Hospital System Improves Emergency Response

Rhode Island Hospital and CACI, Inc. developed a mobile, easy-to-use emergency communications system.

EXECUTIVE SUMMARY

RHODE ISLAND HOSPITAL, PART OF THE LIFESPAN SYSTEM
- Healthcare
- Providence, Rhode Island
- 6863 Employees, 1570 Affiliated Physicians

CHALLENGE
- Provide backup communications
- Accelerate setup of emergency communications in any location
- Enable public-private partnerships during disaster response

SOLUTION
- Built Rapid Emergency Satellite Communications (RESCQ) system, based on Cisco Rapidly Deployable Communications
- Engaged CACI, Inc. for systems integration and one-click setup

RESULTS
- Improved Rhode Island emergency response system's ability to communicate during disaster or mass casualty event
- Enabled laypeople to establish satellite communications in less than 30 minutes
- Supported public-private partnerships for emergency response

Challenge

Lifespan, Rhode Island's first health system, was founded in 1994 by Rhode Island (RI) Hospital and The Miriam Hospital. Its current partners also include RI Hospital's Hasbro Children's Hospital, Bradley Hospital, and Newport Hospital.

After 9/11, the Joint Commission on Accreditation of Healthcare Organizations mandated that hospitals provide backup communications services, and also establish alternative care sites. These sites, often in schools, typically lack the robust communications systems required for effective disaster response.

When planning its backup communications solution, Lifespan realized that a highly portable system would provide more value to the community. "We envisioned a solution we could bring to any location that needed emergency communications services, such as a nursing home, or even an open field," says Peter Ginaitt director of emergency preparedness for Lifespan.

Therefore, in late 2005, RI Hospital executives began investigating ways that healthcare workers, first responders, and community members could collaborate at disaster scenes that had no

communications infrastructure. Hurricane Katrina had underscored the problems when different organizations could not directly communicate. Lifespan employees had experienced the challenges firsthand in 2003, when they performed medical triage after a Rhode Island nightclub fire. Although the area did have push-to-talk (PTT) radio coverage, the lack of interoperability among the various agencies and hospitals prevented field personnel from communicating with the hospital. "We saw that although Lifespan's communications technology worked well for our own community, it did not support collaboration with other organizations," says Dave Hemendinger, chief technology officer, Lifespan.

The Lifespan team established the following criteria for its mobile communications solution:

- Easy to set up within 30 minutes, in any location.
- Easy to use, even for a layperson. If given easy-to-use communications devices, citizen volunteers could be put to use directing traffic or providing other valuable services that do not require medical or technology training.
- Based on commercial off-the-shelf (COTS) components. A standards-based solution would simplify system design and maintenance.
- Highly portable. The solution had to fit in hospital elevators, small vans, helicopter bays, and standard railcars.
- Interoperable with different PTT radio systems as well as phones and cell phones. Communications interoperability would facilitate collaboration among different organizations involved in disaster response.

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—Peter Ginaitt, Director of Emergency Preparedness, Lifespan

Solution

No turnkey communications solution met all of the criteria, so Lifespan engaged CACI, Inc., a Cisco Certified Gold Partner, to perform systems integration. Lifespan and CACI decided to base the solution on standards-based Cisco® Rapidly Deployable Communications technology. "Cisco offered all the capabilities needed for emergency response, and a one-vendor solution would simplify support from CACI," says Hemendinger.

To fund solution development, RI Hospital applied for and received a US$5 million emergency preparedness grant from the U.S. Department of Health and Human Services, through the Assistant Secretary for Preparedness and Response. The hospital was one of only five in the United States to be selected for the 2007 Healthcare Facilities Emergency Care Partnership Program. The grant is designed to improve the state emergency care systems' ability to receive, treat, and respond to a disaster or a mass casualty event. As part of the national demonstration project, RI Hospital will share best practices with other health systems throughout the country.

Lifespan and CACI designed the Rapid Emergency Satellite Communications (RESCQ) system to provide complete voice and data communications capability to hundreds of users through a direct satellite link. "Most redundant communications systems rely on radio alone," says Ginaitt. "By basing the RESCQ system on Cisco Rapidly Deployable Communications, we can offer radio, satellite, and wireless voice and data, in one integrated package." The solution can operate anywhere in the state, and anywhere in the world after the satellite connection is reconfigured. To date, RI Hospital has provided 22 RESCQ systems to hospitals and public safety agencies throughout the state.

When designing the RESCQ system, RI Hospital and CACI focused on mobility, simplicity of setup, and ease of use. "We have developed numerous rapidly deployable communications systems for the U.S. Department of Defense that involved satellite or unified communications, but this is the first solution we have offered that delivers all these capabilities in a completely turnkey package," says Ira Hostetter, business development manager, CACI. "The design goal was to make communications completely operational with one click of a button." For ease of storage and shipping, RI Hospital decided to package the Cisco solution to fit on a secured, retrofitted, and strengthened linen cart.

Results

Simplifies Setup and Operation of Emergency Communications

The system is designed so that anybody at the incident scene, including a passerby who wants to help, can establish communications within 30 minutes by following the simple instructions. Other community volunteers can be given Cisco Unified Wireless IP phones, which operate like cellular phones, to direct traffic and perform other useful tasks that don't require specialized training.

During solution testing, RI Hospital invited people without technical backgrounds to establish satellite communications using the RESCQ system. "We observed as they worked, and iteratively revised the instructions to make them very clear," says Elaine Palm, enterprise network manager, Lifespan.

Simplifies Site-to-Site Communications

CACI designed the RESCQ system so that responders can dial the Cisco Unified IP phone on another system using the same five-digit number, regardless of where the system is located. "Five-digit dialing is important because it saves time, and every minute counts during emergency response," says Palm.

Provides Business Continuity

When a mishap occurred during street construction, a Lifespan clinic in northern Rhode Island lost all inbound and outbound communications. RI Hospital promptly delivered a RESCQ system, and communications were restored within 30 minutes. Staff used Cisco Unified Wireless IP phones to continue to make and receive calls, and connected wirelessly to the hospital network to access hospital clinical and administrative systems. "If we had not had the RESCQ solution, communications would have been down for four hours, affecting patient care," says Hemendinger.

Supports Medical Triage

In the summer of 2009, Lifespan used RESCQ systems in a proof-of-concept for medical triage at the Rhode Island National Guard Air Show. The state's disaster medical assistance team and the military were each given a RESCQ system to use for incident command, control, and communications. "Within minutes, we connected two separate radio infrastructures, enabling collaborative incident command," says Hemendinger. "Personnel were able to use the system with nominal support and training."

PRODUCT LIST
Cisco Rapidly Deployable Communications
• Cisco Integrated Services Router
• Cisco Unified Communications Manager Express
• Cisco IP Interoperability and Collaboration System
• Cisco Unified IP Phones 7962 and 7942
• Cisco Unified Wireless IP Phones 7921
• Cisco Aironet® 1200 Series Wireless Access Point

The medical team used the satellite-based voice and data network to register patients when they arrived at the tent and to track them for the duration of care. Both incident commands could reach each other by phone or by radio. "Using the Cisco IPICS [IP Interoperability and Collaboration System] on the RESCQ pallet, personnel carrying inexpensive, consumer-grade radios could communicate directly with other personnel using $4000 800-Mhz radios," says Ginaitt. Spacenet, the satellite services provider, tied together the local phone companies, and performed without failure during 24 hours of testing.

Flexibly Supports Different Emergencies

RI Hospital can use the RESCQ systems in any type of emergency situation, including:

- **Pandemic preparation:** As directed by the Rhode Island Department of Health and Human Services, RI Hospital can quickly establish a mini-hospital at a school, using the RESCQ system for voice and data services.
- **Communications outages in care facilities:** If a windstorm takes out a hospital or nursing home phone system, a healthcare worker can re-establish phone and Internet access in less than 30 minutes.
- **Search and rescue:** When a Rhode Island police officer was missing and believed to be in a rural area that was out of radio range, Rhode Island provided RESCQ systems for the searchers, who communicated via satellite with a remote operations center.
- **Public-private partnership:** Although the RESCQ system was conceived to help the hospital respond to disasters, Rhode Island Hospital now appreciates that its benefits extend far beyond hospital walls. "Part of Lifespan's mission is to improve the health status of the community it serves," says Palm. "RESCQ systems support the mission by rapidly establishing vital voice and data services even in the absence of communications infrastructure."

Next Steps

RI Hospital has begun an awareness program about the RESCQ system for local, regional, and national first responders and military organizations throughout the United States. "When we first envisioned this solution, we thought we would be successful if every hospital had access to rapidly deployable communications," says Hemendinger. "Now we realize that the solution can play an important role in global disaster response."

For More Information

To learn more about Cisco Rapidly Deployable Communications solutions, visit:
http://www.cisco.com/web/strategy/government/rdc.html

To learn more about Cisco IP Interoperability and Collaboration System (IPICS), visit: http://www.cisco.com/go/ipics