

COMMUNITY HOSPITAL CREATES NEW RECORD FOR PATIENT CARE

EXECUTIVE SUMMARY

Today's leading healthcare organizations are embracing technology to help address their clinical, business, and regulatory challenges. Cisco's Medical Grade Network solutions deliver critical decision-making applications and information anywhere, instantly, with the reliability, security, and resiliency required in a 24x7 healthcare environment.

A Medical Grade Network solution for Cheshire Medical Center/Dartmouth-Hitchcock Keene (CMS/DHK) helped eliminate paper charts and give clinic-based physicians online access to an electronic medical record (EMR) for patients. This customer success story describes how CMC/DHK:

- Implemented the Allscripts TouchWorks™ EMR running over a Cisco wireless and wired network
- Ensures reliable, high-performance access to the EMR with Cisco Catalyst® switches and Aironet® wireless access points
- Uses Cisco wireless and remote access technologies to allow physicians to access the EMR while moving around the campus or working from remote clinics or home

CHESHIRE MEDICAL CENTER/DARTMOUTH-HITCHCOCK KEENE DELIVERS ELECTRONIC MEDICAL RECORD TO CLINIC PHYSICIANS OVER A CISCO MEDICAL GRADE NETWORK

Background

Cheshire Medical Center and Dartmouth-Hitchcock Keene (CMC/DHK) are located in Keene, New Hampshire—a city of approximately 25,000 residents in the southwest corner of the state. CMC/DHK's staff of 1,300 works for two separate but closely allied partner organizations: Cheshire Medical Center is a 169-bed acute care health facility; Dartmouth-Hitchcock Keene is a multi-specialty group practice of some 80 physicians representing 25 primary care and specialty areas.

CMC/DHK's leaders see the organization's top priority as providing quality healthcare services to the community in a safe, efficient, and effective manner. The healthcare organization's strong bonds to the community go back more than 110 years. The original 18-bed building was donated to the City of Keene by a local patron, but funds were lacking to equip the hospital. Donations of five and ten dollars flooded in from local residents to raise the US\$1,000 needed to open the hospital's doors.

Challenge

Although the hospital and physician practice are separate organizations, Robert Langlais, president and CEO, believes that patients visiting CMC/DHK should feel as though they are in the care of one provider. But, until recently, the Dartmouth-Hitchcock Keene physicians occupied a clinic that was separated from the hospital by a large parking lot. The construction of a three-story building, completed in 2003, linked the hospital and clinic into one contiguous structure. However, there were still significant information and workflow obstacles. The Information Systems group for CMC/DHK, under the direction of Mary Jane Kamps, was charged with implementing the technology solutions to eliminate those barriers.

One of the most significant problems facing Kamps' team was the organization's reliance on a largely manual process of compiling, updating, and accessing paper-based patient charts. CMC/DHK serves between 1,000 and 1,250 scheduled patients a day. Each time a visit was scheduled, someone in medical records had to pull the patient's chart. After exams, physicians dictated notes for transcription. Once the notes were transcribed, they were sent down to the records department, which would update the chart. The process could take hours or days, depending on the work backlog. If a clinician had to see the patient in the

interim, he or she might have to work with an incomplete record. Consultations between physicians were also difficult, because the paper chart was not accessible by more than one physician at a time.

In addition to the limitations of the paper charts, clinic physicians were frustrated by the need to log into multiple electronic systems in order to get a complete picture of a patient's condition.

Solution

Kamps' IS team began the process of implementing an electronic medical record (EMR) solution that would consolidate all online information in one place, and eliminate paper charts entirely. They chose TouchWorks™ Software from Allscripts Healthcare Solutions running over a wireless local area network (WLAN) and wired LAN powered by technology from Cisco Systems®. TouchWorks is an integrated, modular EMR solution for physicians. The software replaces paper charts and multiple electronic records with one application from which clinicians can access lab and x-ray reports, enter notes, write and fax prescriptions directly to local pharmacies, and more.

Today, each patient's EMR is viewed on a flat screen terminal installed in each exam room in the clinic. The terminal is positioned on a swinging arm so physicians can adjust the screen to share information with the patient. All of the terminals are connected to the Cisco® WLAN. Clinicians equipped with tablet PCs can move freely around the clinic and access any patient chart to answer a question or check the latest lab results. Because Cisco Aironet® wireless access points are deployed throughout the three connected buildings, clinicians can maintain access to their patients' charts from either the hospital or the clinic.

With the new system, physicians are assured of continuous connectivity to patient records. "When we committed all of the patient information to an electronic record and eliminated paper charts, network availability became a crucial requirement," Kamps explains. "We had another wireless vendor in the clinic before we standardized on Cisco, but the signal strength was weak, and clinicians were frustrated by lost signals and the need to restart applications and reenter data. In contrast, with Cisco, we've never had a network failure that affected the physician's access to the EMR."

The Cisco network also provides the performance that was critical for handling increased traffic associated with the deployment of the EMR application. "The Cisco network not only gave us the connectivity we required, but also the performance that physicians expect," she continues. "When physicians are in the middle of an exam and need to input or call up information, they have no tolerance for sluggish response times."

"There is a natural affinity between Allscripts and Cisco," says Steve Schwartz, vice president of strategic alliances for Allscripts. "Our application demands the highest quality network performance. We are continuing to work closely with Cisco to develop solutions that meet the needs of visionary healthcare institutions like CMC/DHK."

Physicians can also access a patient's EMR from any of the seven remote clinics connected via Cisco routers and secured with a Cisco PIX® Firewall. "Physicians can even access the information from home using a password-protected Web interface," Kamps explains, "and perhaps save themselves a trip to the hospital in the middle of the night by reviewing the patient's record remotely."

Prior to the clinic renovation and the implementation of the EMR, the IS department had standardized on a Cisco wireless and wired infrastructure to support the hospital's inpatient medical and administrative systems. The dependability and performance of the system gave Kamps' team confidence in extending an EMR to an outpatient setting.

Thirty-five Cisco Catalyst® switches are deployed around the campus, from the core of the data center to the smallest wiring closets in the clinic. Network analyst Bob Meyer, half of the two-person network team that supports the entire campus and remote clinics, adds, “The common operating system of the Catalyst switches enabled us to quickly deploy high-performance switches in the clinics to support the higher bandwidth requirements of the EMR application. With Cisco, we can create a basic profile for a switch and use that to set up each new switch with just the necessary additions or changes.”

The IS group also makes extensive use of the built-in virtual LANs (VLANs) in the switches to segment traffic and optimize bandwidth across the campus. For example, all of the printers, regardless of location, are on the same VLAN. This configuration keeps bandwidth-consuming printer broadcasts from interfering with more critical departmental traffic.

Recently, the VLANs protected the healthcare institution from potentially devastating worm and virus attacks. “Only two of about fifteen major viruses and worms that were unleashed got past our defenses,” says Meyer. “Our Cisco support team came in and identified the worm quickly. Using the VLANs, we were able to isolate the affected segment, fix the problem, stop any chance of reinfection, and then go back and restore the small portion of the network affected by the worm.”

Results

“Our goal as a healthcare organization is to move to a virtually paperless environment,” says Kamps, “and the solution from Cisco and Allscripts has taken us another step closer to that goal.”

Before the implementation of the EMR, it cost CMC/DHK approximately US\$5.00 to retrieve, update, and refile each patient chart. The new system has significantly reduced the need for paper records and, as a result, the organization will save on both storage space and staff. As medical records staff have left or taken new positions, the institution has not had to refill the positions.

But the cost savings were not the most important goal for the EMR project. The true measure of success is better patient care, and Kamps believes the project has exceeded expectations in this area. “The chart is no longer a secret document that the patient never sees,” she says. “Now, the physician can share all of that information, and the patients feel much more involved in their care. The feedback we’ve gotten from both patients and physicians has been extremely positive.”

Patient safety has also been improved by replacing handwritten prescriptions (other than those for controlled substances) with typed, faxed prescriptions. When the physician types in a prescription, the system flags any drug-to-drug interactions, duplicate medications, or possible allergies to the medication. A new feature under development will tell physicians if the patient’s insurance doesn’t cover a drug.

Physicians are also more productive because they have access to patient information when and where they need it. Many have already stopped dictating notes for later transcription and now just enter their reports directly into the EMR. Consultations are easier and more productive because multiple physicians can access the same record simultaneously over the network. With the greater trend toward mobility and remote access, physicians can take advantage of the wireless network capabilities to work with records while moving between the hospital and the clinic, or from their homes.

“Working with Cisco and TouchWorks, I couldn’t ask for a better team to make this whole campus as strong as it is today,” Kamps says.

Next Steps

With an end-to-end Cisco network in place, Kamps says that the IS group will look at using the built-in quality of service (QoS) capabilities of the Catalyst switches to ensure that the highest priority departments are always allocated bandwidth in peak traffic periods.

Kamps' IS group recognizes that at some point in the future, they will want to transmit images over the network as well, such as MRIs, CTs, and X-rays, which will mean upgrading the Cisco infrastructure to support higher bandwidth Gigabit Ethernet links.

The Cisco infrastructure has also provided the foundation for IP telephony. "We have a top-down commitment to take advantage of technology that will benefit patients and better serve the community," she explains. "If we decide to implement IP telephony, the Cisco network foundation will allow us to do that without ripping out our existing infrastructure. We are extremely cost-conscious, and we need to squeeze the most out of equipment investments. Cisco gives us the investment protection we need to maximize our budgets."

This customer success story is based on information provided by Cheshire Medical Center/Dartmouth-Hitchcock Keene and describes how those particular organizations benefit from the deployment of Cisco products. Many factors may have contributed to the results and benefits described; Cisco does not guarantee comparable results elsewhere.



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