

## Case Study

## Southern California Medical Center Turns to Free-Space Optics Network to Improve Patient Care

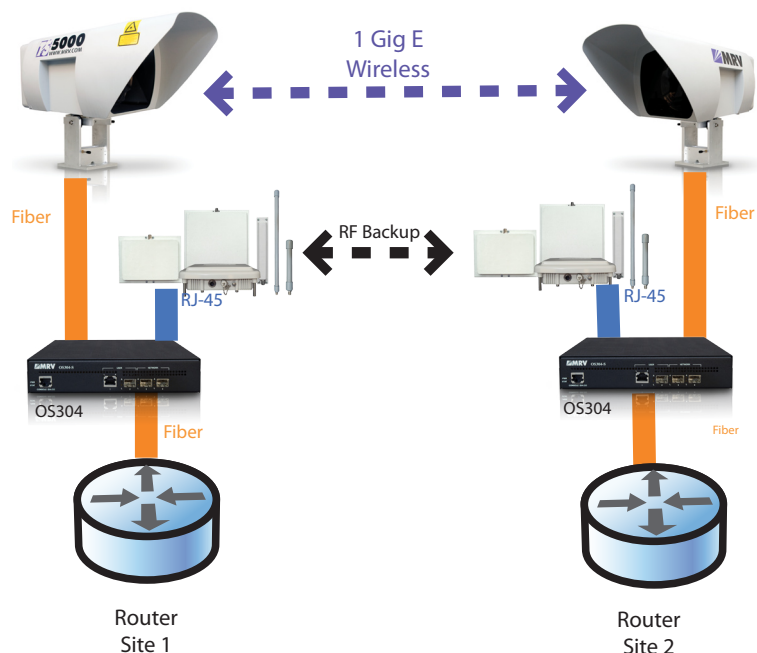


When a new medical imaging center was opening in Santa Monica, California, it needed a network solution that would allow for secure, high-speed transfer of medical images and data to pathology experts that reside in a building across the street. Working on a tight deadline, the medical center needed to choose and implement a cost-effective network solution that would provide a 1 GigE connection between the two buildings and could be in place by the center's opening date. Installing a fiber optic cable between the buildings was both cost prohibitive and would take too much time. The solution – high-speed connectivity delivered by an MRV TereScope free space optics (FSO) system.

### Background

The project began when the medical center's network managers turned to trusted network integrator partner NetCom International Inc. for a network solution that could be installed quickly. The deadline to open the center was looming and the facility's original plan to link the two buildings using fiber optics had become too expensive. However, the medical center needed a high-speed network that would allow large high-resolution X-Ray and other medical files to be sent across the street for review by pathology, and later sent to storage. Without a solution in place by opening time, the facility would be forced to revert to "sneakernetting" the files across the street on DVDs or other media. Walking the data back and forth between the two buildings would be extremely inefficient, so the facility looked at its options.

The medical center considered trenching the street and laying its own fiber, but that would be costly and time consuming to obtain permits and complete construction. Another option considered was leasing fiber optic lines from the local carrier, which would take time to light up and would require a considerable monthly fee. With little time to weigh the options, the facility needed to make a quick decision. In a meeting, one of the network managers mentioned a successful FSO implementation the hospital had several years before. With a good reputation and quick install time, the center called NetCom to move forward with implementing the FSO solution.



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### MRV Solution

The facility's backbone network link is based on the TereScope 700/G Gigabit Ethernet FSO system. FSO is a wireless optical data, voice and video transmission system and is primarily deployed where a fiber-optic solution is not possible or cost effective, and performance, security, rapid deployment, and cost-effectiveness are critical issues. In the medical center's case, when compared with the cost of installing and operating a fiber optic network, the payback on the TereScope system was less than one year. The TereScope FSO system is available with numerous interfaces operating at data rates of 1 Mbps to 10 Gbps.

The medical center was concerned with the security of the transfer of its medical files across a wireless network, to make sure they complied with the strict privacy rules set up in the Health Insurance Portability and Accountability Act (HIPAA). FSO, however, is not based on radio frequencies, but rather light transmission with a narrow beam, which means the signal cannot be easily intercepted and the data can be encrypted using enterprise-strength security.

The TereScope 700/G is available with an optional RF back up transmitter that can instantly start if the primary link goes down. The facility opted to install this RF transmitter to ensure it had redundancy. With the weather variability in Southern California, the TereScope and RF solution will provide the medical center a stable solution..

### Implementation

Although Santa Monica experiences morning fog, this was not an issue at this link distance as MRV engineers determined that the site would have availability of more than 99.3% for FSO alone and 99.999% with the RF back up. Based on this information and previous experience, NetCom engineers recommended the FSO/RF hybrid system. With the success and ease of installation, the facility is looking at wireless high-speed connections, possibly at 10 Gbps, between other buildings using the same FSO technology.

### Success

The medical center met its goal of having the network operational by the time its new facility opened, and is now able to securely transfer large medical images and data between the two locations at the high data rates needed to provide patients with the best possible care. The solution was implemented in time for the opening of the new facility and has been reliably transmitting data since its installation.

### TereScope Optical Wireless Systems

TereScope systems provide the most comprehensive FSO wireless solutions, ranging from short to long distances and narrow to ultra-high bandwidth.

- **Ultra High Wireless Bandwidth —**  
Can provide 1 Mbps to 10 Gbps wire-speed connectivity for distances of up to 5 km
- **Most Secure Wireless Transmission —**  
The data transmission beam is very narrow and invisible, making it nearly impossible to intercept.
- **License free operation —**  
No need to obtain frequency licenses.
- **Versatile Protocols —**  
Supported protocols include 10BaseT/ Fast Ethernet/ Gig Ethernet/10G Ethernet, ATM, FibreChannel, SONET, SDH, HDTV and ESCON.
- **Safe to Use—**  
Systems are eye and skin safe at the aperture and meet all safety standards including IEC60825-1 Class 1M.
- **Major Cost Savings —**  
By avoiding the recurring costs of leased lines and licensing costs, an ROI can be realized in just a few months
- **Reliable Communication —**  
Use of multiple transmit apertures helps long range TereScope models ensure high performance under adverse weather conditions. The receivers are designed to overcome atmospheric noise in hot or cold weather.
- **High MTBF —**  
Extremely reliable with an MTBF (Mean Time Between Failures) of more than 10 years.

MRV has more than 50 offices throughout the world. Addresses, phone numbers and fax numbers are listed at [www.mrv.com](http://www.mrv.com).

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