› FORWARD-THINKING HOSPITAL BOOSTS PRODUCTIVITY AND POTENTIAL THROUGH FIXED AND WIRELESS TECHNOLOGY

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Case Study

Hospital de São Sebastião

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HOSPITAL DE SÃO SEBASTIÃO, E.P.E.

Customer: Hospital de São Sebastião

Country: Portugal

Industry: Healthcare

Challenge: To enable a large hospital to improve patient care through future-ready fixed and wireless LAN technologies.

Solution: A highly available network core based upon an actively resilient configuration of the Nortel Ethernet Routing Switch 8600. High-speed connectivity – vital for accessing and exchanging medical data – extends across the Hospital campus, through the Nortel Ethernet Routing Switch 5000 portfolio. The Nortel WLAN 2300 Series enables mobile access to this data, whilst underpinning a variety of new applications.

Benefits:

- **Enhanced productivity of medical staff** – high-speed access enables images and data to be retrieved from anywhere, delivering better care at the bedside and across the Hospital
- **Highly secure access** – only authorised users are permitted to access the network, thus protecting critical services
- **A platform for future innovation** – the wireless LAN technology underpins multiple new applications for enhanced productivity, including wireless Voice over IP (VoIP) and asset tracking using RFID

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The scenario

The past decade has seen a rapid increase in the amount of technology used in healthcare environments. Few hospitals today would survive without a data network in place for sharing email and other business-critical applications for hospital administration.

Some ten years later, however, many hospitals are finding that their existing technology can no longer support daily activities – let alone enable the 21st-century collaborative style of care they seek.

Rui Gomes, Director of IT and Systems at the Hospital de São Sebastião in Feira, Portugal, found himself in precisely this situation a couple of years ago: "We wanted medical staff to have anytime access to high-bandwidth medical images and data, no matter where they were located in the Hospital. But our network did not have the capacity to allow both this and other critical activities to take place at the same time. We had also tried to implement wireless LAN technology, but our ageing hub-and-spoke topology did not allow us to restrict secure access to authorised users in the way we wanted to."

Rui knew that secure wireless access around the Hospital could enable much faster and improved medical care at the bedside and beyond, while offering enough capacity to prioritise data transfer and use a variety of new, collaborative medical applications. "But São Sebastião is a well-established hospital, with a reputation to maintain," he points out. "We needed a reputable supplier that could help us transform communications in the long term."

After looking at the suppliers available, Rui decided that Nortel offered the safest transition to the most reliable technology available on the market: "We really know and trust Nortel technology, having used it for many years. It's highly stable and simple to use, and my staff had already undergone comprehensive training on our existing Nortel configuration. We had every confidence in Nortel to help us make a low-risk move towards a better way of working."

The solution

Rui and his team implemented a fixed and wireless Gigabit Ethernet network across the Hospital site.

To deliver the levels of resiliency and business continuity required of a modern hospital network, Nortel delivered a highly robust switch cluster based on the Nortel Ethernet Routing Switch 8600. The switch clustering technology ensures active resilience and no single point-of-failure, thereby protecting the Hospital's existing and future investment in critical applications and services.

Although originally considering Fast Ethernet across the Hospital campus, it was the Gigabit Ethernet capability of the Nortel Ethernet Routing Switch 5510 and 5520 that Rui and his team were most surprised and pleased by: "The sophistication of the Nortel 5500 portfolio is impressive for the cost. The switches offer us both Gigabit capability to the desktop and Power over Ethernet, the latter being vital for powering our wireless LAN," says Rui. The Hospital now has high-speed links from these switches to the core, supporting widespread 10/100/1000 desktop connectivity.

Finally, in order that medical staff have highly secure wireless coverage across the Hospital grounds, Nortel also deployed the Nortel WLAN 2300 Series, namely the Nortel Security Switch 2380 and Nortel WLAN Access Point 2230s. Managed by the Nortel WLAN Management Software 2300, this 802.11 compliant wireless solution offers quality of service (QoS) and policy-based provisioning, which is vital to ensure only authorised personnel have access to sensitive and confidential hospital data and medical imagery.

The results

The Hospital now benefits from a highly available fixed and wireless network, which allows medical staff to access data and imagery from any point on the campus.

Using the sophisticated QoS facility and the high bandwidth of the Nortel solution, doctors can now access X-ray images from the radiology department in real time. This also allows physicians to share imagery with other specialist hospitals, as Rui explains: "Some areas of specialism, such as neurosurgery, are dealt with by one of our partner hospitals in the local area. Through the high bandwidth and QoS, we can rapidly share neurosurgical data and imagery without causing a network bottleneck."

Importantly, doctors can use the new wireless network to retrieve the same kinds of information via handheld devices and tablet PCs. This not only enables them to access patient histories, imagery and research at the patient's bedside, but also allows the consultation to continue anywhere – no matter where the doctor is on campus: "Given the critical nature of medical activity, we were keen to ensure uninterrupted wireless access across the building. Consequently, we have installed some 120 access points at strategic locations to ensure that there are no gaps in the coverage. There are even some in the bathrooms!" smiles Rui.

Additionally, the new wireless network is also only accessible to authorised personnel and devices, thereby protecting sensitive patient and Hospital data. The WLAN Security Switch 2380 rejects unauthorised users and hardware, and a message is sent to the IT department to inform staff of the attempted breach.

However, it's the future application of the wireless technology that most interests Rui and his team. Currently, the Hospital is accepting proposals from suppliers of Radio Frequency Identification (RFID) technologies that, enabled by Nortel's WLAN, will enable both medical staff and patients to be tracked around the campus: "Tracking progress of emergency and non-emergency patients can be hard in a busy hospital," Rui explains. "And getting hold of doctors can also take time. RFID will enable us to know the precise location of any patient and any doctor at any time, preventing staff from wasting valuable time paging physicians, and searching the building."

Indeed, Rui envisages the Nortel wireless technology being a critical enabler of all manner of communications across the Hospital: "We are investigating the use of wireless VoIP across the building in order to save costs and boost productivity. In fact, I can imagine a future in which the WLAN enables us to connect everything – access to patients, laptops, desktop computers, telephony and more. Nortel's solution provides exceptional resilience in the core, as well as highly secure and available fixed and wireless connectivity around the building. I am in no doubt that we have an infrastructure designed to support the next generation of hospital communications."

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NN122580-060407

EMEA:
Nortel
Maidenhead Office Park, Westacott Way
Maidenhead, Berkshire SL6 3QH UK

European Customer Information Centre:
Telephone: 00 800 8008 9009*
+44 (0) 870 907 9009
*Number accessible from most countries
Email: euroinfo@nortel.com

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