

Nexans' LANmark-7A system used in cancer treatment centre



The Creekside Cancer Care facility in Lafayette, Colorado, needed to have the best technology available as it would be home to the world's first CyberKnife VSI system, so planners turned to Nexans and found that its LANmark-7A system gave them the convergence, future-proofing and transmission speed needed to make the centre one of the most high-tech facilities in the US

CyberKnife VSI

In June 2010, Creekside Cancer Care in Lafayette, Colorado, became home to the world's first CyberKnife VSI system. This system is the new version of Accuray's CyberKnife Robotic Radiosurgery System, widely recognized as the best way for cancer sufferers to receive non-invasive radiation treatment.

The CyberKnife system was first used in the 1990s and delivers radiation with sub-millimetre accuracy anywhere in the body. The robotic nature of the system means that doctors are able to treat any area of the body with accuracy and to reposition the source of radiation very quickly which speeds up treatment times. The system also uses continual image guidance which means that it can target tumours

extremely accurately and can respond to any movements of tumours during the treatment process.

One of the benefits of the CyberKnife system is its frameless design. Conventional radiosurgery systems are frame-based, with a rigid frame secured to the patient's skull and the positioning of the treatment directed through CT or MRI scans. In contrast, the frameless CyberKnife means that scans can be taken at any point prior to the treatment, and the patient simply has to be positioned on a table for the system to complete the treatment. This means that planning and preparation for each treatment is quicker and clinical staff can therefore spend more time directly assisting patients. The system also allows patients with fragile heads or young patients to receive treatment, which is much harder with a frame-based system.



Creekside Cancer Care

Planning for the Creekside Cancer Care centre began in 2009 and opened in June 2010. It is an independent, physician-owned, free-standing centre committed to cancer care, and is one of the most high-tech facilities in the United States. The building itself is architecturally sophisticated and includes features such as lead lining in order to protect local residents and members of the public against any possible effects of radiation.

It was clear when planners started designing the building that it would need the best telecommunications network available. Managing Partner Matt O'Rourke explains: "Naturally, the first thing we were concerned about when designing the centre was that we had the technology necessary to support the CyberKnife VSI system itself. It is crucial that there is no down-time during treatments so we needed a network that could provide high transmission rates and low latency. We also wanted to make sure that the additional applications such as medical imagery and video conferencing were well supported. Lastly, I was determined to future-proof the facility as much as possible so we wanted a network that would last longer than a few years."

Technology

In addition to the transmission rates the network would need to support, there were other considerations to take into account. As well as performing the robotic treatments, doctors at Creekside would need to be able to collect medical images such as CAT scans and MRI scans of patients and transfer these to both internal and external contacts very quickly which would put pressure on the network. They also needed sophisticated video-conferencing technology in order to discuss treatments in real-time with remote consultants.

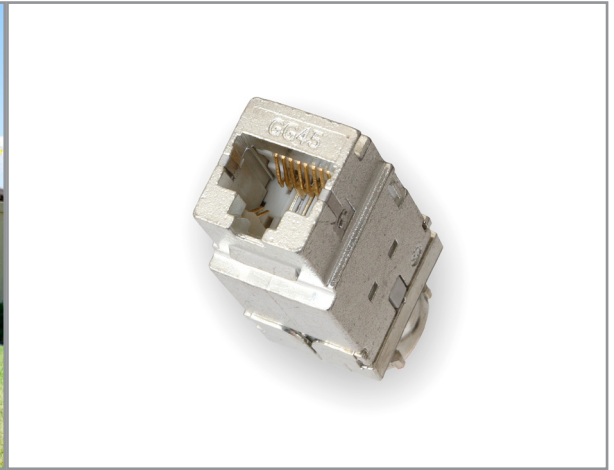
Jim Mathers, Chief Development Officer at Creekside, remembers the concerns they had regarding the network: "Most US organizations use Category 6 cabling to provide 1 Gig networks but we wanted better than that. Medical scans are large files and we needed to be able to store these and move them very quickly. We wanted our clinical staff to be able to share information with external contacts and make real-time decisions about treatments.

"In addition to all this we had concerns about interference from all the electronics in the facility so we knew that we needed a shielded solution, and we wanted all this to be converged onto one single network that would be backwards compatible with existing equipment."

Investment & Support

Although Jim and Matt had an IT team working on the facility, Matt decided to do his own research. "I knew that a good network is an investment so we wanted a system that would be good value over time," says Matt. "The small additional cost during the initial build of implementing the best solution on the market would easily be recovered through the extra efficiencies and reduced operational cost in the long term."

Matt's research for a network that would provide all the centre's needs whilst being backwards compatible quickly led him to Nexans. "I was immediately impressed with the benefits Nexans' LANmark-7A solution could bring, including shielding to protect against interference, convergence capabilities and the speed to move a 200MB file in just a few seconds! However, the most impressive aspect was that when I got in touch with Larry Paniccia he was willing to fly over to the site and meet me in person to discuss the project."



Solution

Larry Paniccia, Business Development Director of Nexans Cabling Solutions, was immediately interested in the Creekside project. "Matt was very clear that he wanted the best cabling infrastructure he could get with low total cost of ownership. It needed to be backwards compatible while also providing potential for 40G in a high noise environment, which meant that Category 7A cabling was really the only solution."

The LANmark-7A system provides double the bandwidth and half the crosstalk of Cat 6A, maximizes energy efficiency and has 360° screening for alien crosstalk immunity. However the key to the project was Nexans' GG45 connector which contains a full Cat 6A RJ45 as well as Cat 7A interface. The system installed at Creekside uses a shielded Cat 7A backbone with shielded Cat 6A patch cables. This means that the network is compatible with existing RJ45 equipment but is still capable of supporting higher bandwidth simply by switching patch cords.

Conclusion

"It is always a pleasure to see the real-world impact of our cabling infrastructures," says Larry, "so I was delighted when Matt told me that Creekside had completed treatment of its first patient in July 2010."

Matt and Jim are just as pleased with the infrastructure they have put in place, with Matt commenting: "As well as the financial benefits of a good network – we are saving thousands of dollars each month by emailing rather than couriering medical images to remote colleagues – we are also able to treat more patients more quickly and to improve the standard of care we can offer through increased collaboration."

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