



› SUPPORTING HEALTHCARE TO MAKE TELEMEDICINE A REALITY

NORTEL



› **The Medical City, Manila**

This massive new hospital, the largest in the Philippines, houses 500 patients in two towers, complete with rooftop helipad and provision for an additional 288 beds. Along with designated floors for medicine, surgery, obstetrics, gynecology and pediatrics, it also includes a six-storey podium for special services and diagnostic facilities, an 18-storey medical arts tower containing 280 doctors' clinics and three levels of parking for 1,000 vehicles

Case Study Collaborative Connectivity

Customer: The Medical City, Manila

Challenge: To implement a reliable and secure networking solution with optimum connectivity capable of carrying information services such as patient records and X-rays as well as sensitive laboratory results and other medical services information

Solution: The deployment of Nortel Ethernet Routing Switch 8600 and Nortel Ethernet Switch 470: complete, cost-effective solutions with 99.999 percent reliability, providing ease of use, superior performance, availability and scalability, and capable of supporting voice, video and data

Benefit: Critical services information on major medical procedures, such as MRIs, CT scans, X-rays and nuclear medicine, is routed via the Nortel network infrastructure - making "telemedicine" a reality

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**>Dr Alfredo R A Bengzon
President & CEO
The Medical City**

The Challenge

Reliability and security. These were the two main challenges facing The Medical City’s President and CEO, Dr Alfredo R A Bengzon, as he began looking for a supplier to provide the data networking connectivity required to maintain the high level of operational efficiency necessary for providing critical patient care.

The new hospital, now in operation, is a breakthrough in Philippine healthcare. The massive complex houses 500 patients in two nursing towers: one 14 stories tall, complete with rooftop helipad; the second, with provision for nine more floors to accommodate an additional 288 beds. Special floors have been designated for medicine, surgery, obstetrics and gynecology and for pediatrics. In addition, the compound includes a six-storey podium for special services and diagnostic facilities, 18-storey medical arts tower containing 280 doctors’ clinics and three levels of parking for 1,000 vehicles.

Not only is the new Medical City the largest hospital in the country – with plans to eventually grow from 500 to 1,500 beds – it is also the only institution to use what Dr Bengzon calls “filmless imaging systems” – meaning all of its X-rays, like MRIs and CT scans, will be digitised. “We needed a full networking solution capable of carrying information services such as patients records and X-rays, thus reliability was extremely important,” he added. “We are also holding very sensitive information such as laboratory results and other medical information, that is why security was another crucial component of our requirement.”

A Web-based hospital information system will be used in the new hospital complex to provide optimum connectivity – and meeting this prerequisite was another key consideration. Developed in-house, SHAMAN (Strategic Hospital and Medication Automation Network) is a fully integrated hospital information system that automates the entire business process of The Medical City from patient admission to discharge. The system also includes pharmacy, laboratory, radiology, nuclear medicines and a mini-ERP (enterprise resource planning) system to take care of logistics, human resources and finance. Evolved from an earlier ASCII-based system to a GUI (graphical user interface)-based application, SHAMAN is now a fully Web-based application.

Consulting with Trends & Technologies, a local Nortel Networks channel partner, Dr Bengzon settled on a Gigabit Ethernet LAN solution from Nortel Networks.

The Solution

To provide Gigabit Ethernet connectivity, The Medical City is deploying two Nortel Ethernet Routing Switch 8600s (previously known as Passport 8600 Routing Switches) at its network core, providing a fully-redundant solution interconnected by Nortel SMLT (split multi-link trunking) technology for

sub-second failover. The industry's first carrier-grade routing switch, the Nortel Ethernet Routing Switch 8600 delivers a complete, cost-effective solution for Gigabit Ethernet connectivity over fibre or copper media. It provides ease of use, superior performance, availability and scalability within a single platform capable of supporting voice, video and data. The Nortel Ethernet Routing Switch 8600 is designed to provide 99.999 percent reliability.

“Of all the solutions we evaluated the Nortel system guaranteed the maximum uptime,” said Julius Milla, IT Head. “And with two core Nortel Ethernet Routing Switch 8600s, I have additional protection. If something should happen to one of the switches, the other will instantly take over without our losing any bandwidth whatsoever.”

To deliver high-density desktop connectivity, and to meet its strict quality of service (QoS) requirements for server response times and priority applications, The Medical City is also installing over 80 Nortel Ethernet Switch 470-24T (previously known as BayStack 470-24T) edge switches at key hospital tower locations.

“Switched Gigabit Ethernet solutions combining Nortel Ethernet Routing Switch 8600 and Nortel Ethernet Switch 470 switches deliver unparalleled network resiliency and design flexibility through distributed and redundant switching architectures and failsafe stacking plus SMLT,” said Tony Pio de Roda, Managing Director, Nortel Philippines.

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> Julius Milla
IT Head
The Medical City

> Solution Snapshot

- **Nortel Ethernet Routing Switch 8600** - combines Terabit performance with Nortel's unique reliability technologies to create the basis of a resilient terabit cluster solution. The chassis-based Ethernet Routing Switch 8600 scales up to 240 Gigabit Ethernet ports and 24 10 Gigabit Ethernet ports as well as enabling LAN connectivity for ATM, PoS and wave division multiplexing technologies
- **Nortel Ethernet Switch 470** - stackable 10/100 Mbps Ethernet Layer 2 switch, includes two built-in GBIC uplink ports and built-in stacking ports in a compact, 1 rack-unit high design. Designed to provide high-density desktop connectivity for mid-large size wiring closets. The Ethernet Switch 470-48T allows configuration flexibility: Port 47 and Port 48 can be configured as either 10/100BASE-TX or make use of the built-in GBIC. Up to eight Ethernet Switch 470-48T models can be stacked to achieve up to 384 10/100 ports for high-density desktop switching



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“These features deliver scalable, resilient solutions where all network paths simultaneously carry traffic, providing a simple yet highly available and non-stop network for businesses and institutions whose survival depends on the continual free flow of information.”

The Gigabit Ethernet LAN solution also includes Nortel Enterprise Switch Manager (previously known as Optivity Switch Manager), designed to help reduce administration costs and time to deploy network devices by providing a “point-and-click” GUI to configure and monitor networks system remotely or on-site.

Customer Benefits

Although the installation is new, Dr Bengzon and his team have fully tested Nortel Gigabit Ethernet solution. “We put our entire medical staff, from doctors and nurses to medical and laboratory technicians, onto the system and ran all major transactions, up to transmitting a full-body CT scan, which is 1.3 gigabytes of information, to see how the system behaved,” he reported. “During our testing phase, we also fired all our major financial transactions and reports into the system to simulate a live environment and the network is doing its job very well. It’s providing the reliability and security we wanted at the outset, plus very high levels of performance.”

One of the major benefits of the Nortel solution to The Medical City, according to Dr. Bengzon, is making “telemedicine” a reality. “Major medical procedures, such as, MRIs, CT scans, X-rays and nuclear medicine are critical services that our hospital offers the public, and the Nortel network infrastructure is right smack in the middle of this. We can shoot a digitised X-ray or scan from one floor to another if a doctor needs it, or we can push an MRI to a specialist at the ICU (intensive case unit),” he explained.

What also influenced Dr Bengzon’s choice of vendor was “the professional nature of the people I’ve been dealing with.” He elaborated: “Professionals from Nortel and its channel partner Trends & Technologies were easily able to translate our business requirements into a technology perspective, into a theoretical solution of what would be best for the hospital. And then, in turn, they transformed this theory into a practical business reality.”

Final Note

Looking ahead, Dr Bengzon and The Medical City have ambitious plans for a telemedicine initiative that will make patient information and digitised imaging available to doctors outside the hospital premises – allowing local physicians and surgeons to leverage the hospital’s network to enable medical teleconferences with colleagues not only across the Philippines but also in other parts of the world.

The Medical City currently operates five satellite clinics in remote areas of sprawling Metro Manila and plans to centralise patient information in all these clinics. The aim is for The Medical City to become the hub in a web of healthcare facilities that span the nation.

“The ultimate benefit will be to the Filipino people; this will make it easier for them to obtain the health services they require,” said Dr Bengzon. “If a doctor at one of our satellite clinics needs to consult a specialist from another, it can be done virtually, over our system. In this way, those caring for patients in regional clinics will have the latest diagnosis and treatments available to them, wherever they happen to be. This is one of our major plans for the future.”

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