COMMSCOPE®

The University of Tennessee finds a powerful partner in CommScope

Customer

The University of Tennessee

Country

United States of America

Founded in 1794, the University of Tennessee, Knoxville, is older than its state. The university has since grown to a total enrollment of 28,321 undergraduate and graduate students for the 2019 academic year, and houses the country's fifth-largest college sports stadium, with seats for 102,455 screaming fans.

With rich historical roots, the university is connected for the modern age—and for all the right reasons. Ensuring the safety and security of all on-campus students, faculty, staff and visitors is a primary focus. So UT has indoor and outdoor Wi-Fi access points, operates three data centers, and maintains 220 miles of singlemode fiber-optic cable and hundreds of security cameras across its 580 acres.

The university is also a public research institution, so data security and network reliability are critical as well. Therefore, UT is constantly looking for ways to update its networking power to provide staff and students the fastest, most secure and reliable wireless experience possible.

As a part of a $1.2 billion renovation and expansion project in pursuit of that goal, UT turned to CommScope to deploy more outdoor wireless access points and security cameras throughout its campus. The effort includes connecting the campus with miles of new pedestrian walkways and pocket parks as well as expanding and enhancing the school's iconic Volunteer Boulevard pedestrian mall.

Powered fiber cabling supports UT's multi-year upgrade

The project's scale posed unique challenges, such as supplying electrical power to the wireless access points and security cameras, and ensuring system reliability across long distances. When the university's IT department heard of CommScope's Powered Fiber Cable System (PFC), they were intrigued.

The solution consists of hybrid copper/fiber cable and power over Ethernet (PoE)

extenders. The CommScope system also comes with cable/fiber management, power transmission management, safety and overload protection, and a universal power supply. The entire system is built to withstand the elements of an outdoor setting.

Combining power and communications into one easy-to-manage cable, the PFC system provides the flexibility to locate cameras and wireless devices precisely where they are needed to maximize coverage. Because it uses safety extra low voltage (SELV) and NEC Class 2 cables, it eliminates the risks and added cost of installing a traditional AC power network. Especially important for UT's network services department was that the PFC system delivers power and data up to 3 kilometers, enabling it to span the long distances required by the project. Power is supplied at the switch—typically supported by UPS backup—and needs no remote PoE switches. This ensures power continuity even during an outage.

"We view CommScope as a trusted partner, capable of helping us tackle the unique challenges and ever-changing needs associated with connecting a higher education campus environment—like the University of Tennessee, Knoxville—to the future."

— Ben Rayfield
University of Tennessee, Knoxville

Successful trial leads to wide-scale deployment

For the UT campus, the Powered Fiber Cable System meant faster, more reliable outdoor Wi-Fi access and increased security with a quicker, less-costly deployment. UT network managers recognized the potential of the solution to help power the university's three-phase expansion project. Still, the decision was not a slam dunk.

"As with any new technology, we had some concerns. Specifically, we wanted to validate the ability of the system to deliver data and power across long distances," says Ben Rayfield, IT Technical Specialist IV at the University of Tennessee, Knoxville.

To address their concerns, UT engineers and CommScope technical consultants developed a vetting process that included in-depth meetings and rigorous testing of the Powered Fiber Cabling solution over a one-kilometer span. The PFC solution performed flawlessly,

reassuring Rayfield and his team. After seeing how it could blend into its surroundings, the university's beautification committee gave its stamp of approval as well. The three-phase multi-year upgrade now had the green light to continue.

Planning and design for phase one of the project began in 2015. It involved 16,400 feet of four-stranded fiber and two-conductor 12 AWG powered fiber cabling and 11 PoE extenders. The system connected a wide network of Aruba AP-275 outdoor wireless access points and Avigilon Pan, Tilt, Zoom (PTZ) security cameras.

The powered fiber cable is surprisingly thin and pliable, with a high bend tolerance. This made it easy to handle and enabled installation crews from UT partner Massey Electric to run it through the standard power conduit. As a result, installation for phase one was completed in just three weeks. Four months later, UT, CommScope and Massey Electric began phase two. The second phase—similar in scope and design to the first—involved an additional 13,120 feet of powered fiber cabling and 10 more PoE extenders that were mounted on pole bases instead of existing structures.

Shortly thereafter, the team began work on the project's final and most ambitious phase. Phase three involved 75,000 feet of powered fiber cabling—including the longest single pull of 3,700 feet—and the installation of 22 PoE+ extenders. Planning for the phase took about six months and the system was successfully deployed and tested in less than eight weeks.

"Delivering power is one of the big roadblocks when deploying any technology outdoors, and can add significant time and costs to projects. Our Powered Fiber Cable System is ideally suited to campus environments and uses technology very familiar to IT professionals."

— Ernie Pickens
CommScope Senior Vice President
Inside Plant Copper & Enterprise Market

UT and CommScope: Powering a faster, more secure wireless future

The final phase of the expansion project wrapped up in January 2019. In addition to greatly expanding its robust and highly capable outdoor wireless network, UT officials have created a strong and productive partnership with CommScope.

Planning for future outdoor campus projects is well underway. Next up will be upgrades to the security camera systems at the university's Sorority Village and Fraternity Park student housing areas. "We've already made the decision to go with CommScope and their PFC system," Rayfield said.

"We view CommScope as a trusted partner, capable of helping us tackle the unique challenges and ever-changing needs associated with connecting a higher education campus environment—like the University of Tennessee, Knoxville—to the future," he added.

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