Patient Care Applications Receive a Massive Shot in the Arm

Relying on Cisco and Cerner, Baptist Health replaces its entire infrastructure without disruption.

Baptist Health

Size: Six care facilities, nine imaging centers

Location: Montgomery, Alabama USA

Industry: Healthcare

Challenges

- Ineffective wireless connectivity and coverage was impacting clinical workflows
- Network outages significantly affected application performance and availability
- Underlying infrastructure inhibiting ability to take advantage of new technologies to improve patient care and experiences

Baptist Health has always focused on helping the residents of central Alabama stay healthy. At the same time, the organization is using all of its knowledge, skills, and the most advanced technology available to improve healthcare for central Alabama. Baptist Health serves the community and local businesses across six care facilities and nine imaging centers. Its wellness programs and services range from open-heart surgery and rehabilitative services to community outreach and support groups encompassing almost any medical need or problem.

Baptist Health had deployed the Cerner electronic health records (EHR) system and had begun to purchase new equipment and software as part of its commitment to continuously improve patient care. Unfortunately, the new technology would not run on the existing network. And the symptoms began to affect everyone. Poor network availability meant that applications ran slowly or could not be accessed anywhere or anytime they were needed.

The wireless infrastructure was old and no longer supported by its manufacturer. With spotty coverage and unreliable connections, caregivers couldn't use the latest devices, such as wireless infusion pumps, glucometers, or telemetry. Frequently, a nurse would scan a patient wristband or IV bag, and the Wi-Fi network dropped the connection—and the data. So the nurse had to repeat the entire process.

"If a clinician cannot use a handheld scanner to push the right medications to the right patient at the right time, the technology behind it doesn't matter," says Kathy Gaston, RN, MSN, and chief nursing officer for Baptist Medical Center East.

An old network also made compliance with Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and Health Insurance Portability and Accountability Act (HIPAA) requirements more difficult. Baptist Health came to Cerner for help with the network issues, and Cerner brought Cisco into the conversation.

"We engaged the Cisco® Connected Health Services team to help us plan for the network implementation," says Paul Schwartz, practice manager and technology consulting lead for Cerner. "Working together, we enabled Baptist Health to meet its patient care goals"

The relationship between Cisco and Cerner was critical to building trust with the hospital and caregivers.

Solutions

- Cisco Digital Healthcare Architecture, based on Cisco Medical Grade Network
- Cisco and Cerner Partnership
- Cisco Connected Health Services

A Strong Working Partnership

Baptist Health needed a significant technology overhaul to achieve its objectives, but Cisco and Cerner first had to demonstrate why new technology is important to doctors, nurses, patients, and patients' families. Schwartz and the Cerner team, the Cisco team, Baptist Health leadership, and Baptist Health clinical team members all worked together to define the desired outcomes and help ensure that the expected results were delivered.

Managing Complexity in Parallel

Hospitals never close, so implementing a new network for the entire healthcare system required extraordinary planning and coordination. Downtime had to be near zero. Vital third-party networks, such as neonatal systems and cardiac monitoring, had to be able to retain data during a cutover and restart without missing a beat.

And the task was huge. The team had to ensure deployment of more than 15,000 feet of fiber optic cable and 50,000 feet of Cat6e Ethernet cable to bring the Layer 1 connectivity up to current standards. Next, they had to migrate 15 facilities, configure 120 wiring closets, upgrade two data centers, deploy new security appliances, migrate more than 300 network switches, and install more than 1200 new wireless access points.

"The relationship between Cisco and Cerner is critical," said Schwartz. "We planned and executed critical steps in parallel. Because both the Cerner engagement leader and the Cisco leader were on the same page, our relationship inspired confidence in the Baptist Health team."

New Infrastructure, New Foundation

The two teams designed and deployed the optimal network infrastructure to support the Cerner EHR and a number of essential clinical workflows that are dependent on wireless connectivity. Based on a patient centric architecture, Baptist Health's new system provides the foundation for enabling reliable, easy-to-use, and highly secure health data communications across the healthcare system. The Cisco and Cerner partnership played an integral role in helping ensure that the massive, 18-month project was executed smoothly without disruption to caregivers. When all was said and done, there was a 100-percent improvement in network reliability and availability. Improvement in application performance ranged from 100 percent to 600 percent. Caregivers were surprised at the lack of disruption they encountered throughout the project. And when wireless networks were cut over, no one noticed. The Cisco and Cerner collaboration was key to this success and was used as one of several key elements in the creation of what we now call the Cisco Digital Healthcare Architecture.

"Everything just worked better together," says Schwartz. "When we did run into an issue, we could escalate technical requests to the Cisco TAC [Technical Assistance Center] exponentially faster, and we had the right resources available instantly. The partnership really pays off in reducing deployment risk for everyone—us and the client."

Results

- Improved infrastructure reliability and availability by more than 100 percent
- Improved application performance by 100 percent to 600 percent
- Improved wireless coverage by 20 percent and speed by 1200 percent
- Achieved enhanced network protection and compliance
- Created foundation for enabling new technologies

Availability That Can Be Trusted

In the past, a small network outage would have taken the entire system down. Now, if an issue occurs, it's contained, minimizing impact on patient care processes. If a wireless access point goes down, the other access points automatically take up the traffic. Outages and dropped sessions have become distant memories. Baptist Health caregivers can use workstations on wheels (WOWs) everywhere they're needed, without dropped connections, lost data, or time spent re-doing procedures.

Products and Services

- Cerner Network Assurance with Cisco Connected Health Services
- Cisco Digital Healthcare Architecture (based on Cisco Medical-Grade Network)
- Program Management
- Design and implementation for wired, wireless and security products

Products

- Data center and campus: Cisco Nexus® 5000 Series Switches, Nexus 7000 Series Switches, Catalyst® switches, and UCS® servers
- Wireless: Cisco Access Points, Wireless LAN Controller, Mobility Services Engine, Prime™ Infrastructure
- Security: Cisco ASA with FirePOWER™ Services, ASA Firewall appliances, Identity Services Engine, Security Manager

"We've seen significant functionality improvement since the upgrade," says Gaston. "The Respiratory Therapy team reported—with much cheering and enthusiasm—that now they can scan medicines and document their administration using the WOWs. Endoscopy nurses can use WOWs in locations where they wouldn't work before. We've seen many wins with time savings and far less frustration."

Payoff to Patients and Families

Wireless is also essential to patient care in another way. Patients and their families rely on the guest network to keep friends and other family members informed. Procedures, such as chemotherapy, are more easily endured if the patient can watch a movie or browse the Internet.

"The wireless network affects every aspect of the patient experience," says Mallary Myers, clinical informatics director for Baptist Health. "Patients, family members, and visitors are now able to consistently access the Internet through the guest wireless network from any area within our organization. That's a huge win."

Improving Speed and Quality of Care

The new network powers high application performance, and the results are impressive. Baptist Health's NaviCare WatchChild application is 100 percent faster. The Centricity Perinatal application runs 600 percent faster. Electronic health records are quickly and easily accessible everywhere. The wired network also dramatically improved the wireless network's performance. Coverage area increased by 20 percent and performance is 1200 percent faster.

Network high performance translates directly to clinical success. Diagnostic imaging scans can be read much faster, and test results can be accessed faster, reducing time to treatment. Respiratory therapists, nurses, and other caregivers can log in at a patient's bedside, scan medications, and stay connected to the Cerner EHR system the entire time.

"Improved network performance greatly reduced caregivers' frustration and has given them time to provide more personal care," says Gaston. "We also have implemented multidisciplinary rounds with physicians, nurses, pharmacy, and other team members using the WOWs. Instant access to the Cerner system gives the entire medical team much better visibility into patients' conditions. It just makes for better medicine."

Awesome Deployment in Parallel

Teamwork between Cerner and Cisco enabled rapid, transparent deployment. The teams configured network devices ahead of time and placed wireless devices on carts for clinicians to ensure uninterrupted EHR access during wireless network cutovers.

The team performed the first wireless network cutover at a 60-bed hospital in three hours. The next facility was a 500-bed hospital—and the cutover was completed in five minutes. A 250-bed facility with 170 access points was cut over in less than a minute.

"It took us 10 weeks to plan our cutover for a 50,000 square foot facility with multiple floors," says Schwartz. "It took one minute to execute. As we deployed facilities, Baptist Health staff members were unaware that the wireless network had changed—except that it worked much better."

One Hand to Shake

The Cisco and Cerner partnership not only transformed the Baptist Health network, it also transformed the system's ability to plan for new technologies that improve patient care, staff efficiency, decision-making speed, and accuracy. For example, Cerner CareAware Connect, a mobility and communications solution designed for smartphones, brings together communications, alarm management, and nursing workflow tools on a single device. This will enable clinicians to make voice calls inside and outside of the facility, send HIPAA-secure text messages, review EHR data, and receive alerts on their smartphones.

"The teamwork between Cisco and Cerner and the smooth deployment of a massive infrastructure overhaul has been incredible," says Mason Brown, MD, MBA, and chief medical information officer at Baptist Health. "The experience certainly elevated our perception of Cisco and Cerner. We went from having one throat to choke to having one hand to shake."

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