Wireless Networks Foster Collaboration for Healthcare Services

NHS Hospital Trusts use Cisco wireless solutions to encourage cooperation and improve patient services.

Executive Summary

Customer Name: University Hospitals Coventry and Warwickshire NHS Trust, and Coventry and Warwickshire Partnership NHS Trust

Industry: Healthcare services

Location: Coventry and Warwickshire, United Kingdom

Business Challenge

- Establish secure access to corporate systems for healthcare workers at partner facilities
- Improve quality of care provided by healthcare workers through improved communications
- Secure networks to protect data while helping enable guest access and Bring Your Own Device policies

Network Solution

- Build reliable, high-performance wireless networks on Cisco wireless solutions supported by unified network management and easy service provisioning

Business Results

- Delivered first-of-its-kind reciprocal wireless access to increase collaboration between NHS organizations
- Increased healthcare worker agility through Cisco teleworking and collaboration solutions that connect workers, no matter where they are
- Established foundation for Bring Your Own Device initiatives for staff, guests, and patients

Business Challenge

Serving a population of over one million residents in the English Midlands, University Hospital in Coventry is one of the largest hospitals in the region and acts as one of four major trauma centers in the area. As a community organization in the same region, the Coventry and Warwickshire Partnership Trust provides a wide range of services for local residents of all ages with mental health issues and learning disabilities.

Tasked with improving service while reducing costs, the National Health Service (NHS) is bringing change to U.K. healthcare through a more patient-centric focus. Instead of having patients go between general practitioners (GPs) in local offices and specialists in hospitals, the NHS imagined continuous care where doctors bring the treatment to patients through mobile caregivers and increased sharing between organizations. For example, specialists from University Hospital may run clinic sessions at a GP Practice or neighbouring hospital to assist with treating patients locally, or community nurses from the Partnership Trust may coordinate treatment for mental health patients who are hospitalized for emergency treatment.
The Commissioning for Quality and Innovation (CQUIN) payment framework helps enable commissioners of NHS healthcare services to reward excellence by linking a proportion of a providers’ income to the achievement of local quality improvement goals. The trusts had a challenging CQUIN target for the introduction of a mental health screening tool to improve the appropriateness of and time to referral for patients from the emergency department and medical wards in the University Hospital to the Mental Health Unit. The purpose of the target is to reduce the incidence of self-harm among individuals in the care of the acute hospital and to reduce the length of stay (LoS) of patients with mental health co-morbidity, which also results in significant financial savings. This innovative use of wireless technologies allowed the CQUIN target to be achieved both efficiently and effectively in weeks rather than months.

As University Hospital and the Partnership Trust expanded collaborative ties, the IT departments identified a pressing need for agility, which created issues around security and access. Because each organization is considered a separate legal Trust within the NHS, each must protect its network and the patient data that it contains according to the Data Protection Act.

“Partnership Trust community nurses working at our hospital are not allowed access to our networks, without first going through lengthy access control processes,” says Charles Yeomanson, ICT Technical Director at University Hospitals Coventry and Warwickshire NHS Trust. “But at the same time, the Partnership Trust network also had to be secured against outside access, making it difficult for community nurses to connect remotely, even to their own systems.”

Without proper network access, most nurses working at University Hospital wrote down notes that they would later use to update the patient’s record at the Partnership Trust. Not only did this method increase risks associated with incorrectly entered records, but it was also very slow, potentially delaying treatment and discharge of patients. “The NHS incentivizes organizations to process and discharge patients promptly, so any delays directly affect payment,” says Shafiq Khalifa, Head of Information Technology Services at Coventry and Warwickshire Partnership NHS Trust.

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— Shafiq Khalifa, Head of Information Technology Services, Coventry and Warwickshire Partnership Trust

Additionally, University Hospital and the Partnership Trust wanted to improve the mobility of healthcare workers through more reliable communications with doctors and improved network access. University Hospital is built with a steel structure that does not allow the penetration of mobile signals, which, in turn, limits the effectiveness of mobile phones and modems. The organizations saw that improvements to the wireless networks that would increase sharing, mobility, and reliable communications while maintaining security would give healthcare workers greater agility to improve patient care.
Network Solution

To help enable more secure, easier collaboration between University Hospital and the Partnership Trust, the two organizations decided to use a solution known as "reciprocal wireless access". This was the first deployment of its kind between hospital Trusts in the United Kingdom. Reciprocal wireless access essentially allows workers from the Partnership Trust to connect to the Partnership Trust network through access points at the University Hospital, and vice versa. Although workers may use the access points at the guest facility, they are only able to connect to their home network.

The IT departments at University Hospital and the Partnership Trust looked at several options for establishing a reciprocal wireless access network. A customer of Cisco since 2005, the Partnership Trust was already using Cisco products throughout its data center and network environment. University Hospital used Nortel for wired and wireless network connections, but the wireless network had insufficient access point coverage and was not reliable.

Satisfied by the performance, unified management, and cost-effectiveness of the Cisco solutions already in place at the Partnership Trust, the two organizations agreed to build a reciprocal wireless network using Cisco wireless solutions. Reliable Cisco Catalyst® 6500 switches are used in the core of the Partnership Trust network, and both data centers now have Cisco® Catalyst 3750-X switches on the network edge for enhanced security and availability, and to enable Power over Ethernet (PoE).

PoE streamlines network and wireless operations by making it possible for devices to be powered directly through the Ethernet connections without requiring additional power cabling. With up to 48 PoE ports per Catalyst switch, the IT departments could expand wireless coverage through extensive use of Cisco Aironet® 1142 and Aironet 600 Access Points. Both types of access points provide excellent performance at 802.11n standards, but Aironet 600 is specifically made for teleworking environments.

Although the previous Nortel management solution was unable to accommodate more access points, the Cisco 5508 wireless controller delivers reliable performance and enhanced flexibility while managing up to 500 access points. The 5508 wireless controllers are also an essential part of the reciprocal wireless access solution, acting as an “anchor” that connects users to their organization’s network, no matter where the user is connected. Together with the Cisco Wireless Control System, the IT departments at both organizations can easily deploy, monitor, and troubleshoot the wireless networks from a central location.

The Cisco management solutions also work with Cisco Aironet 600 Access Points as part of the Cisco OfficeExtend teleworking solution. In addition to high security and streamlined provisioning, the OfficeExtend solution integrates with Cisco Unified Communications solutions, such as VoIP, Cisco TelePresence® for video conferencing, Cisco Jabber™ for collaboration and messaging, and Cisco WebEx® meetings. With enhanced communications, healthcare workers can easily and quickly collaborate with each other, no matter whether they are in hospitals or trusts, or working remotely.

Business Results

With improved networking, including reciprocal network access, healthcare workers can deliver even better care to patients. Community nurses working at University Hospital can access the home networks at the Partnership Trust for full access to files and programs. "Nurses can now quickly look up or update secure patient records on a tablet at the patient’s bedside,” says Khalifa. “This eliminates delays in treatment for our mental health patients and improves overall care.”
Cisco communications solutions also improve the ability for people outside of the hospital to reach doctors and consultants. With poor mobile reception, healthcare workers at University Hospital have to rely on landline telephones for outside communications. If someone tries to call the hospital, a staff member would usually have to track down the healthcare worker. “With Cisco Unified Communications, people can contact doctors at any time over VoIP,” says Yeomanson. “Better communications makes for more flexible and efficient working, resulting in more effective use of valuable clinical resources.”

Improved network access also sets the foundation for better connectivity for guests and patients, including Bring Your Own Device (BYOD) policies. Network access can be vital for patients, especially those in long-term care. “Being able to access the Internet, do banking, or communicate with families and loved ones: all of these things help our long-term patients emotionally and mentally,” says Khalifa. “For patients of the Partnership Trust, such as those being treated for learning disabilities, Internet access also enables them to work on their CV and apply for jobs while in treatment, giving them a great head start when they are finished.”

In addition, University Hospital is a teaching hospital, so guest Internet access helps lecturers deliver top educational experiences for students while maintaining secure networks. The BYOD initiative is still in its beginning stages, limited to secure iPad devices, but both the University Hospital and the Partnership Trust plan to expand. Next year, the IT departments will implement device profiling solutions that will help the network identify and provide the correct levels of access to staff or guests.

For More Information
To find out more about Cisco wireless solutions, go to: