students and teachers needed educational tools.

After initially looking at a copper-based architecture, the school switched to a passive optical LAN (POLAN) system. This enabled Thunder Ridge to redirect the square footage for telecom equipment to educational tools.

Thunder Ridge High School, part of Idaho's Bonneville Joint School District No. 93, worked with Tellabs and System Tech to install the POLAN system. The 257,000-square-foot high school, which spreads over 55 acres, was able to extend the reach of Ethernet and IoT connectivity from 100 meters (over existing copper) to 20 kilometers over fiber.

Dave Lawes, RCDD, PMP, account manager for System Tech, which served as the systems integrator for the project, says the school quickly saw POLAN's potential.

"The project originally was planned for a Category 6A cabling infrastructure," he says. "We started discussing the advantages of optical LAN as an option." In the end, what really convinced Thunder Ridge was another nearby school district that had deployed an optical LAN system.

By opting for a POLAN system, Thunder Ridge saw various positive benefits.

For instance, because it did not require multiple telecom closets, the school was able to eliminate costly cooling and associated infrastructure.

"Thunder Ridge ended up pulling out a bunch of cooling and other infrastructure for the other communications rooms that weren't needed," Lawes says. "The deployment changed the building's infrastructure layout significantly."

## **SCHOOL OPTS FOR SAVINGS, EFFICIENCY**

A key driver for the decision behind choosing a POLAN architecture was reducing costs and



having the flexibility to support future network needs.

Offering 2.5/1.25 Gbps today, the network will support migration to 10 Gbps, 40 Gbps and 100 Gbps as needed.

With a POLAN in place, the high school and other district schools can support a wider array of services and networks: wireless infrastructure, IoT, LAN security, and management and other systems.

The POLAN system's capabilities can also be extended to other schools in the broader Bonneville Joint School District. It can immediately address an adjacent middle school, improving operational efficiencies across both schools. System Tech has just begun work on the middle school and plans to extend to other schools over time.

"The cost savings were a big thing, as was the ease of use and the ability to deploy it across the school district," Lawes says. "We're now going from one school to two and three at some point. The whole school district could be run out of one OLT."

Lawes says the district has limited IT staff, "who would like to put all their time into supporting the teachers, staff and students rather than managing the network."

### **POLAN GAINS MOMENTUM**

The merits of PON, including GPON and BPON, have been well

documented as the technology of choice for consumer fiber-to-the-home service deployments such as Fios, but enterprise PON use has started to gain momentum in recent years.

According to a Building Services Research and Information Association study, the global POLAN market is growing at a 46 percent compound annual rate.

Further, a Hanover Research study commissioned by APOLAN, an association focused on education and global adoption of POLAN, revealed that 44 percent of the ICT professionals it contacted had heard of POLAN and were familiar with it. Another 59 percent found fiber-based LAN solutions "very appealing."

The growing acceptance of POLAN also influences systems integrators, such as System Tech, traditionally a copper-based installer. The emergence

of POLAN is driving the company to take advantage of new fiber-based network opportunities.

"We're a cabling company, but the writing on the wall says that copper cabling has a life span, so we want to be ahead of that," Lawes says.

### **VITAL STATISTICS**

*Property Description:* The new Thunder Ridge High School, built for Bonneville Joint School District No. 93, is an approximately 257,000-square-foot building on a 55-acre site. The facility serves the growing local community and was funded by a local bond measure. The school features a state-of-the-art auditorium, indoor athletic facilities, classrooms and administration areas. It also includes an exterior sports complex with a running track and soccer, baseball, softball and football fields.

### **PROPERTY OF THE MONTH HIGHLIGHTS**

#### **~ Thunder Ridge High School ~**

- Municipal fiber network feeds a passive optical LAN in several buildings
- LAN will be extended to other schools in the district
- Passive optical LAN yielded space and power savings relative to original copper design
- Vendors include Tellabs, System Tech, Superior Essex and Ortronics



Thunder Ridge High School's state-of-the-art auditorium

**Demographics:** This is a high school with students in grades 9–12, staff and teachers.

**Greenfield or retrofit?** Greenfield

**Style:** Three-story school building

**Date services started being delivered:**  
June 2018

**Special property requirements:**

The optical LAN needed to be able to provide network service to this school and connect to others in the district, including a middle school currently under construction.

## SERVICES

The POLAN offers 2.5/1.25 Gbps high-speed internet access for students, administrators and teachers at the school. The system also supports common area Wi-Fi access and building-access control.

**Provider choice:** Idaho Falls Power, a municipal electric utility, provides fiber connectivity to each school building. Leveraging its own underground and aerial pole infrastructure, the utility provides fiber to numerous local businesses, government buildings and schools, including Thunder Ridge. The city's 96-strand fiber optic network is available for lease as dark fiber to commercial service providers.

**Technical support:** The school district maintains the system internally with support from System Tech and Tellabs as needed.

## BUSINESS

**Which parts of the network does the service provider own, and which parts belong to the property owner?** Idaho Falls Power owns the fiber going into the school buildings.

**Network benefits:** By adopting a POLAN system architecture, Thunder Ridge was able to redirect the square footage for telecom equipment to educational tools for teachers and students. The scalable network architecture can support 2.5 Gbps today, and will be able to support 10, 40 and 100 Gbps in the future. The network can also serve as a foundation for various IoT-based facilities management services.

## TECHNOLOGY

The broadband architecture is based on fiber to the unit.

**Fiber to the unit:** Leveraging a fiber-to-the-unit architecture, the ONTs are placed at teachers' workstations, in offices, and in various ceiling locations to serve other network devices, such as cameras, and wireless access points.

**Technology used:** For the POLAN system, Tellabs and System Tech deployed GPON-based fiber-to-the-unit technology.

**Methods for running cables:** Fiber was routed from two intermediate distribution frames through j-hooks and basket trays. Fiber to outbuildings at the stadium and to the new middle school was routed through a conduit bank.

**Vendors/products:**

- Tellabs (optical LAN)
- Superior Essex (cabling)
- Ortronics (fiber optic cable and hardware)

**LESSONS LEARNED**

**What was the biggest challenge?**

The project was designed with a traditional copper network. We worked as quickly as possible to help Thunder Ridge remove

The scalable network architecture can support 2.5 Gbps today and will support 10, 40 and 100 Gbps in the future.

unnecessary HVAC and electrical scope from the project to save the high school money.

**What was the biggest success?** The school district was able to focus its IT staff on other areas that help serve students more and to reallocate operational savings from the Thunder Ridge High School budget to other projects.

**What has the experience taught them about marketing, installing or supporting these services?** The school district stated that this was its largest single-network deployment

and also the easiest. The district is looking forward to adding more schools to the Tellabs Optical LAN to enjoy the numerous benefits for years to come.

**What should other owners consider before they get started on a similar deployment?** Start early in the design process to realize the most savings in floor space and construction costs. ❖

Sean Buckley is the associate editor of **BROADBAND COMMUNITIES**. He can be reached at [sean@bbcmag.com](mailto:sean@bbcmag.com).

**When the Power goes out...  
will you be a Hero - not a Zero**



**ESPi**  
espicorp.com

Your Next Generation UPS

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