

Greenville Hospital System University Medical Center

Health Sciences Education Building



In its more than 100 year history of healing compassionately, Greenville Hospital System University Medical Center has grown to be the largest health care system in the state. This growth demanded a high performance network communications infrastructure product from the leader in shielded solutions - TE Connectivity.

The Project Snapshot

Opportunity:

Build a state-of-the-art facility with a cutting edge network infrastructure to support the regions' first medical school in upstate South Carolina.

Why TE Connectivity AMP NETCONNECT brand cabling?

TE Connectivity was selected because of its leadership position in the shielded cabling infrastructure market. TE offers a wide range of high-quality cabling solutions for high speed networks as well as excellent service.

Solution:

- 220K feet of Cat 6a XG Shielded F/UTP Cable
- 2,300 Cat 6a F/UTP Jacks
- Modular Patch Panels
- Cat 6 F/UTP Patch Cords

Results:

The first medical school in upstate South Carolina is now optimized for high performance and high bandwidth applications with a future-ready network infrastructure from TE Connectivity.

“We’ve worked with the TE team on many past projects,” said Russell Lowery, RCDD - OSP, Senior Network Engineer Telecommunications, GHS. “With our relationships and our confidence in TE technology we knew that we were in good hands and they would help take this project beyond our expectations.”

The Challenge

With more than 1,200 patient beds and 10,000 employees, Greenville Hospital System University Medical Center is a thriving community within itself. Within that community are the life and death demands of a patient-focused medical facility coupled with all of the technology challenges associated with modern medicine.

Gone are the days of handwritten charts and x-ray film. Everything from diagnostic images and lab results to physician orders and prescriptions are now migrating to digital information that is shared, accessed and stored via IP-based network systems. The healthcare environment is faced with many challenges in this new digital world.



Greenville Hospital System University Medical Center encompasses five individual campus locations and includes: multiple hospitals, in-patient elective and out-patient surgical centers, long-term acute care, and several other lab and teaching-related facilities. Electronic health records and digital information needs to be quickly and easily shared among healthcare workers at various locations, requiring fast, reliable and secure transmission of data via high-performance networks and data centers.

The hospital has the highest standards for its facilities and knew that immediate bandwidth demands and unknown future requirements would present a challenge when planning the network design for its new medical school. Security, EMI considerations and accommodating wireless applications were also considerations in the hospital's plan for enhancing the physical layer its newest building.

Today's healthcare facilities are built to have an exceptionally long life with many decades of service and limited opportunity for refurbishment. How do you keep costs down while ensuring sustainability?

The Solution

Enter TE Connectivity's 10 Gigabyte shielded cabling system. With the ability to meet the present technology needs of Greenville Hospital System University Medical Center and plan for any future, currently unforeseen requirements, TE's Cat 6a F/UTP cable, jacks/modular patch panels and cords have made the medical school as state-of-the-art as its medical facility. TE's XG shielded solution was selected for:

- Superior noise immunity to eliminate alien crosstalk and RFI/EMI
- Far more headroom for guaranteed 10 Gig transmission
- Performance above 500 MHz for advanced and future applications
- Better heat dissipation to handle Power-over-Ethernet

With three floors and two underground parking levels, the Health Sciences Education Building was strategically conceived with the network mapped out as part of the building architecture from day one. Early on, Greenville Hospital System University Medical Center recognized the need for designing a premium physical layer of cabling technology to empower its users and its technology.

The installation team was aware that this type of project would have a number of significant challenges; medical designs needed to take priority but consideration needed to be given to the educational requirements as well. Medical environments are very fertile ground for converged messaging and intelligence. There are approximately 20-to-25 low-voltage systems that are not ready to go IP currently but, in future years, all of these will drive toward IP and that type of convergence will only accelerate. The educational aspect is more common with rooms for standard educational learning being required along with other instructional processes. These changing technology requirements are facilitating the movement toward project-based, self-directed learning and individualized instruction. As learning becomes increasingly virtual, web-based, and wireless, it still must physically take place somewhere. Greenville Hospital System University Medical Center's team realized this as well as the fact that data requirements are becoming ubiquitous, so more decentralizing technology is planned throughout.

Comparing the cost of installing current Cat 6 standard cabling vs. having to re-cable in a few years to meet the demands of high bandwidth applications, made the decision to install Cat 6a cabling very easy. The secondary choices regarding shielded and unshielded offerings were closely checked and the benefits of the shield in a facility with so much possible EMI made that decision almost as simple.

Mark Townsend of RAM Technologies, a TE contractor, is local to the Greenville, SC area and has a long-standing working relationship with Greenville Hospital System. Townsend, who helped to determine the materials for this project states, "Despite the growing need to share large information packets such as digital images, transport times between circuits can still exceed latency requirements because of interference, which causes timeouts or even failures. Even though image modality and all of the networking equipment is operating normally, the image might not be delivered properly because of low-bandwidth, high-latency network conditions. Put simply, the main requirements in medical environments are bandwidth and headroom."

It's important to note that while the construction and operation of this building involves a substantial expenditure of funds, the investment for cabling represents only a fraction of the cost of operating a school over the life of the building. When life-cycle costs of operating a school are considered (including staff salaries and overhead costs, in addition to maintenance and operation of the facility), the initial cost of the school facility may be less than 10 to 15 percent of the life-cycle costs over a thirty-year period. Properly designing and constructing school buildings for the realities of management can often provide cost savings over time that could in turn provide additional funds for education.

The Future

Greenville Hospital System University Medical Center looks forward to the completion of this project and to being ready for any new technology or bandwidth-hungry application that presents itself. Mapping to a vision of "transforming healthcare for the benefit of the people and communities" it serves, the hospital has transformed its network communications infrastructure to best serve its own technology needs for the present and future.

"We have high expectations for the life of this building, and the 10gig shielded product should certainly help in many aspects," said Mr. Lowery. "We feel we have designed a fairly "future-proof" building which will allow for many years of reliable information transport - without requiring upgrades to our cabling."

- Russell Lowery, RCDD - OSP, Senior Network Engineer Telecommunications, GHS.



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CASE STUDY



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