



## University of Rochester Medical Center / Strong Health

### ATM Provides Major Hospital with a Healthy Outlook

A \$700 million health care system spanning a nine-county region, Strong Health is one of the nation's premier academic health care systems dedicated to improving the health of people in Rochester and the Finger Lakes region of New York and beyond.

**Industry:**

Health Care

**Number of Users:**

7,000

**Services:**

A \$700 million health care system serving nine counties

**Challenge:**

Building a powerful, high-speed enterprise to support emerging applications

**Solution:**

Enterasys networking brings performance, security and reliability

**Benefits:**

- High capacity handles life-critical network traffic
- Supports existing applications like telemedicine and emerging voice, video and data applications
- Offers superior traffic and congestion management—even under the most demanding conditions
- Traffic shaping and class-based queuing optimize Quality of Service and network utilization

An integral part of the University of Rochester Medical Center (URMC), Strong Health enjoys unique advantages unavailable to other health systems. The School of Medicine and Dentistry attracts some of the finest faculty and students in the world. The faculty conducts more than \$100 million worth of medical research per year and ranks in the top one-fifth of all medical centers in federally funded research. This research has greatly benefited Strong Health, since new treatment approaches can be moved quickly from the lab to the bedside.

**The Challenge:****Building a Powerful, High-Speed Enterprise to Support Emerging Apps**

John Glynn was at a crossroads. As Assistant Director for Information Systems for URMC/Strong Health, John knew his organization's network would need to support quickly emerging voice, video and data applications. The question was whether to upgrade the organization's existing legacy LAN or start from scratch and build a more powerful, high-speed enterprise that could support these applications right out of the gate.

The existing network connected 1,500 end users and several server farms via a Cisco router in an FDDI ring configuration. While this was adequate a few years back for simple text-based file transfer, it was clear that as URMC/Strong Health became more dependent on the network and desired greater WAN or remote connectivity options, changes had to be made. "We knew that our bandwidth requirements were going to dramatically increase very soon, particularly with new telemedicine applications already being tested and implemented in other hospital environments," explained Glynn. "We also knew that in a life-saving environment like ours, we

could not afford even the slightest downtime or degradation in

performance."

Glynn and his staff compared the pros and cons of Gigabit Ethernet and FDDI with ATM. While the higher speed frame-based technologies would be more cost-effective to implement over the existing cable plant, and easier to manage since the learning curve would be minimized, the virtues of ATM were overwhelming. Glynn realized that with its scalable bandwidth (from 155 Mbps to 622 Mbps and more), guaranteed Quality of Service and clear migration path (easy to upgrade from OC-3 to OC-12), ATM was the more logical choice.

Glynn added, "Of course, we were more fortunate than a lot of companies in that we weren't tied to working with existing equipment. We had the luxury of picking the best technology, even if it had to be implemented from the ground up."

Once ATM got the nod, next came the all-important decision of which vendor to partner with. Glynn says that they looked at the ATM portfolios of four different vendors. After evaluating criteria such as engineering, price/performance, product

flexibility and investment protection, as well as talking to other customers, Glynn and his staff leaned toward Enterasys. But that wasn't the end of the evaluation process.

An outside consultant was brought in to propose a test network. Stipulating some very specific requirements, the consultant put Enterasys' ATM expertise through the paces. But considering the critical role the solution would be playing, it made sense to make sure the ATM network would more than measure up to UPMC/Strong Health's high standards.

### **The Solution:**

#### **Enterasys Networking Brings Performance, Security and Reliability**

Building any ATM network from the ground up is ambitious, but when it's for a customer as large and successful as UPMC/Strong Health, it can be an imposing challenge.

With UPMC/Strong Health's renowned reputation to uphold, the new Enterasys system had little margin for failure, especially when 7,000 end users from 40 different sites would eventually rely on the network for safe, secure and reliable connectivity.

That's where the company's flagship SmartSwitch product line came through. For starters, Enterasys has deployed three SmartSwitch 6500s to create a powerful OC-3 (155 Mbps) backbone. Each modular SmartSwitch 6500 delivers 10 Gbps non-blocking bandwidth to support an array of mission-critical applications. Other key features important to UPMC/Strong Health include redundant power and management, standards-based routing, and superior traffic and congestion management. Value-added features include traffic shaping and class-based queuing to optimize QoS and network utilization.

Connected off these ATM backbone switches in the data center are 80 Matrix E6s located in the hospital's communications closets. Sharing a similar architecture as the 6500s, the Matrix E6s deliver switched 10 Mbps Ethernet to the desktop, but maybe more importantly, allow for the seamless integration of ATM, Gigabit Ethernet, Fast Ethernet and FDDI within the same chassis.

This flexibility allows UPMC/Strong Health to easily swap out boards and uplinks as their needs dictate, while also protecting their investments. The Matrix E6, for example, features an OC-3 uplink module to the hospital's backbone. But if Glynn and his staff upgrade the backbone to OC-12, the E6s can keep pace with user-configurable OC-12 uplink modules, thus protecting investments in the original chassis.

The UPMC/Strong Health network also incorporates Enterasys' X-Pedition 2000s which provide high-density, wire-speed 10/100/1000 switching and routing to the facility's remote hospital via T1s.

Of the UPMC/Strong Health's many groups and departments, the first users to be moved from the legacy network to the new ATM network were the 200+ clinical information systems users, and the radiology and cardiology groups. The latter two were particularly eager to get on the ATM network since they could more easily exchange huge digitized medical images such as X-rays (10 to 15 MB), MRIs (30 to 40 MB), CAT scans (30 to 40 MB) and angiograms (10 to 15 MB) due to the rapid read-and-forward nature of fixed-length cells in an ATM environment. The clinical information systems also has high-bandwidth demands because of the sheer amount of patient data it has to access, update and share with doctors and staff throughout the facility. For both groups, downtime, let alone latency, has been nonexistent.

Glynn has found the Enterasys ATM solution to be reliable and secure. He really likes the VLAN management application that lets him create distinct, separate workgroups for various departments. By keeping the radiology group on a private LAN, they are assured of no unexpected traffic jams that could disrupt image transfer. "This type of configuration control is important to an organization like ours," said Glynn.

**The Real Benefit: Critical Application Support.** Probably the biggest gain for UPMC/Strong Health is the immediate and long-term support for their most important applications. For example, one of the more interesting and money-saving applications currently being used by the hospital is in cooperation with the N.Y. State Department of Corrections. Through a video-conferencing connection between the hospital and the prison, doctors can examine and diagnose inmates without either having to move from their respective locations. How much money can this solution save? It used to cost \$1,500 every time the state had to transport a prisoner back and forth from the hospital.

Glynn is looking forward to even greater remote capabilities when ISPs introduce ATM/WAN service to subscribers. He got a glimpse of this potential when they conducted an experiment with their long distance carrier, Frontier. With a test ATM remote connection supporting real-time voice, video and data, a neurosurgeon at Strong Health was able to actively

participate in a back surgery at another hospital across town. “He was able to converse with doctors performing the surgery, monitor vital patient statistics and clearly witness the surgery all through one connection,” marvels Glynn.

The experiment was a huge success and Glynn sees it as a precursor to expanded remote capabilities for students at UR. “Once ISPs are able to standardize on ATM, our students can watch a surgery, in the classroom or their dorm room.”

#### **The Future:**

#### **Taking Advantage of Scalability in a Growing High-Speed Enterprise**

These are just a few of the telemedicine applications being used on the URM/Strong Health ATM network and it will only get better as more users are moved over to the ATM network from the legacy network, creating an all-encompassing, high-speed enterprise.

And if along the way, these growing bandwidth requirements start to put a strain on the network, Glynn has the luxury of moving up to a faster OC-12 network without worrying about the wholesale replacement of equipment. That’s the beauty of a modular solution and ATM’s inherent scalability.

Glynn is also exploring voice-over-ATM solutions that will essentially put the entire URM/Strong Health phone system on the same high-speed network. “It won’t be long before our entire operation will be running on ATM and judging by the results thus far, I think everyone from doctors and nurses to students and faculty is going to be pleased by the performance.”

## Contact Us

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