› FAST, ROBUST NETWORK PROVIDES LEADING ACADEMIC HOSPITAL WITH PLATFORM FOR INNOVATION

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Case Study

Academic Medical Center (AMC)

"We're confident that we've got the resilient, high-performance network to empower communications across the whole Hospital campus. We can continue to offer leading-edge care to our patients and maintain our reputation as the leading teaching hospital in Amsterdam."

› Erwin Wortel,
Senior Network Architect,
Academic Medical Center

Customer: Academic Medical Center (AMC)

Country: Netherlands

Industry: Healthcare

Challenge: To empower this leading academic hospital with a resilient, highly secure and technically innovative network enabling advanced patient care.

Solution: A highly resilient network based on Nortel Ethernet Routing Switch 8600s at the core. Nortel Ethernet Switch 470s deliver connectivity to the network edge and the Nortel Ethernet Routing Switch 5500 portfolio offers Gigabit Ethernet to the business-critical servers. Highly secure remote access to the hospital research library is enabled by the Nortel VPN Gateway 3050. The Nortel WLAN 2300 series will empower mobile physician applications.

Benefits:

- **High availability** – switch clustering technology delivers sub-second resilient networking, ensuring optimal uptime
- **Enhanced patient care through mobility** – staff have wireless access to medical images and records at the patient's bedside. AMC is also considering wireless nurse call systems.
- **Remote access to medical data** – staff and students have always-on access to the breadth of medical research

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The scenario

The Academic Medical Center (AMC) in Amsterdam is a large, cutting-edge hospital. With around 7,000 staff – and as many visitors coming to the building every day – it is the largest teaching hospital in the country and has recently earned itself the accolade of the best university medical centre in the Netherlands*.

But with this kind of reputation – and in such a critical field as healthcare – there comes a huge responsibility. Medical data must be easily and quickly accessible, and at no time can the Hospital afford to experience downtime. However, AMC's existing network was struggling to deliver an assured level of reliability across the whole Hospital campus: "Whilst we had already implemented a powerful Gigabit Ethernet backbone from Nortel, we were still operating the entire Hospital network as a large broadcast domain. This meant that any failure would cause the whole network to come down, across the Hospital," explains Erwin Wortel, Senior Network Architect at AMC.

"A failure on this scale would put all sorts of business-critical activities at risk. Students would not be able to access research information; medical staff would be unable to access patient data and would have to send patients home. Given the sensitive and critical nature of our work, we needed to ensure optimal uptime."

To deal with this, Erwin sought to migrate the data network to a fully switched, 'compartmentalised' network. This would split the single large network into smaller 'subnets', preventing single points of failure and ensuring far higher reliability.

What's more, Erwin also needed this to be a long-term investment – and was particularly keen on investigating wireless technology: "Location-based services and voice over WLAN have interested us for some time," enthuses Erwin. "The convenience of being able to access specific patient information at the bedside via (tablet) PCs or handheld devices would save medical staff hours per day – and that's just one application of wireless technology. The Hospital was therefore very keen to find the most flexible, reliable and leading-edge solution available."

The solution

For AMC, there was little doubt that Nortel was the best choice: "We had already used Nortel technology for some time and it performed extremely well," he explains. "What's more, choosing them for this project helped us build a network that is largely from a single supplier – which is vital to avoid network complexity and contain costs."

AMC chose to design and implement a brand-new, 'compartmentalised' network, radically reducing the risk of a single point of failure. To bolster its Nortel core, AMC chose a highly resilient terabit cluster of Nortel Ethernet Routing Switch 8600s. This unique clustering technology was particularly attractive to Erwin: "Nortel's Ethernet Routing Switch portfolio is the only one on the market to ensure no single points of failure, whilst offering sub-second failover in the event of any network incident. This was vital for us to be able to subnet the network and ensure the highest levels of resiliency."

Nortel Ethernet Switch 470s offer a compact and cost-effective way for the Hospital to offer resilient connectivity right out to the edge of the network. Given the size of the Hospital campus, AMC also used the Nortel Ethernet Routing Switch 1624G and Ethernet Routing Switch 5530 to aggregate the Ethernet Switch 470s into the core, as cost-effectively and simply as possible.

* According to a 2006 survey from Elsevier, a leading publisher of science and health information.

For rapid and highly reliable links between business-critical servers, AMC chose the Nortel Ethernet Routing Switch 5510 and Nortel Ethernet Routing Switch 5520. These can cater for many servers, making them a highly cost-effective option for the Hospital. What's more, they are able to deliver Gigabit Ethernet to the desktop, which will be particularly useful, for example in the Hospital's radiology department – where high-resolution images are created, stored and analysed.

AMC also invested in the Nortel WLAN Security Switch 2380 and the Nortel WLAN Access Point 2330A for high-performance, scalable wireless coverage. Finally, the Nortel VPN Gateway 3050 was chosen, to offer staff and students highly secure remote access to the Hospital research library.

The results

AMC now has a highly robust network that will help it deliver optimum levels of care, both today and in the future, as the Hospital explores more innovative technologies.

Staff and students now have remote access to a breadth of medical research via the highly secure Nortel VPN. The fixed network is also in place ready to be subnetted for greater resiliency. And thanks to the Nortel switching technology, AMC now has an infrastructure that is robust enough to pilot a full subnetting exercise of the whole Hospital network. "We are very excited about this project," says Erwin. "Once completed, the network will vastly reduce the risk of downtime that the Hospital currently faces, ensuring performance of our business-critical applications and eradicating single points of network failure. This confidence in the network will allow us to explore many more avenues with our technology."

Indeed, one avenue already being explored by AMC is wireless technology: "As I had hoped, we're now piloting a special wireless project for medical staff, who are using wireless services to access electronic patient records and improve care at the patient's bedside. It's going extremely well, so we're planning an ambitious project to extend coverage across the whole Hospital in the coming years."

This is not the only wireless service that AMC is considering. The Hospital is also investigating WLAN combined with Asset Tracking for better supply chain management and control of critical medical assets in the Hospital, as well as wireless nurse call systems, which reduce administrative effort by paging medical staff straight from the patient's bedside. "We have no doubt that Nortel wireless technology has an enormous amount to offer us into the long term. We're already investigating the use of Nortel Secure Network Access to enable policy-based networking for greater security," says Erwin.

And he reveals there are more plans to work with Nortel: "We're constructing a brand-new Academic Psychiatric Center on the AMC campus. Nortel Ethernet Routing Switch and Edge Switching technology will be used to extend our core connectivity to that building.

"We're confident that we've got the resilient, high-performance network that will empower communications across the whole Hospital campus. AMC also has a really strong collaborative relationship with Nortel and Nortel works hard to understand our requirements. This means we can continue to offer leading-edge care to our patients and maintain our reputation as the leading teaching hospital in Amsterdam."

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NN121504-032807

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