HEALTHCARE

ROYAL ORTHOPAEDIC HOSPITAL

Birmingham | England

ROYAL ORTHOPEDIC HOSPITAL PROVIDES SPINAL SURGERY, HIP REPLACEMENT, AND CANCER TREATMENT. Royal Orthopedic Hospital's Meru wireless solution provides reliable real-time access to electronic patient records (EPR).

"We're currently using only about seven percent of the wireless LAN capacity. If we put everything on the wireless LAN, we'd still only use about fifty percent of it." **Alan Kinder** | IT Manager

Challenges

- Therapists need access to the IT system from anywhere in the hospital using laptops.
- Wireless traffic must be encrypted.
- Tight deployment timeframe.

Results

- Therapists can enter data securely when they see patients anywhere in the hospital.
- Network can handle a variety of applications including digital x-rays and voice calls.
- Ease of deployment made it possible to meet the very tight installation timeframe.

Challenge

The Royal Orthopaedic Hospital in Birmingham (ROH) is the largest orthopaedic unit in Europe, providing planned surgery such as hip replacements, as well as spinal surgery and cancer treatment and caring for children with orthopaedic problems. Its history stretches back almost 200 years: founded as the Royal Orthopaedic and Spinal Hospital in 1817, it now occupies a 40 acre site on the outskirts of the city, donated a century ago by the philanthropist and chocolate manufacturer George Cadbury. As an NHS Foundation Trust, the hospital still embodies his principles of community involvement.

ROH is also committed to using the best technology for its patients. On 1st April 2008, it switched on Tiara, a hospital IT system which brings together patient information that had previously been divided between three databases.

In Tiara, an electronic patient record (EPR) includes each patient's history, and new data on assessments and interventions can be recorded directly into it. This means therapists can access and update their patients' information quickly, and banish the paper notes which could previously be lost, or else had to be entered into the computer systems manually.

But Tiara can only be used to the full if therapists can connect to it from anywhere on campus – and that means wireless access. "We've seen Tiara implemented without wireless, but we wanted to be able to use it while at the patients' bedside or alongside them in therapy rooms and gyms," says Chris Aspland, a physiotherapist at the hospital, and a project leader for Tiara.

Pervasive wireless access to Tiara across the site with reliable support for current and future applications would require a large network. As a result, the team investigated several options.

Solution

Before selecting and implementing a larger wireless LAN, the hospital looked at alternatives: "We evaluated several solutions, including one from Cisco," says Alan Kinder, IT Manager at the hospital. "But the Cisco solution was double the price, and there were certain things it could not do." The hospital also looked at a solution based on standalone Belkin access points.

Supplier Synaptic Solutions guided the Hospital towards Meru. A wireless specialist, Synaptic has two other wireless vendors on its books, and was able to put the Meru benefits in context.

Synaptics demonstrated that the system was the only one capable of the large scale data access the Hospital required and the only one able to support toll-quality voice in future.

The Meru solution performed better because it covers the whole hospital with a single "virtual cell" in which all the access points use the same radio channel. Staff can roam from one part of the hospital to another using wireless devices, without having to wait while their laptop reconnects to the network. The network covers all the hospital's clinical areas.

Once the hospital made its decision, the network had to be installed quickly to meet a deadline set, in part, by the financial year. "The whole thing had to be turned round in five weeks," says Nigel Townsend of supplier Synaptic Solutions, who worked with network contractor Midland and the hospital's IT department to meet the deadline.

This was achievable because Meru's single channel architecture makes installation easy. Other networks require tedious RF planning and costly site survey, in which every access point is set to a defined channel and signal strength, to avoid interfering with other access points. Meru's access points can be simply plugged in and used.

In fact, Synaptic did carry out a wireless site survey, but to confirm that there would be no major problems where the Meru equipment was installed.

The access points are all powered over Ethernet, so there's only one wire to install to connect an AP. Two Meru MC3050 controllers were installed in the server room for reliability, and 32 access points, mostly the single-radio AP150, but with some AP208 dual-radio devices, cover the entire hospital.

Security is paramount when dealing with medical records. The wireless traffic is encoded using 256-bit encryption and access to the records is by password, managed by the hospital's existing Radius authentication server.

Currently, the Tiara system has about 55 users, most of whom use standard Dell wireless laptops and tablets, with some splashproof models for use at the hydrotherapy unit.

Since installation the network has operated without any significant problems. As the access points are managed centrally, any problems with them are easy to fix. "If an access point fails, we just plug in a spare," says Alan.

Continued.

For more information about Meru Networks wireless networking solutions, visit | www.merunetworks.com |
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Results

The wireless LAN, and the Tiara system it supports, has changed the way therapists work at the Hospital. Therapists use laptops or tablet PCs anywhere in the hospital where they're seeing patients. This includes the hydrotherapy unit, where splash-resistant laptops are used by the pool.

Clinical records can be viewed anywhere, by several users with appropriate security, so different departments can share information far better than before. The days of dealing with lost files are over. Tiara is also collecting data on the Hospital's work - which will help plans to improve care in the future.

The performance of the wireless LAN itself has impressed the staff. The ability to move a laptop to a less crowded area is a boon, making it easier to share workspace. Staff have found, given the choice of an Ethernet cable, that they can work better on the wireless LAN.

The Future

It is sometimes hard to find budget for infrastructure like a wireless LAN. The applications which use it are implemented one at a time, over a period of several years.

Usually, no single application can justify the cost of new infrastructure, so it has to wait.

In the case of the Royal Orthopaedic Hospital, Tiara and EPR provided the justification for a wireless LAN, which is now available for other applications. "We needed the WLAN backbone for EPR, but now it has been justified, it's easy to move other applications onto it," says Alan.

For instance, X-ray images can now be carried across the wireless LAN, because they had already been moved to a digital system, and were going across the wired LAN, says Aspland. "We went filmless a year ago."

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Some future applications could use the wireless network to locate and track staff or valuable equipment - a task that is particularly important in a hospital. Getting hold of a doctor or some specialist equipment quickly can be a matter of life and death in extreme cases, or at the very least, save a patient from hours of uncomfortable waiting. ROH is also looking at the possibility of running voice over the Wi-Fi to dual-mode mobile phones, which could improve internal communications, and replace (or augment) the hospital's system of beepers currently used to alert staff. However, before using it for either purpose, it's got to prove its reliability, says Alan.

There is one application that's definitely going ahead. It serves a need that's not specifically clinical, but will help patients greatly: web access. Communication is crucial in people's lives, but in most hospitals patients are isolated from friends and family, and limited to shared phones that are clumsy and expensive to use.

"In 2009 we will allow patients access to the guest network," says Alan. The Meru network can completely separate traffic, so patients and staff can be given access to the web for private use without risking confidential data. Patients will be allowed to bring their own laptops into the wards, and log into the guest network for a small fee. Access points will also be extended to nurses' accommodation on the site.

The guest network will allow email and web browsing, as well as VoIP applications such as Skype, says the trust, as well as allowing access to streaming media.

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