

Hospital Improves Patient Care with Powerful Technology

Business Challenge

Vail Valley Medical Center (VVMC) was founded in 1962 as a not-for-profit organization dedicated to providing quality healthcare. Today it has grown to nine facilities, serving the needs of 50,000 residents in six Colorado counties, as well as tourists visiting the popular area.

Executive Summary

Industry

- Vail Valley Medical Center
- Healthcare
- Vail, Colorado
- 700+ staff

Business Challenge

- Improve patient safety and care by deploying network infrastructure to support powerful PACS (picture archiving and communication system)

Network Solution

- Infrastructure and medical grade network to support PACS, wireless, and security

Business Value

- PACS system in place, providing faster access to critical patient information
- Cisco Medical Grade Network will support additional medical applications, enabling hospital to stay progressive with patient care and services and patient care

In late 2005, VVMC embarked on a physician-driven initiative for organization-wide implementation of PACS (picture archiving and communication system) in order to improve patient safety and care. Adoption of such a system would enable images such as X-rays, computerized tomography (CT) scans, and magnetic resonance imaging (MRI) to reside as digital images on the network rather than film that must be printed and stored in a physical location.

“We are located at the bottom of Vail Mountain and we have world-renowned orthopedists on our staff,” says Brian Muller, senior network



engineer for VVMC. “The quality of a digital image is far superior to a scanner display or film print. So from a patient-care standpoint, getting a PACS in place at our medical center was very important.”

A PACS would necessitate the deployment of a medical grade network to support the powerful application. Chris Smith, vice president and CIO at VVMC and was committed to deploying the new network on Cisco® infrastructure. Local Cisco representatives put the center in touch with ISC, Inc., located in Englewood, Colorado. ISC is a Cisco Gold Certified Partner that has earned many Cisco technology specializations, and has focused its business on the technology needs of several vertical markets, including healthcare.

Network Solution

“The criticality of a healthcare organization’s network is absolute,” says Matt Hammer, account manager at ISC. “You are dealing with critical patient care information, HIPAA (Health Insurance Portability and Accountability Act) regulations and a high level of network security.” VVMC had not done a complete network replacement in some time, and over the years the network had been added to and put together as needed.

Hammer and the ISC team applied the company’s lifecycle services to help ensure that the center’s new network would be highly secure, powerful enough to run PACS and support a planned EMR (electronic medical records) application, and scalable to support the medical center’s needs for years to come.

ISC’s Customer Experience Lifecycle is a methodology that is applied from the first customer contact through the discovery work and production of an agreed-upon statement of work.

After conducting its research, the ISC team recommended an initial high-capacity foundational Cisco network with a vision into the future. This way, the center would realize immediate benefits of the new network and have in place a platform for future growth. Demands for future applications were considered, such as wireless integration with a large EMR solution and plans for Cisco Unified Communications to be deployed at all remote sites. The Cisco Medical Grade Network consists of Cisco 6509 with Supervisor Engine 720BXLs in the core at the main closet. Other closets contained either Cisco 3750s or Cisco 6500s with Supervisor Engine 32s. All switches are Cisco 10/100/1000 PoE. A Cisco 3845 was deployed at the network perimeter, terminating a DS3 for Internet. Cisco MARS (Monitoring, Analysis and Response System) was deployed to monitor and mitigate threats, and Cisco ASA (Adaptive Security Appliance) 5520s would enable the firewall, VPN (virtual private network), and IDS (intrusion detection system).

To meet the wireless networking needs of the hospital, plans were accelerated for a mobile point of care solution that included a Cisco WCS (Wireless Control System), 4402 WLAN Controllers, and approximately 80 Cisco 1242 Wireless Access Points. This would enable deployment of an EMR solution from Cerner Corporation. Although phasing in of EMR across all VVMC sites will take several years, the initial wireless network deployment supports about 70 wireless tablet PCs and "carts on wheels" that allow physicians and clinical staff to access and update charts at a patient's bedside. Wireless access at the point of care makes accurate and up to date information easily available to improve the quality of patient care.

"The wireless network is the first step in deploying full EMR across all of our facilities," says Muller. "We can provide segmented guest access to the Internet, and have the security needed to start accessing electronic patient records."

Cisco Unified Communications will eventually be deployed to provide standardized, unified communications across all VVMC sites.

Business Results

With its Cisco Medical Grade Network now in place, VVMC has successfully implemented its PACS initiative. The result is faster access to all kinds of information including lab results. A patient coming in with a leg injury that needs a scan, X-ray, or MRI is being treated more quickly. The superior quality of the digital images allows physicians to easily see even micro-fractures that are not easily seen on film or scanner images.

"These images can be accessed and viewed from anywhere in our organization, or even remotely," says Muller. "We have VPNs set up with other area hospitals and physicians' offices, so we can quickly send the images to the patient's own doctor. In terms of patient care, this imaging system and the network supporting it have enabled our physicians in really big ways."

Even with the high bandwidth demands of the PACS system, Muller reports that the network is performing flawlessly.

"This network gives us the ability to add more medical applications and stay progressive with our patient services and patient care," says Muller.

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