

# News@Cisco

## Feature Article

# Internet Communications Becoming Indispensable for U. S. Healthcare

Hospitals and other organizations rapidly deploying wired and wireless networks using Internet standards to facilitate communications among people, medical devices and information

February 26, 2007

By Charles Waltner, News@Cisco

### MORE INFORMATION

## Video

[Building the Network from the Ground Up](#)

## Press Release

[Cisco Announces Community for Connected Health](#)

The United States healthcare system undoubtedly faces some daunting challenges, but hospitals and other health organizations are realizing they now have a crucial aid in easing many of their problems: Internet communications.

Healthcare professionals and technology experts say the industry is making record investments in communications systems based on Internet protocol (IP) technology, the language of the Internet. These networks, however, do far more than provide access to Web sites. Thanks to their ability to adroitly run all forms of communications--including telephone, video, text, data,

and images--healthcare providers are using IP networks to improve virtually every facet of their activities.

The firmly established ability of IP networks to dependably and securely facilitate both wired and mobile communications among people, medical devices, and information repositories has made them the number one tool for improving both the quality and the affordability of healthcare in the United States.

"I've been in the business since the early 1970s, and I've never seen such a level of activity in healthcare," says Marc Holland, the program director for health provider research at [Health Industry Insights](#), an IDC company in Framingham, Massachusetts. "Networking technology initiatives are happening in so many different areas of the industry simultaneously. It's remarkable."

Holland explains that to care for each patient, information has to be shared among a labyrinth of entities, including doctors, nurses, labs, hospital administrators, government agencies, insurers, and patients. "It's a very heterogeneous mix," he says.

The need for electronic medical records is a common theme to many networking investments. "A whole host of people and groups need access to information to care for you," Holland says. "The industry hopes electronic records, accessible over ubiquitous networks, will make it much easier for all parties."

Holland says IP networks are also helping hospitals reduce "a lot of wasted motion" by providing a better means to coordinate staff, resources, and information to operate more efficiently, especially over wireless networks. Wireless connections are one of the most important aids in helping reduce the chaos. "Communications are essential in a hospital, but they don't happen in an orderly way," Holland says. "Hospitals are very frenetic places with intricate interdependencies among all the moving parts. People are moving around all the time and they need to reach people and access information immediately. This isn't like autos on an assembly line."

### Network as Healthcare Hero

Though the healthcare industry is recognizing the potential of IP networks to improve their operations and patient care, they face budget conundrums and all kinds of logistical, operational, even political issues. "There's no easy answers and the problems go way beyond the network," Holland says. "The battle to improve the healthcare industry is really an epic film."

For some hospitals IP networks are becoming their hero. "The network is now the lifeblood of our organization," says Russ Branzell, chief information officer for [Poudre Valley Health System](#) (PVHS), a 430-bed non-profit healthcare provider in Fort Collins, Colorado.

Branzell has already upgraded PVHS to modern IP networks for both wired and wireless communication, and it now enjoys multiple benefits from the new technologies. Branzell, however, realizes there are many more opportunities to capitalize on his organization's investment. "We are trying to figure out what we have not even thought of yet," Branzell says.

Branzell says use of PVHS' network will likely increase dramatically as his group finds more ways to connect devices and information for ubiquitous access. In particular, the growing need to transmit medical-grade images for everything from X-rays and CAT scans to MRIs and ultrasound images is making a robust network essential.

The organization's doctors and staff can now access its PACS (picture archiving and communications system) from anywhere there is a broadband connection. During a recent snowstorm, for example, many doctors were able to examine images from their homes to avoid driving on dangerous roads.

Ultimately, Branzell says, IP networks can help "break down siloed portions of healthcare," so the whole system can

share information more effectively. "We've got a long way to go to get everyone to talk together," he says.

## Growing Demand for IP Networks

Poudre Valley Health System is certainly not alone as the healthcare industry increasingly invests in IP technology to improve operations and patient care. Doug Schuck, president of [MSN Communications Inc.](#), a Cisco Systems' network integrator in Centennial, Colorado, says network installations and improvements for healthcare providers is an increasingly important part of his business as the region's hospitals look to bolster their communications capabilities. "Over the last five years, one reference has led to another and now healthcare is one of our networking specialties," Schuck says. PVHS is one of his customers.

He says healthcare accounts now total about seven percent of MSN Communications' \$80 million in annual revenues. He expects that to increase to 10 percent next year, as more hospitals make crucial upgrades to their core networks. "The equipment and technology we are installing today didn't exist four years ago," Schuck says. "Healthcare organizations are realizing a lot has changed with IP communications."

Hospitals are technically challenging environments for running communications networks, especially wireless. Schuck says wireless networks are particularly difficult to do well in a hospital because they are filled with all sorts of road blocks to radio waves, including electronic equipment, lead-lined rooms, and often wide-spread campuses.

To address the complex needs of hospitals, MSN Communications cultivates a group of engineers and consultants that focus solely on that industry. "You can't just have technical networking expertise to help healthcare organizations," Schuck says. "Experience is vital. This industry has very special requirements and their environments are unique. Without experience you are really in virgin turf."

Another MSN customer, [Memorial Health System](#) in Colorado Springs, Colorado, is now exploring ways to take advantage of its extensive wireless network. Tom Kerwin, the organization's chief information officer, says his staff is now working on ways to connect more medical devices such as IV pumps or ultrasound machines to its wireless networks for remote monitoring and information recording.

Memorial Health, which is ranked as one of the best cardiac care centers in the nation, will soon open a 98-bed hospital to supplement its primary 477-bed facility. Kerwin says IP networks are making it much easier for his organization to expand its services. The ability of IP networks to carry all forms of communications greatly reduces management complexities and eases new construction demands. "Why run a separate infrastructure for all of that?" he says. Kerwin's staff is even managing Memorial Health's video security system over its Cisco IP network.

Kerwin's group is now looking at using such up-and-coming technology as RFID tags, which are like little homing beacons for mobile medical devices. With the tags, medical staff will be able to quickly locate the devices they need, helping reduce time-consuming searches for wayward machines.

Kerwin says Memorial Health, a city-owned hospital operating without tax subsidies, has invested in network upgrades because everyone in the hospital's administration now recognizes the dramatic role IP-based communications can play in improving the quality and affordability of care. "That's the biggest difference," he says. "The clinicians realize that the network is the key to any new efforts to improve their work with patients. Now my department is involved in every conversation."

## Cisco's Focus on Healthcare

Cisco realizes that the healthcare industry faces a complex set of challenges, but the IP pacesetter is highly committed to improving healthcare throughout the world. Cisco is developing both its technology and expertise to bring tailored products and services to the industry.

Cisco efforts begin with a highly experienced team of healthcare and networking specialists. Dr. Daniel Sands, senior medical informatics director in Cisco's healthcare group, typifies the kind of cross-disciplinary professionals that support Cisco's [healthcare communications technologies](#). Besides maintaining a primary care practice, Sands is an internationally recognized lecturer on information technology in healthcare, a board member of the American Medical Informatics Association, an assistant professor of medicine at Harvard Medical School, and formerly the information systems architect for the clinical systems at Beth Israel Deaconess Medical Center in Boston.

Sands says networks can help the healthcare industry address four key areas: safety, access, operational efficiency, and patient experience.

Medical errors, such as mistakes with prescriptions, are the eighth leading cause of death in the United States. Eighteen percent of those errors are due to missing information. Sands says better network communications coupled with electronic medical records can ensure that the right information gets to the right person at the right time.

Sands says IP networks are also making services such as telemedicine increasingly viable. Many healthcare experts believe telemedicine can greatly increase the quality of service to rural areas that typically have fewer medical services, especially medical specialists such as cardiologists.

IP networks are also helping patients connect with doctors and medical services in other ways. Through email and a growing number of Web services, doctors and hospitals are providing greater information online to patients while making it easier for patients to schedule appointments or discuss their medical conditions.

Networks can also help lower operational expenses for hospitals and for U.S. healthcare overall, Sands says. Healthcare costs the U.S. \$2 trillion a year, accounting for a staggering 16 percent of the country's gross domestic product (GDP). Though the U.S. spends the most per capita of any country, it ranks 36th in the world for quality of care, falling behind such countries as Spain, Columbia and Morocco. "GM spends more on healthcare than steel, and Starbucks spends more on healthcare than coffee," Sand says. "At least some of those costs are from system inefficiencies that modern communications technologies can address."

Though IP networks are now instrumental in helping with the many challenges facing the U.S. healthcare industry, hospitals and other organizations have only begun their examination of what IP-based networking technology can do. The healthcare industry's spending on information technology is typically two to four percent of revenue, compared to an average of 10 percent in many other industries. With greater investments, the more networks can help. "Technology is not the be-all and end-all but it is definitely a part of the solution," Sands says.

### 'Human Network' Making a Difference

Perhaps the most important benefit from modern communications technology is that it is helping counteract the sometimes impersonal nature of healthcare that distresses patients and undermines the very essence of the profession. Sands says the concept of the "human network" is not just marketing hype but a tangible result of the ability of Internet communications to connect people to people.

For example, Sands describes the experience of "Paul," one of his patients. A month ago, Paul was diagnosed with cancer. Though Paul lives in New Hampshire, Sands and other doctors in Boston have been able to stay in touch with Paul and share CAT scan images and other important medical information over the Internet. In many cases, Paul can get the information he needs and can "meet" doctors without having to travel.

More importantly, Sands says, the Internet has helped buoy Paul's mental well-being during his extremely challenging illness. Thanks to the Internet, Paul has been able to join a cancer support network, enjoying the encouragement and advice of peers throughout the world. Through another Web site service, Paul has also been able to set up his own online diary, or "blog," where he can keep family and friends updated on his condition, as well as giving them a way to contact him.

Though Paul's physical outcome is still in doubt, Sands says Paul's spirits are excellent. A strong support system is about the best medicine he could prescribe. "Modern communications are simply about making it easier for people to talk with one another," Sands says. "There isn't one right way for doctors and healthcare providers to help patients, but IP networks open up a whole new range of possibilities for improvement."

*Charles Waltner is a freelance writer Piedmont, Calif.*