



Bloomington Hospital & Healthcare System

Secure Wired and Wireless Solutions Support a Leading-Edge Environment

Bloomington Hospital & Healthcare System is a not-for-profit regional referral center serving a patient base of 357,000 in nine counties in south-central Indiana. Bloomington Hospital was founded in 1905 by the Local Council of Women. The hospital is accredited by the Joint Commission on Accreditation of Health Care Organizations (JCAHO) and is a shareholder in Voluntary Hospitals of America.

Industry:
Health care

Number of Employees:
1,925

Annual Admissions:
16,840

Challenge:
Upgrading to a higher performance, more flexible infrastructure

Solution:
Total security, availability and mobility with Enterasys X-Pedition, Matrix and RoamAbout .

Benefits:

- Wire-speed throughput handles the most bandwidth-intensive applications including the hospital's real-time fetal heart monitoring system
- Scalability and interoperability enable the network to seamlessly accommodate new technologies and applications while protecting existing investments
- Maximum availability to ensure that the network is always up and running
- High capacity to handle demanding network traffic
- Wireless networking increases patient satisfaction and offers disaster recovery support
- Secure Networks ensure guaranteed security and end-to-end Quality of Service

The hospital has 1,925 full-time equivalent employees, including 325 physicians trained in 31 specialties. Some of the specialty services provided by the hospital include an emergency response heart team, psychiatric crisis care, urgent care and maternal/child services. In addition to the hospital, Bloomington Hospital & Healthcare System includes three nursing homes and satellite offices in nine different counties.

The Challenge:
Upgrading to a higher performance, more flexible infrastructure

As one of the busiest hospitals in the state, Bloomington receives 16,840 annual admissions and 67,310 emergency department visits per year. This kind of patient volume requires the hospital to maintain top-notch business systems and back-end processes. "We are constantly talking about the future, about staying on top of the latest and greatest," explained Katherine Stroud, Bloomington Hospital's manager of network and systems technology. "We've already implemented several applications internally to help streamline business processes, such as an applicant tracking system developed by our IS department with HR's involvement. We're also exploring the use of telemetry and voice-over-IP applications to help reduce costs and improve care delivery."

At the same time, Bloomington wanted to make improvements in processes like patient registration. With patient satisfaction surveys voicing a common complaint about slow registration processes, Bloomington Hospital & Healthcare System sought to deploy tools that would enable them to take patient information at the bedside or the waiting room—a time saver for both patients and physicians. "We've always been focused on patient care and ways to improve," said Stroud. "In particular, we wanted to streamline and expedite Emergency Room procedures as much as possible."

Finally, Bloomington was looking for a solution with inherent flexibility—to accommodate new technological advancements, evolving business and end-user requirements, and to ensure the infrastructure would be up to the challenge in the event of a disaster.

The Solution:
Increased security, availability and flexibility with a Secure Network solution

Bloomington Hospital & Healthcare System was an Enterasys customer for nearly eight years. “We started way back when, with MMAC hubs for shared-access connectivity, and have been a satisfied Enterasys customer ever since,” said Stroud. “Throughout our relationship, we’ve received the best service and support. And when an upgrade was necessary, the process has been as smooth and cost effective as possible, with minimal disruption to our operation.”

The facility’s infrastructure spans 35 buildings and is fully standardized on Enterasys equipment, from the data center to the wiring closets to the wireless end user. The main hospital includes five buildings; the primary six-story structure and three other buildings are connected by fiber. The remaining building is connected wirelessly. At the heart of this robust network are three X-Pedition 8600 switch routers in the core data center. Renowned for their ability to move data securely at wire speed, the X-Pedition family has the built-in intelligence to recognize individual traffic flows and provide varying levels of priority, depending on the application or specific user group. In this way, the network’s bandwidth can be more efficiently utilized to support the applications that are most critical, such as the hospital’s real-time fetal heart monitoring system, as they are needed.

“This level of differentiation is very important to Bloomington’s success,” said Stroud. “While staff e-mail is essential to our business, for example, patient data and records need to be securely accessed when and where we need them, without exception. The X-Pedition maintains this order every time.”

Bloomington Hospital & Healthcare System is also deploying Matrix E1s in its data center. These switches offer redundant, high-bandwidth fiber connectivity to the core.

The hospital’s departmental connectivity is provided by Enterasys’ Matrix E7 multilayer switches in 22 subnetted wiring closets. Each of these switches in turn connect to a core router and redundant core router in the hospital’s data center. “Our use of subnets means that our infrastructure is no longer flat,” Stroud explains. “This is an ideal design for disaster recovery because a problem in a single subnet can be isolated to that area.” The Matrix E7 is a powerful, high-density platform that is designed to support 10/100/1000 Mbps Ethernet switching at both the server and end-user levels.

Of particular importance to Bloomington’s operation is the Matrix E7’s ability to identify application and protocol information (much like the X-Pedition), enabling the hospital to assign specific bandwidth amounts per port based on priority. This ensures that bandwidth is always available for the hospital’s most critical applications and users, such as patient registration data collected, stored and shared from the Emergency Room.

Maximum availability—obviously, a major concern in such a life-critical environment—is also ensured through the innovative distributed switching architecture of the Matrix family. Because each module in the Matrix E7 has a complete chip set for switching and processing, no one module can be a single point of failure for the chassis. This, along with the fully redundant power of the Matrix, ensures that the network is always up and running.

In an ongoing effort to improve patient care and remain on the technological cutting edge, Bloomington has deployed Enterasys’ RoamAbout wireless LANs in wards throughout the facility and continues to deploy wireless in new areas of the hospital. Currently, the hospital has installed 100 Access Points, providing wireless access to doctors, nurses and administrative staff alike. The wireless infrastructure operates on a separate subnet connected to Enterasys Vertical Horizon switches in the wiring closets. These Vertical Horizon switches then connect to the network’s core. To ensure security, the wireless infrastructure takes advantage of RoamAbouts 128-bit encryption as well as VPN clients on all devices and a firewall. In the ER for example, patients no longer have to wait for registration; now the hospital comes to them, thanks to mobile “walkaroos”— wireless devices used for gathering patient information from anywhere in the facility. These walkaroos are also used by doctors and nurses on other floors of the hospital for charting patient progress, gathering clinical information and more—all at bedside.

“We’re delighted with the new wireless system,” said Stroud. “Not only has it increased patient satisfaction, it provides us a secure, emergency network solution if disaster ever struck our facility.”

The Future:

Building on a strong foundation to further improve health care delivery

Bloomington’s network serves as a sterling example of how well IT can support the care delivery process. But to ensure they remain at the forefront in technological innovation, Stroud and her staff are constantly exploring new applications and

capabilities to further improve their operation. “We have recently implemented a high-performance SAN (storage area network) for network data storage,” Stroud explained. The Bloomington team is also currently testing wireless tablets, which will support the hospital’s document management system and provide doctors, nurses and administrative staff even greater flexibility. Bloomington Hospital & Healthcare System is also implementing a new PAC Picture Archiving and Communication system as well as a new time and attendance application. Fortunately, Bloomington is ahead of the game with their Enterasys network. The inherent bandwidth provisioning, application prioritization and guaranteed Quality of Service of the Matrix and X-Pedition provide the ideal foundation for a health care network that continues to evolve without missing a step.

Contact Us

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