Case Study

Saint Luke's Health System

Award-Winning Hospital System Uses Network to Take Patient Care to New Heights

About Saint Luke's Health System

Saint Luke's Health System includes 11 hospitals and many physician practices in the Kansas City metropolitan area and surrounding region. The health system is an organization in which the physicians and hospitals function as an integrated unit, assuming responsibility for the delivery of comprehensive, cost-effective, quality health care.

Customer's Situation

As part of its culture of continuous quality improvement, Saint Luke's Health System wanted to enhance patient care with electronic solutions — specifically, officials envisioned a paperless, wireless environment that would benefit patients and caregivers. Included in the plan was a new, all-digital hospital in which patient records, tests and lab work would be computerized to facilitate accessibility for health care teams. Saint Luke's needed a reliable, high performance network that would take patient care to a new level by connecting all locations and supporting the all-digital hospital and future technological innovations.

Our Solution

Saint Luke's chose AT&T to help design and create a digital infrastructure that supports the best in patient care. The result was a reliable, robust network that offers dedicated high-speed access and consolidates Saint Luke's private line, switched and enhanced services, as well as its voice, data and video applications. In order to provide for the convergence of clinical applications and time-sensitive IP telephony and IP video applications, AT&T recommended a dedicated OC-48 SONET ring. The network's high level of redundancy and application availability, combined with Saint Luke's own fiber connectivity, paved the way for the opening of Saint Luke's East – Lee's Summit, one of the nation's first all-digital hospitals. AT&T also provided the wireless network that is the foundation for the all-digital environment.

A Shared Vision of Quality

The mission of Saint Luke's is to create a health care system that is "the best place to get care, the best place to give care." In an ongoing effort to achieve this mission, CEO Rich Hastings wanted to implement digital processes to further improve patient care. Hastings, CIO John Wade, CFO Chuck Robb and Chief Medical Officer George A. Pagels worked to make Saint Luke's Health System one of the first hospitals to use electronics extensively to improve the quality of care and attract and retain staff.

Thanks to the vision of its leaders and the willingness of the entire health care team to make a commitment to quality, in just 13 years Saint Luke's has gone from a single facility to a health system of 11 hospitals. In the process it has been recognized for excellence and earned a number of national honors, including the prestigious Malcolm Baldrige Quality Award. "In the eyes of our consumers we continue to be rated the number one health system in this region," Wade said.

Wade knew the hospital's IT department would be hard pressed to handle the challenge of building a network to support the paperless care system and other innovations Hastings envisioned. "It was incumbent upon us to seek out a telecommunications provider that

Saint Luke's Health System Facts

Client Needs

Ability to take advantage of newer medical technologies and approaches to provide enhanced patient care

Technology Solutions

Secure, reliable networking solution that supports high bandwidth applications and allows for growth within and beyond the hospital system

- Business Value Continuous quality improvement, outstanding success in patient care
- Industry Focus Health care
- Size

Eleven hospitals and numerous physician practice locations



would allow us to meet the challenge of communicating not just inside our campuses, but into a wider geographic region," Wade said. "We shared our business strategies with AT&T and found that there was a high level of alignment that enabled the organizations to understand one another's business plans and challenges."

Together, Saint Luke's and AT&T created a network that delivers the throughput required by the advanced medical applications Saint Luke's uses to make critical patient data available to all the hospitals in its health system. Because patient records, tests and lab work are computerized, they are instantly accessible by any member of the patient's health care team. Clinicians can more efficiently store, update, retrieve, and manage patient information in real time-without paper records-in secure electronic files.

In the past doctors and other staff had to sign onto the hospital's network every time they moved from one hospital department to another. Caregivers now use wireless devices to authenticate themselves once when they enter the hospital. "From that point in, they maintain access to clinical information about their patients," Wade explained. Since the network gives physicians immediate access to test results, they can prescribe treatment more quickly to increase the likelihood of a positive outcome.

Networking has made Saint Luke's an aligned health system, Wade says. "Standards of care can be delivered at any one of our facilities and if the standard changes for any reason, that information is instantaneously available to every caregiver in our health system."

An Outstanding Record of Success

The alignment of Saint Luke's health care processes has enabled the hospital to post significant improvements in a number of fields. For instance, the Stroke Center at Saint Luke's Hospital has become nationally recognized. Reversing the effects of a stroke depends in large part on the care provided during the first few hours. Thanks to the strength of its communications environment, a patient's information is immediately available to the hospital's entire clinical care team, no matter where within Saint Luke's Health System a stroke patient is admitted.

"This very sophisticated communications network that we have built with the assistance of AT&T is positioning Saint Luke's to be a national if not international leader," Wade said. While the national average for stroke reversal is four percent, and its closest competitor reverses around 13 percent of stroke effects, Saint Luke's has achieved a national benchmark 38 percent stroke reversal rate.

Saint Luke's network also supports intensive care patients with the eICU care system, which monitors patients throughout the health system from a single off-site location. Thanks to this monitoring, health care professionals have immediate and constant access to patient data, as well as automated warning signals and decision-support software to optimize patient care. "It's a quality of service issue," Wade said. "If we had an unstable network supplier and we weren't able to guarantee remote support into the communities, we wouldn't be able to run an electronic intensive care unit."

Patients who live outside Kansas City, some in rural areas, also benefit from Saint Luke's network, because caregivers are able to monitor patients in real-time even when they're in outlying hospitals. In the past, patients who needed tertiary care often had to be transported hundreds of miles by ambulance into Kansas City. The hospital network now allows them to get the same standard of care much closer to their homes, which makes getting treatment easier and more cost-effective.

Better Care for Patients and Families

The opening of Saint Luke's East – Lee's Summit, an all-digital hospital, was the culmination of a vision to enhance health care options for citizens of Lee's Summit and the surrounding community. The result is a seamless system of behind-the-scenes care that benefits caregivers, patients and their families.

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AT&T worked with Saint Luke's on the design and testing to deliver the IP services platform for its traditional voice applications as well as for its wireless IP user mobility voice system. By integrating the nurse call system with the wireless IP handsets, caregivers can now receive patient notifications and text alerts directly, allowing them to quickly respond to patient needs.

Thanks to its network, the hospital is able make patients and their families more comfortable. The admissions process is substantially easier than at most hospitals. "Because of electronics, the experience of the patient is better, and the experience of the family is better," Wade said.

The network supports processes that have been designed with sensitivity to families in mind. Upon entering the hospital, for example, loved ones can easily learn whether a patient is in her room or in another part of the hospital. "What's the mental impact on a family that comes to visit 84-year-old Aunt Gerty but finds her hospital room dark?" Wade asked. "The network lets us prepare the family by letting them know that she's on the third floor having physical therapy."

Wireless connectivity makes it easy for patients and families to use the Internet for work or leisure activities without jeopardizing Saint Luke's network setup. "It's not the electronics per se," he said. "It's the use of the electronics on behalf of that vision of taking care of patients." For instance, Saint Luke's network ensures better security for the neonatal units, pharmacies and other restricted sectors, validating those authorized to be in each area. Because physicians enter prescriptions digitally, there are no errors caused by handwriting and no paperwork mix-ups.

An Electronic Patient Lifeline

Saint Luke's relies so extensively on its network to provide patient care that disaster recovery processes have become increasingly vital. Operating an all-digital hospital, with few medical records on paper or X-rays on film, means that any network interruption could have a significant impact on patient care. "That realization took us to a new level of business continuity that we call 'Patient Care Continuity." Wade said. "As you deploy more and more electronics into direct patient care, you can't wait days to restore your business; that's no longer acceptable. The business need is that patients are on a lifeline through the electronics and if you lose your main processing center, you are out of business and you are risking patient care." As a result, Saint Luke's capitalized on the new Lee's Summit facility to enhance business continuity by designating it as the health system's backup storage site and alternate data center.

Business continuity was also a reason Saint Luke's was attracted to the SONET ring architecture. Redundancy is guaranteed, so even if one of the hospital's sites goes down, processing capabilities remain throughout the rest of the system. "It has to be bulletproof and failureproof, with zero down time," Wade said. "We have been fortunate that that is the level of performance that AT&T said we would have and we have not had issues in that arena."

And since the hospital has outsourced a significant amount of its infrastructure to AT&T, Wade said, "If there is an issue it's handled automatically by the AT&T team."

Future Innovations to Benefit Patients

Saint Luke's is working to bring the advantages of an all-digital operation to its existing health care facilities, but retrofitting older hospitals isn't easy. The hospital counts on AT&T to research and recommend network design and applications that will help the entire hospital system benefit from digital processes. By the end of the year all metro locations are expected to be enabled for wireless communications.

Officials said they appreciate AT&T's willingness to share the development of new technologies that could benefit the health system. "It allows us to tailor our plans around when there is going to be another advance that we'll be able to take advantage of," Wade said.

One project in the works calls for using radio frequency ID (RFID) tags to document each patient's food delivery as mandated by the FDA and to track patient movements to make it easier for physicians on rounds to locate their patients who may be getting an X-ray or in another part of the hospital rather than in their room. "If we didn't have a robust infrastructure, we wouldn't be able to even consider that type of technology," Wade said. Because of the investments the hospital has made in its wireless infrastructure, it is well positioned to add new functionality that will benefit patients, families and caregivers.

One of the newest initiatives that Wade will be overseeing is Saint Luke's participation in the Kansas City Regional Electronic Exchange (KCREE). This linking of Saint Luke's Health System with an area insurance carrier and bank via the communications network will enable regional transactions processing. Wade estimates Kansas City health care providers ultimately can save between \$13 million and \$20 million annually. "We can take that funding and help doctors get electronic records for their offices and help fund personal health records for this community," he said.

The Kansas City Regional Electronic Exchange is the first step in creating electronically accessible medical records, which the Federal government plans to make mandatory within the decade. Many believe that these electronic medical records can make the difference between life and death in emergencies while at the same time saving billions in health care costs.

Saint Luke's is confident the pilot regional information exchange and other digitally enabled processes will continue to grow, Wade said. "So there is a further dependence upon AT&T service in the region, because the foundation of the Kansas City Regional Electronic Exchange will serve as the personal health record for our community. It's because of good partnership with companies like AT&T that we will see this happen."

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