

Community Hospital Expands Wirelessly

Greenwich Hospital installs a Cisco Unified Wireless Network to meet the needs and expectations of its patients, clinicians and community.

EXECUTIVE SUMMARY

GREENWICH HOSPITAL

- Healthcare
- Greenwich, Connecticut
- 174 beds
- 1800 employees

BUSINESS CHALLENGE

- Provide the clinical teams with mobile technologies capable of expediting the timely delivery of high quality care
- Select and implement a cost-effective solution that meets the technical requirements of the various technologies
- Select a solution that is flexible and adapts to the continual wireless standard progressions of 802.x
- Manage wireless network activity that spans several buildings
- Mitigate security risks
- Improve quality of service for wireless voice over IP calls

NETWORK SOLUTION

- A Unified Wireless Network from Cisco provides remote management of disparate access points
- Separate VLAN for patients and guests helps to ensure that confidential data remains secure
- Separate VLAN for voice traffic helps to ensure superior quality of service

BUSINESS RESULTS

- Providing ubiquitous wireless access keeps clinical teams connected with one another and the patient clinical information they depend on.
- Wireless e-mail and Internet access improves quality of life for patients and their families during their hospitalization and visits.
- The network enhances communications between caregivers and the supporting services staff.
- Prioritizing wireless voice traffic protects the quality of vital phone calls, and keeps them from being dropped.
- Centralized network management saves a great deal of time for the IT staff
- Network-related help desk calls have been reduced

Business Challenge

Greenwich Hospital is a 174-bed healthcare center serving the communities of Fairfield County, Connecticut and Westchester County, New York. A member of Yale New-Haven Health Systems and a major academic affiliate of the Yale University School of Medicine, the hospital is both an important teaching institution and a progressive provider of medical care.

In 1992, the administration staff launched a US\$60 million campaign to expand and update the hospital, and now the campus includes several state-of-the-art buildings. Although they have helped to ensure superior care for patients, the improvements have posed a challenge for the hospital's information technology staff.

"We have a very spread-out facility—several buildings that are two to five miles away from each other," says Nassar Nizami, chief security officer at the hospital. Until recently, the hospital was operating a wireless LAN for its medical and administrative staff. But that WLAN was composed of standalone, individually-managed access points (APs). If someone reported a problem, the staff would have to physically find and fix the faulty AP. To address these concerns, last year the hospital decided to upgrade its WLAN with a system that could be managed and controlled centrally.

Nizami also sought a system that could support high-bandwidth applications such as video feeds and the transmission of detailed X-rays and MRI scans. The existing 802.11b network handled basic data traffic well, but "for some of the imaging machines, the 802.11b network was not sufficient," he says.

The hospital also needed to upgrade its wireless voice over IP (VoIP) system, which tended to drop phone calls when users roamed throughout the buildings. Finally, Greenwich Hospital was under pressure to provide wireless Internet access for patients and visitors—a common request that the hospital had previously avoided because of security concerns. Nizami needed to find a way to provide guest access without compromising patient records and other confidential data that traversed the WLAN.

Network Solution

To meet the many needs of its employees, patients, and guests, Greenwich chose a Unified Wireless Network from Cisco®, the company's trusted network equipment provider. The single-vendor solution helped ensure network interoperability. "Integration was one of the key factors in our decision," Nizami says.

The Cisco Medical-Grade Network provides a highly responsive and trusted environment for securely sharing vital healthcare information and improving interactions among stakeholders throughout the entire healthcare community by delivering the right information, to the right people, at the point-of-need.

As part of the Cisco Systems® Medical-Grade Network infrastructure, a Cisco Unified Wireless Network enables access to critical information at the point-of-need with a scalable, cost-effective solution. The Cisco Unified Wireless Network delivers mobility, security, and instant access to data applications, which can help healthcare organizations accelerate responsiveness, increase productivity, and improve the quality of care provided.

The WLAN plan included three Cisco 4400 Series Wireless LAN Controllers and 85 Cisco Aironet® 1240 Series wireless access points, distributed across several buildings. Although each controller is capable of supporting up to 50 access points, Nizami wanted an extra controller for failover purposes. In a Cisco Unified Wireless Network, if there is a problem with one controller, the access points will automatically associate themselves with another available controller.

Before the upgrade, the hospital had an installed base of standalone 1200 Series Aironet 802.11b access points. Via a free firmware upgrade, these APs were converted to support controller mode so they could work with the WLAN controllers, thus protecting the existing investment. The hospital also installed additional access points that support 802.11g, which offers throughput rates of up to 54 Mbps, enabling X-ray transmissions and other high-bandwidth data streams.

The hospital also installed Cisco Wireless Control System (WCS) management software, which provides RF prediction, policy provision, network optimization, troubleshooting, security monitoring, and wireless LAN systems management—all from a graphical interface. For Nizami, the WCS proved to be invaluable as a site survey tool for initial AP placement.

"The WCS gave us a nice pictorial view of the hospital and helped us to predict coverage issues, so we would know where to install additional access points," Nizami says, explaining that hospitals have unique coverage issues. "In the radiology labs, for example, the rooms have lead walls. In the operating rooms, there is heavy equipment that also can block the penetration of wireless signals."

Nizami appreciates the Cisco Unified Wireless Network's ability to assign separate virtual LANs for separate user groups "at the click of a button," helping to ensure both data security and quality of service for voice traffic. One virtual LAN is now assigned for data traffic for the hospital's computers-on-wheels, or "COWs," which run applications such as Meditech medical information

software. Doctors use the COWs to view medical records at patients' bedsides. Another VLAN is assigned to the hospital's administrative staff.

There are two separate VLANs for voice traffic and, via the WCS, the IT staff has prioritized voice traffic above data traffic. Separately, the new network supports the ability for voice clients to roam seamlessly from access point to access point without dropping a call. This is vital for doctors and nurses who often travel among buildings to visit patients as they use the wireless voice network.

Finally, thanks to the capabilities of the new network, there is now a VLAN dedicated to patients and visitors. "The guest network terminates outside the firewall, which means it is totally separate from the internal network, helping ensure that confidential data remains secure," Nizami says.

Business Results

Providing public wireless LAN access to their guests and patients has garnered a great deal of positive publicity for the hospital, and improved that quality of life for patients and visitors.

"Some of the patients are so tied to their work that they cannot stand to be without Internet access," Nizami says. "Before the upgrade, we were receiving two or three phone calls a week, asking whether we offered wireless coverage. Since we implemented the guest network, people have been very happy. In fact, the PR department has received several calls just to thank the hospital for the wireless access."

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—Nassar Nizami, chief security officer at Greenwich Hospital

For the hospital staff, the new network not only ensures the data safe, but also empowers the clinical teams with point-of-care information and communications to ensure the best care for their patients.

"The new wireless LAN has helped the medical community a great deal, especially in terms of the improved responsiveness of the wireless voice network," Nizami says. "Because they can carry their phone extensions anywhere they go, they can easily be reached at any time."

The wireless voice network improves the efficiency of hospital communications, especially in the Emergency Department.

"Wireless phones are crucial for the Emergency Department personnel; they are assigned a four-digit hospital extension just like any other phone," says Dr. Kevin Brown, director of the emergency department at the hospital. "The unit secretary can put a call through to any of the phones. During a busy day in the Emergency Department, that might mean 30 to 40 calls a day. In the past, crucial time would go by as the unit secretary would page overhead and then have to wait for the doctor or nurse to call back. The Emergency Department is much quieter now, as there are much fewer overhead pages. If the nurses from the telemetry unit, ICU or any of the admitting floors need to contact an Emergency Department nurse about a patient, they can just dial the extension directly and eliminate delays."

The hospital now includes the WLAN in its emergency response plans. “Recently, the hospital performed a pandemic drill, and wireless played a key part in it,” Nizami says. “The staff set up triage throughout the hospital, and the only way to extend the network quickly was by connecting clients wirelessly.”

PRODUCT LIST	
Routers	<ul style="list-style-type: none"> • Cisco 800 Series Routers • Cisco 3700 Series Routers • Cisco 6500 Series Switches
Security	<ul style="list-style-type: none"> • Cisco Secure Access Control Server
Wireless	<ul style="list-style-type: none"> • Cisco 4400 Series Wireless LAN Controllers • Cisco Wireless Control System • Cisco Aironet 1200 Series Access Points • Cisco 7920 Wireless IP phones

For the IT staff, the ability to manage the network from a central location has saved time in network repairs, and the diagnostic capabilities of the Wireless Control System helps the staff pinpoint and fix potential problems before users notice anything amiss.

“In the past, we would get a couple of network-related calls from remote locations each month, and so at least twice a month one of us would have to drive to that location for troubleshooting,” Nizami says. “Now, those calls are down to twice a quarter at the most because the WCS helps us to avert

potential problems. If a problem does arise, 99 percent of the time it is not a physical access point issue, so we can almost always solve the problem remotely from the central controller.”

Next Steps

By the end of 2007, the hospital plans to launch location-based services on the Cisco Unified Wireless Network so that the staff can wirelessly track valuable, mobile medical equipment such as infusion pumps and wheelchairs.

Separately, the hospital is taking steps to separate the Emergency Department’s data traffic from the other data traffic on the network; network usage is extremely high among doctors in that department, and reliable communication can be a matter of life and death. To that end, Nizami plans to move the Emergency Department from 802.11g (2.4Ghz) to 802.11a (5Ghz), to increase data reliability. The Cisco Unified Wireless Network is prepared for the migration. “One of the reasons that we chose the 1200 Series access points was that they supported both 802.11g and 802.11a,” Nizami says.

For More Information

For more information on Cisco wireless solutions, visit: www.cisco.com/go/wireless

For more information on Cisco Unified Wireless Network Solution, visit: www.cisco.com/go/unifiedwireless.

For more information on Greenwich Hospital, visit: <http://www.greenhosp.org/>.



Americas Headquarters
 Cisco Systems, Inc.
 170 West Tasman Drive
 San Jose, CA 95134-1706
 USA
www.cisco.com
 Tel: 408 526-4000
 800 553-NLTS (6387)
 Fax: 408 527-0688

Asia Pacific Headquarters
 Cisco Systems, Inc.
 155 Robinson Road
 #28-01 Capital Tower
 Singapore 068912
www.cisco.com
 Tel: +65 6317 7777
 Fax: +65 6317 7798

Europe Headquarters
 Cisco Systems International BV
 Heerlenbergpark
 Heerlenbergweg 13-18
 1101 CH Amsterdam
 The Netherlands
www.europe.cisco.com
 Tel: +31 20 600 020 0/91
 Fax: +31 20 657 1100

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