

MRV Solutions for the Healthcare Environment



Today's Challenges in the Healthcare IT Infrastructure

Demand for increased bandwidth

New automatic healthcare information systems

- Electronic Medical Records (EMR)
- Picture Archiving and Communication Systems (PACS)
- Digital Imaging and Communications in Medicine (DICOM)

High density storage networking requirements

- Quickly exchange and store data
- On- or off-site data warehousing

Interconnect multiple sites/functional organizations

- Campus, regional and national connectivity
- Patient records, building security, medical imaging
- Fast end-to-end data retrieval

Network security and reliability

- HIPPA Compliance
- 100% network availability

Healthcare organizations are facing IT infrastructure challenges never before seen. The convergence of voice, video and data, combined with increased imaging and data archiving requirements are putting a strain on the existing networks. The need to move from paper forms to electronic formats, combine electronic security and building automation applications and implement voice over IP are driving the demand for a network that provides increased bandwidth and robust security.

Fiber optic technology can insure that the IT infrastructure of healthcare institutions meets current and future application requirements demanded by these challenging criteria. Optical connectivity for in-building and inter-building networks based on bandwidth demands and distance requirements make optical fiber the future-ready media choice. Upgrading a network to meet these growing needs can be daunting. Higher performance and low cost of ownership do not need to be conflicting goals. MRV can provide powerful yet cost effective networking options that are easy to deploy, operate and maintain.

To complicate matters further, unless new facilities are being built, most healthcare networks have evolved over time and contain several generations of equipment and technologies that need to co-exist with the latest generation of technology. Healthcare data networks are typically complex; combining many protocols used in a variety of applications, as illustrated in Figure 1.

The need to simplify the network topology and management, expand bandwidth, support all existing applications while providing the capability to adapt to new technologies is paramount. MRV's family of Optical Communications Solutions addresses these issues cost-effectively with the flexibility to scale with future network requirements.

Application Note

MRV's Healthcare Network Solutions

MRV has a complete, scalable family of optical transport solutions that integrate with legacy technology, expand existing network capacity and deploy the latest in optical transport technology. Although this may sound complicated, the modular design and flexibility of MRV's products actually simplify network operation.

Increased Bandwidth

MRV's Optical Communications Solutions are based on wave division multiplexing (WDM) technology. Using WDM enables the transport of multiple, high capacity data channels on a single strand of fiber. Adding bandwidth capacity is as simple as installing a new module at either end of the fiber. Increasing bandwidth on existing fibers reduces costs by minimizing or eliminating the need for additional fiber facilities. It also decreases the time it takes to deploy new applications that require additional bandwidth in the network.

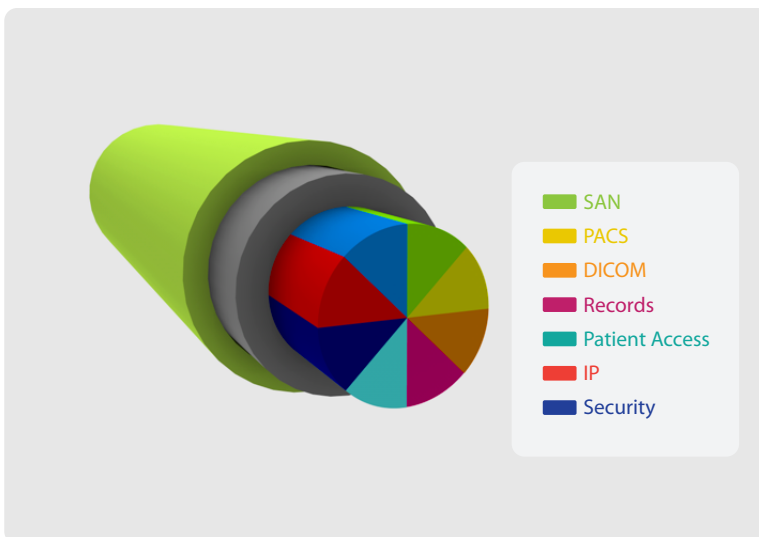


Figure 1: Wave Division Multiplexing (WDM) allows multiple data sources to be transported over the same fiber optic infrastructure.

MRV's optical solutions use multiple wavelengths to transport up to 160 concurrent streams of digital information up to 10Gbps over fiber optic cables. MRV's scalable solutions easily increase bandwidth providing fast access to critical data and support bandwidth-rich applications.

Multi-site connectivity

The flexibility of the modular, pluggable transceiver architecture makes MRV's Optical Transport solutions ideally suited for a variety of network topologies and distances. Supporting point-to-point, linear, ring, add/drop multiplexing or mesh topologies and incorporating dense wave or coarse wave WDM (DWDM or CWDM) technologies, MRV can provide connectivity for a local area network in one building or a network connecting many building over hundreds of miles. Data rates from T1, 10 Gbps to 40 Gbps (100 Gbps in product roadmap) ensure that the network is robust enough to support future requirements.

Secure Networking

Application Note

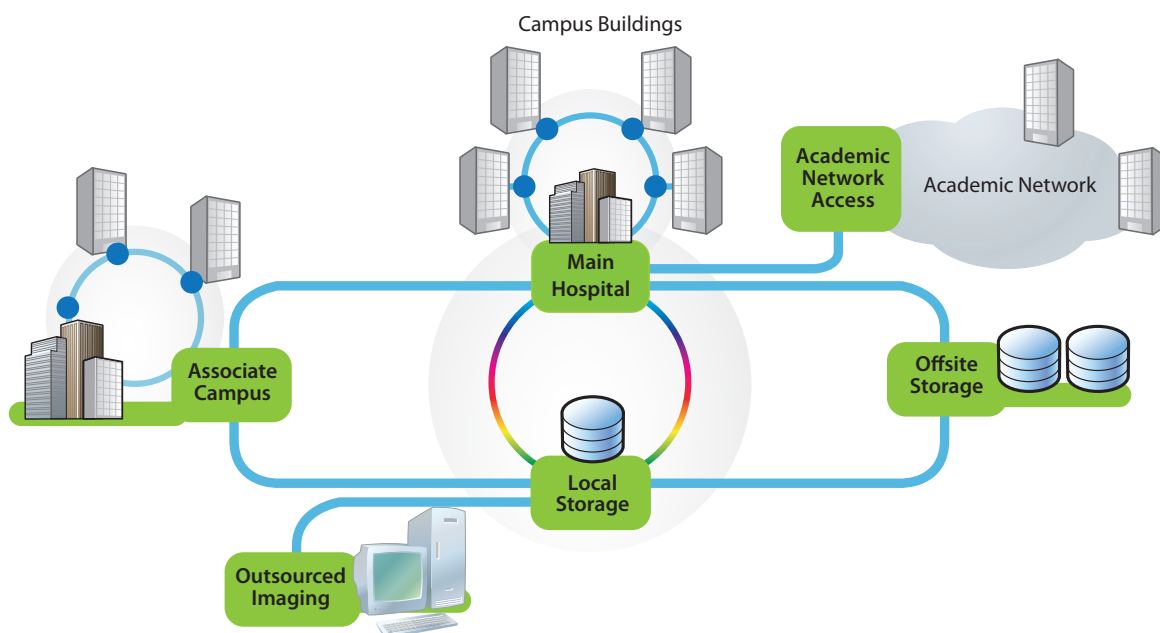
With increased government regulations for patient privacy and performance initiatives, network security is a requirement not an option. MRV's cryptographic security solution achieves encrypted protection without changing the network infrastructure or work flow. High speed link encryption allows fully transparent operation with wire-speed, full-duplex encryption, protection and authentication. In other words, network security does not interfere with network performance. Administrative ports are also secured using encryptions schemes such as IPsec and MACsec.

Network Integration, Operation and Reliability

To accommodate the multi-generation equipment and technologies that exist in a healthcare network, MRV's Optical Communications Solutions support any mix of media, protocols and bandwidths. The type and variety of applications in the healthcare environment is unique to each network. Module combinations and pluggable transceiver-based architecture allow customized solutions for today's requirements with the ability to add future capabilities in a pay-as you-grow approach.

MRV's optical network elements support end-to-end management and provisioning for reliable, low cost network maintenance and allow low-touch network changes and additions. Once the hardware is in place, bandwidth-on-demand and new services can be deployed as quickly and easily as sending a software command.

The availability of the healthcare network is critical as downtime can generate catastrophic consequences. End-to-end monitoring of the network infrastructure supports an extensive array of system alerts, traps and self-healing capabilities for maximum network availability.



Simplified Healthcare Network Using MRV Solutions



Application Note

MRV Healthcare solutions for today and tomorrow

- **Increased Network Capacity** - WDM technology enables multiple high-bandwidth application per fiber strand.
- **Scalability** - transceiver based, modular architecture supports today's needs and grows to tomorrow's requirements
- **Rapid deployment of new services or bandwidth** - provides "plug and play" changes
- **Flexible network design** - T1, 10Gb to 40Gb in any topology over extended distances
- **Security** - Encryption of traffic and management access
- **Maximum network performance/availability** - End-to-end management, low latency transmission and self-healing capabilities

The complexities and demands of the healthcare network require a broad range of optical solutions. The scalability and flexibility of MRV's standards-based design ensure that today's investment can address future technology requirements. MRV's complete Optical Communications Solutions make implementing high-capacity, high available networks easy and cost effective.

For over 20 years, MRV has been providing optical solutions for networks worldwide. Contact MRV for more information on how we can help you accommodate the demands of your network environment.

MRV has more than 50 offices throughout the world. Addresses, phone numbers and fax numbers are listed at www.mrv.com. Please e-mail us at info@mrv.com or call us for assistance.

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