



Grove Hill Medical Balances Diverse Network Needs on a Single Cabling Infrastructure

It is a common dilemma for IT professionals – selecting a network infrastructure that can offer future-proof support of the organization’s most bandwidth intensive applications and users without going “overkill” on less speed-critical connectivity needs. One could install multiple channels of varying cable types and performance levels or, as Connecticut-based Grove Hill Medical Center chose, a single cabling solution could do the trick.

Established in 1947, Grove Hill Medical Center is a multi-specialty clinic offering services ranging from routine checkups to the latest diagnostic imaging. Home to over 70 physicians, Grove Hill covers 19 medical specialties including cardiology, oncology, orthopedics, radiology and more, as well as housing administrative and patient service offices. When Grove Hill began the upgrade to their network cabling infrastructure, they did so with a wide range of network applications, user and challenges in mind.

Like any facility dealing with critical and secure transmissions like patient information and diagnostic data, network performance was a primary concern. And beyond just current needs, Grove Hill was focused on supporting future performance requirements. Carl Labbadia, IT Director at Grove Hill, described how the pace of medical technology advancements drove the infrastructure decisions. "Just five years ago, from our Radiology Department, we might transfer 10-12 DICOM Radiology images per day. Now we process 150-200 per day and those files are getting exponentially bigger with better imaging technology. Today's 16-slice CAT scan can generate a 2000 image, 2 GB file and tomorrow's will only grow. Network speed and bandwidth is critical to real-time transfer and analysis in the medical field and the cabling needs to be ready to support it.

While the bandwidth intensive diagnostic applications posed a performance challenge, the equally important administrative office and patient room connectivity supplied their own set of considerations. At Grove Hill's current levels, these areas and applications do not require the bandwidth supplied to the imaging facilities. Instead, flexibility was the prime concern. "In an internal study, we found that 25% of our 4 Network Technicians' time was spent running new cabling channels to deliver additional services to expand staff capabilities and improve patient experience," explained Labbadia. "This could be a new phone or video feed in a patient room, a data connection in a treatment room so that a physician can review treatment options on a laptop or just a new printer at the front desk. Running a new channel every time was not only time consuming and disruptive, it made efficient infrastructure management pretty challenging and had the potential to overwhelm our pathways."

Ideally, Grove Hill's cabling infrastructure would support both their bandwidth and flexibility needs in a single solution. They were able to achieve this with Siemon's category 7A TERA cabling solution.

Offering bandwidth of 1000 MHz, the category 7A solution more than met Grove Hill's current diagnostic imaging requirements and supporting speeds in excess of 10Gb/s, offered additional headroom for future advancements. Category 7A utilizes fully shielded cable, known as S/FTP, in which each individual pair is wrapped with a foil shield along with an overall shield around all four pairs. The individually shielded pairs virtually eliminate crosstalk between pairs within the same cable and, in combination with the shield braid provides superior noise immunity versus unshielded cable. The TERA connector maintains cable shield integrity and noise immunity into the outlet through a quadrant design that isolates each pair within the interface. This standards-based design fits within an RJ-45 footprint and can be integrated into RJ-based equipment via hybrid TERA to RJ patch cords.



In addition to enabling high speed data transfer, the combination of fully-shielded cable and the TERA interface also provided a unique solution to Grove Hill's need for flexibility in addressing frequent moves, adds and changes within their less bandwidth intensive applications. Through "cable sharing", up to four applications can be supported over a single category 7A cable and TERA outlet.

The standards-accepted practice of cable-sharing is made possible by the TERA connector's four quadrant design, which allows easy access to individual channel pairs via hybrid patch cords combining 1-pair, 2-pair and 4-pair non RJ style TERA plugs terminated to appropriately wired RJ-45 or RJ-11 Ethernet plugs. This capability allowed Grove Hill to support a variety of application combinations in a single channel:

- One 4-pair category 7A connection capable of supporting application speeds beyond 10GBASE-T
- Two 2-pair 10/100 Ethernet connections
- One 1-pair video, one 1-pair legacy voice and one 2-pair 10/100 Ethernet connection
- Two 2-pair VoIP phone connections
- Four 1-pair CATV video feeds; and a variety of other combinations

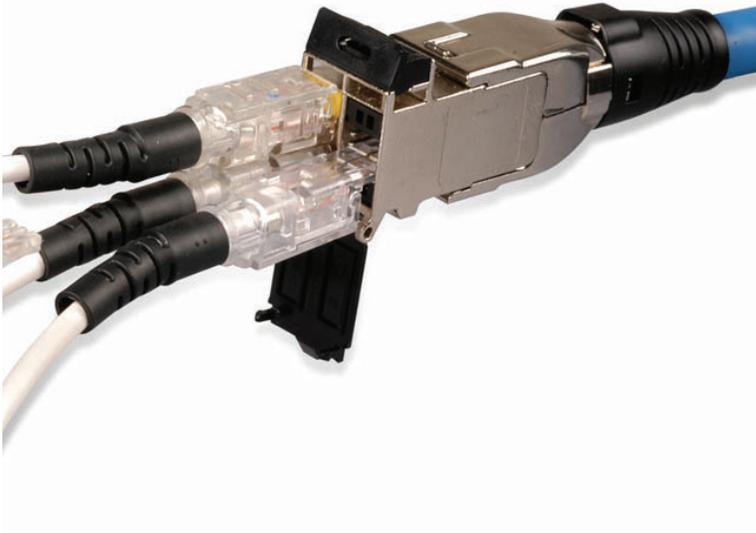
“Cable sharing is solving an ongoing challenge for Grove Hill,” explained Labbadia. “In the end, we are focused on patient needs and delivering services that enhance patient care. But predicting what services we will need in the future has always been difficult. With a TERA channel, we have a ‘one-to-all’ capability. If we need a phone in a patient room, a TV, or an Ethernet connection so a physician can review treatment information with patients – we already have the connectivity in place – we just plug in a patch cord.”

The design and installation of the system was managed by Josh Bartlett of ANI, a Siemon Certified Installer and overseen by Grove Hill’s IT Team. Working with Siemon’s Technical Services group, they implemented a TERA cabling system design that precisely matched connectivity to application, function and user.

Grove Hill’s imaging and other bandwidth intensive diagnostic areas utilize full 4-pair category 7A bandwidth to handle current and future file transfer needs. Each patient room is supplied with one TERA channel to manage potential connectivity needs through cable sharing. Already, Labbadia and his team have begun taking advantage of the flexibility, adding phones, video and data connections on an as needed basis. Two channels were added to physician offices, one for large diagnostic files and the other for flexible support of voice, printers and video. In the administrative offices, three drops were provided to every 2-employee workstation, typically supporting two computers at 100Mb/s, two analog phones and a printer – leaving five pairs (or one full channel and one pair) open for future needs.

“Between the TERA product benefits and the support from ANI and Siemon Technical Services on developing a design to take advantage of those benefits, Grove Hill installed a cabling infrastructure that lets us better leverage technology for the patient,” explained Labbadia.

“Both behind the scenes and in ways patients can readily see, the performance and flexibility of our cabling system will help improve our level of care for years to come.”



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