Minneapolis Medical Center Prepares for Next-Generation Mobility

Hennepin County Medical Center improves patient care services with Cisco 802.11n support for bandwidth-rich services.

EXECUTIVE SUMMARY

HENNEPIN COUNTY MEDICAL CENTER

- Healthcare
- Minneapolis, Minnesota, United States
- 4500 employees

CHALLENGE

- Improve hospital-wide communication, productivity, and patient care
- Increase bandwidth and RF coverage to support next-generation mobile applications and communication systems that improve clinical workflow
- Implement a unified wireless network supporting the needs of an integrated biomedical and IT department

SOLUTION

- Unified wireless network simplified management and facilitated 802.11n upgrade
- 802.11n access points support a wide range of bandwidth-intensive mobile devices and services over one secure unified wireless infrastructure
- Wireless control system enables easy location of RF equipment throughout the hospital

RESULTS

- Improved staff communication, as well as accuracy, efficiency, and safety of patient care through increased bandwidth and coverage from 802.11n deployment
- Increased responsiveness of mobile clinicians and helped ensure business continuity by enhancing network reliability
- Improved management efficiency of the wireless network, maximizing Biomedical and IT resources

Challenge

Located at the heart of the Twin Cities, Hennepin County Medical Center (HCMC) is a nationally recognized comprehensive academic medical center and public hospital. For the last 12 years, *U.S News & World Report* has ranked the center among America's Best Hospitals for its outstanding medical care. As a Level 1 Trauma Center with the largest emergency department in Minnesota, the center is also known for its state-of-the art critical care facility. According to Phillip Gill, I.T./Bioelectronics manager at Hennepin County Medical Center, "HCMC has always remained ahead of evolving healthcare needs by taking advantage of the latest technology advances."

In 2006, the hospital deployed a Cisco® Unified Wireless Network to improve the quality and efficiency of patient care. "With 446 beds and more than 500,000 patients treated annually, we wanted to provide mobile nurses and physicians with the ability to connect instantly to information and clinical resources at the point of care," says Kevin Murphy, HCMC's I.T. infrastructure director.

After experiencing some of the benefits of the wireless network, the hospital wanted to take greater advantage of the technology to provide integrated mobiles services to the clinical staff. "In most hospitals, the Biomedical group is responsible for maintaining and servicing all of the patient care equipment, such as telemetry and radiology machines. But this equipment runs on a separate wireless network that does not interact with the infrastructure that supports the mobile devices of the clinical staff," says Gill. As the hospital continued to deploy the latest in mobile healthcare equipment, HCMC realized it needed to create a new model that could support seamless wireless coverage throughout its facilities.

Solution

To use its wireless infrastructure fully, HCMC decided to converge its IT and Biomedical departments. “With so much RF equipment under the Biomed group’s responsibility, it made sense to give them ownership of the wireless network,” says Joanne Sunquist, CIO at HCMC. At the time, the hospital was using the Cisco Unified Wireless Network with 250 Cisco Aironet® lightweight access points, Cisco wireless service modules, and Cisco wireless LAN controllers.

After careful evaluation, the new department decided that an upgrade to 802.11n technology was needed. “We wanted to create a wireless network that could provide the bandwidth, RF coverage, and performance to support the next-generation clinical applications and communications systems we planned to deploy,” says Gill. Given the stellar performance of the existing 802.11a/b/g network, HCMC chose to continue working with Cisco for the 802.11n upgrade.

The controller-based architecture of the Cisco Unified Wireless Network made the deployment easy and quick. “Centralized management of software upgrades and services simplified the process, making it possible for us to deploy 250 Cisco Aironet 1250 Series Access Points and support a range of mobile services within six months,” says Gill. The 802.11n access points were added to the existing a/b/g access points, creating a mixed network environment.

The new network now supports several bandwidth-intensive mobile devices and services over one secure unified wireless infrastructure. Voice-over-IP (VoIP) badges keep hospital nurses, clinicians, and support staff in constant communication with each other. Handheld scanners, mobile laptops, and tablet PCs improve the efficiency and safety of patient care by giving clinicians instant access to electronic health records and other clinical applications. Portable ultrasound machines and EKG carts keep patients in the convenience of their own rooms, while a wireless picture and archiving communication system (PACS) provides clinicians with imaging files when and where they are needed.

> **“With 802.11n, all RF mobile devices—from EKG machines to computers on wheels—transmit patient information over the wireless network to the right clinician.”**
>
> **—Phillip Gill, I.T./Bioelectronics Manager, Hennepin County Medical Center**

Results

The Cisco Unified Wireless Network supported HCMC’s vision of an integrated IT and Biomedical environment by improving the management efficiency of the wireless network and devices. “With only 1.5 people on our team managing the wireless network, Cisco’s centralized architecture maximizes our resources. It enables us to troubleshoot, upgrade, and maintain our entire mobile services from one point rather than working with each access point individually,” says Gill. Using the Cisco Wireless Control System (WCS), the Biomedical group can now track Wi-Fi equipment throughout the hospital.

The predictability and reliability of the Cisco Unified Wireless Network helps ensure immediate response times for patient care, as well as business continuity during emergency situations. “The Cisco Unified Wireless Network played a crucial role for us when HCMC became the Level 1 Trauma emergency center during the Minneapolis Highway 35W bridge disaster,” says Gill. Access points located in the outdoor areas near the hospital’s ambulance bank made it possible for clinicians to treat patients as soon as they arrived. “Even though the local cellular network was

unavailable due to excessive demand, the clinicians were able to continue using their mobile devices to communicate with each other," he says. In addition, wireless controllers set up in a redundant configuration support the medical center's mission-critical environment. According to Gill, "We have never had a failure but we've tested the network to ensure continued patient care workflow under any circumstance."

The improved bandwidth and coverage of the Cisco 802.11n deployment improved hospital-wide communications, resulting in a higher degree of accuracy, efficiency, and safety of patient care. By increasing the density of coverage and increasing throughput, the network delivers the performance required to support the most demanding applications and provide clinical staff with the information they need at all times. "Voice over IP badges keep our hospital staff mobile, while enabling them to address patient needs from wherever they are," says Gill. "Now physicians and nurses collaborate on a patient's treatment even if they're located on opposite sides of the hospital."

One wireless network supporting all of the hospital's mobile equipment and applications also improves clinical interaction and patient care. "All RF mobile devices—from EKG machines to computers on wheels—must transmit patient information over the wireless network to the right clinician. Cisco provided a secure wireless solution that makes critical data available to both clinicians and nurses directly at the point of care, ensuring patient safety and timely care," says Gill.

As a result of deploying the 802.11n network, HCMC also experienced significant cost savings. "Thanks to the reliable wireless connectivity of the Cisco Unified Wireless Network, we were able to reduce cable costs considerably. We've deployed wireless workstations at a fifth of the cost to pull new cable," says Gill.

Next Steps

The deployment of 802.11n access points future-proofed the HCMC wireless network, enabling the hospital to adopt new high-bandwidth clinical applications easily and improve the timeliness and quality of care. HCMC is currently planning for the placement of radio frequency identification (RFID) tags on all equipment and looks forward to using Cisco Context-Aware location-based services fully. "The high throughput and seamless coverage of the Cisco 802.11n network keeps us ahead of the healthcare technology curve. With Cisco, we're ready to integrate new applications that will keep enhancing patient care well into the future," says Gill.

PRODUCT LIST

Wireless

- Cisco Aironet 1252 Access Points
- Cisco Aironet 1242 Access Points
- Cisco Catalyst 6500 Series Wireless Service Modules
- Cisco Wireless Control System
- Cisco Wireless Location Appliance
- Cisco 4400 Series Wireless LAN Controllers

Routing and Switching

- Cisco Catalyst 3750 Series Switches
- Cisco Catalyst 6500 Series Switches
- Cisco 7200 Series Routers
- Cisco 2800 and 3800 Series Integrated Services Routers

Security and VPN

- Cisco ASA 5500 Series Adaptive Security Appliances
- Cisco VPN Solutions

For More Information

To find out more about the Cisco Unified Wireless Network and 802.11n technology, visit http://www.cisco.com/go/nextgen-wireless.

To find out more about Hennepin County Medical Center, visit http://www.hcmc.org.

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Printed in USA C36-505773-00 11/08