Introduction

When Presbyterian Healthcare Services planned its new flagship facility on the outskirts of Albuquerque, N.M., the organization incorporated several innovative features into the building design. The new hospital — Rust Medical Center in Rio Rancho — opened in October 2011 with state-of-the-art facilities including patient-friendly lighting systems, plenty of natural light in the rooms and hallways, and nursing stations in close proximity to patients. Behind the scenes, Rust also featured a robust communications network from tw telecom that enables the not-for-profit healthcare facility to have enough bandwidth for its myriad of data and voice applications at an affordable price.

"The cost of healthcare is a huge challenge nationwide, and our organization is determined to keep the cost of healthcare as low as possible for our patients and members," says Marcia Birmingham, the manager of network communications services at Presbyterian. "That's why finding the lowest cost solution for the most amount of bandwidth was an important aspect of the new hospital."

Presbyterian Healthcare Services has eight hospitals throughout New Mexico, and with 9,000 employees, it is one of the largest private sector employers in the state. To deliver care that is conveniently located, the organization set out a couple of years ago to build a new hospital in Rio Rancho, a newer community on the western outskirts of Albuquerque slated for significant growth. Presbyterian selected a site and set out to build a full-service, state-of-the-art facility to deliver 21st century healthcare. "We've really embraced lean and Six Sigma efficiency methods at Presbyterian to help us get rid of waste and to ensure that we are following best practices," Birmingham says. Such methodologies were instrumental in the design of Rust Medical Center.

From the outset, Birmingham says, Presbyterian wanted to build a patient-centric hospital, and therefore incorporated patient feedback wherever possible into the design of the new facility. The designs also included private rooms, natural light and an atrium; all important features in the healing process.

Solution Snapshot

| Organization: | Presbyterian Healthcare Services |
| Operational Challenge: | Deploy bandwidth cost-effectively to accommodate current and future data traffic at the newly-built Rust Medical Center |
| Solution: | tw telecom's Business Ethernet high-speed network with a 2 Gbps network circuit |
| Project Duration: | Approximately three months from solution to installation. Multi-year solution between tw telecom and Presbyterian Healthcare Services |
| Benefit: | The network can accommodate current and projected future needs; no disruptions experienced by hospital staff |
process for patients. Other design features enabled greater efficiencies by hospital staffs and nurses. For instance, with the closer proximity of nursing stations to patient rooms, Birmingham says that time and motion studies indicate that nurses now walk the equivalent of 150 miles less per year.

As befits a state-of-the-art healthcare facility, Presbyterian’s plans called for outfitting Rust with a technology infrastructure that would support a number of healthcare applications including electronic medical records, electronic clinical systems, physician order entry systems, remote patient monitoring and digital imaging. Central to the infrastructure would be a high-speed and robust communications network with enough bandwidth to handle current data needs, including connecting videoconferencing rooms to other hospitals and some desktop video for staff and doctors while accommodating for future growth in data traffic between Rust and the centralized datacenter located 20 miles away. However, a key consideration for Presbyterian was affordability. "We've discovered that you need larger amounts of bandwidth," Birmingham says, "and so for us, the biggest challenge is providing the amount of bandwidth that we need to successfully support all the applications that are running [at Rust] when the datacenter is not onsite."

**Implementation**

In addition to bandwidth and cost requirements, Presbyterian insisted that the network provider it selected for Rust had to have a track record of reliability and consistency. Given all the criteria, Presbyterian chose **tw telecom** to provide network services to Rust. Specifically, Presbyterian opted for **tw telecom's** Business Ethernet solution over its high-speed, secure and resilient network with 10 Gbps capacity. Initially, Rust Medical Center implemented a 2 Gbps network solution.

Birmingham says that Presbyterian staff spent about a year planning network services prior to installation and even though Presbyterian was using 600 Mbps circuits at other facilities, the decision to go with the 2Gbps network circuit solution was made because of the expectation that Rust would have higher bandwidth requirements due to the use of remote monitoring, medical imaging and electronic medical records. Once **tw telecom** was selected as the network provider, Presbyterian worked with the vendor to install the network infrastructure to the Rust building site. At that point, the Rust hospital administrator, a project manager from information services, and the director of infrastructure worked for months to plan the applications and network services that would be deployed at Rust. The **tw telecom** solution is not only reliable, secure and efficient, but it is scalable to meet future growth needs and newer applications requirements.

Overall about 125 people from Presbyterian and various vendors, worked for six months on getting the network and applications installed up and running prior to the opening of the state-of-the-art Rust Medical Center.

**Challenges**

As with most large construction projects, things didn’t go exactly as planned. Specifically for network services, Birmingham aimed to have the network circuit installed approximately three months before the hospital went live to provide ample time for extensive testing of the applications and all the gear. Birmingham says the timing was critical — Presbyterian wanted to have enough time for testing

Unfortunately, the weather was unseasonably cold in New Mexico in the early half of 2011, and Rust was experiencing problems due to power-related issues caused by the weather.

Another challenge had to do with involving end users in the planning efforts. Since Rust was a brand new facility, planning occurred before much of the staff was hired, which resulted in change management issues. "We made an enormous amount of changes to our original plan," Birmingham says. As a result, there were some delays in getting the circuit installed in time to do all of the testing,
Benefits

Since Rust has opened, Birmingham reports that the network circuit and network services provided by tw telecom have been as reliable and available as planned. To date, Rust has experienced 100% uptime. Such reliability has resulted in day-to-day changes in how Rust does business. For example, some rooms in the medical center are fitted with video conferencing — an application that runs over the network. "We avoid a lot of travel across town because we're 20 miles from the corporate office," Birmingham says.

In addition, Birmingham is impressed with tw telecom's customer service department and easy-to-understand billing. As for the staff at Rust, the ultimate benefit of the network and the network services is that they are, "for all intents and purposes taken for granted — the tw telecom solutions just work, allowing employees to go about their jobs. The reliability is very high and that really matters to us," Birmingham says.

Methodology

The project and company information contained in this paper was obtained from multiple sources, including information supplied by tw telecom and questions posed by IDC directly to Presbyterian Healthcare Services employees.