LIVERPOOL HOSPITAL IMPROVES PATIENT OUTCOMES WITH NEW END-TO-END NETWORK

Leading Australian teaching hospital and research facility turns to Alcatel-Lucent for mission-critical infrastructure and expertise

Sydney-based Liverpool Hospital serves the fastest-growing region in the city and is the largest hospital and tertiary referral center in the state of New South Wales. With 23 operating theatres and a capacity of 877 beds, the hospital is responsible for providing a full suite of healthcare services to the local population, as well as a range of statewide specialist services in areas such as critical care and trauma, neonatal intensive care and brain injury rehabilitation. As it upgraded its facilities, the hospital needed to ensure its communications network could support its strategic objectives for improving patient care, both today and in the future.

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CHALLENGES

- Support critical healthcare applications as well as communications and security infrastructure

- Standardize and refine real-time communications to allow clinicians to work efficiently, freeing them to spend as much time as possible caring for patients

- Implement a state-of-the-art network infrastructure for both voice and data communications, including ubiquitous, fixed and wireless access to clinical applications for staff throughout the campus

SOLUTION

- An end-to-end network from Alcatel-Lucent, including voice, data and wireless access

- OmniSwitch™ 9000, 6400 and 6850 switches providing secure and reliable access to clinical information and images

- OmniPCX™ Enterprise Communication Server, 3500 IP Touch™ 8 Series desk phones and OmniTouch™ 8118 wireless handsets provide an easy-to-use VoIP communications system

BENEFITS

- The network seamlessly connects users and systems across the hospital campus, across departments, and with independent organizations

- Reliable and secure access to electronic medical records wherever and whenever needed, at nurses' stations or on the move with smart devices

- Staff are able to access to the information they need to make the best decisions for patients, improving communication and workflow, and reducing errors

- Single-vendor solution for network and communications leads to an overall successful implementation

"In an environment of rapid change, clinicians and managers require access to appropriate and up-to-date information and data to support informed choices, monitor progress and develop new ways of care. Information management and technology (IM& IT) provides potential for developing efficiencies, promoting innovation and improving patient care."

Directions to Better Health: South Western Sydney Local Health District Corporate Plan 2013 – 2017

THE CUSTOMER CHALLENGE

As the second-oldest hospital in Australia, the Liverpool Hospital has gone through numerous evolutions throughout its more than 200-year history. Most recently, the hospital undertook an AUS$390m redevelopment project to continue to provide the best possible care to the rapidly growing local population. This included constructing a new wing, which added 45,000m² of clinical space.

When deciding on the communications infrastructure for the new wing, the hospital's General Manager, Anthony Schembri, insisted that the network extend beyond basic connectivity and be capable of supporting the facility's key strategic goals.

The voice and data network was to form the foundation that supported the hospital staff's ability to share information, collaborate and make more informed decisions about how to improve patient outcomes. As such a critical component of their operations, the network had to be designed to deliver the highest reliability possible. "Because we're supporting critical medical data and applications, the network has to have extremely high availability, redundancy and performance." says Chief Information Officer, Nick van Domburg.

Some of the key applications the network has to support are a patient-centered electronic medical record (eMR) that provides a comprehensive view of each patient, and a picture archiving and communications system (PACS). It also has to support call systems, security infrastructure, building automation systems and data management systems for research and administrative staff.

In addition, the network needed to provide comprehensive wireless coverage in all areas so patient information can be made available to clinicians on mobile devices such as smartphones and tablets. Clinical staff are highly mobile, so standardizing and refining workflows to allow clinicians to work efficiently and to free them to spend as much time as possible with patients was another key goal of the new IT network.

THE SOLUTION

To design and to provide the technology for this critical communications network, the Liverpool Hospital turned to Alcatel-Lucent Enterprise.

"With so much riding on this network, we really needed a system that was both state-of-the-art – to deliver the capacity and wireless access required – and that was bullet-proof in terms of reliability. Alcatel-Lucent and their Premium Business Partner delivered on both counts," says van Domburg, adding, "They showed a good understanding of our business, and were very committed from the beginning to work with us to provide a solution that met our needs."

For the networking infrastructure, Alcatel-Lucent delivered a Converged Campus Network Solution, which is based on the Application Fluent Networking strategy and provides unified access for wired and wireless devices. This solution features a simplified and flexible IP architecture and offers high availability, performance and quality of service (QoS).

The Alcatel-Lucent OpenTouch™ Suite for Mid-Sized and Large Enterprises now provides the communications solution. The suite is a modular, cloud-ready solution that provides innovative and collaborative conversation services and delivers outstanding quality of experience, reduces IT technology transformation costs and optimizes infrastructure while unifying management, for improved total cost of ownership.

"Alcatel-Lucent provided an end-to-end system that meets our needs today, and can grow along with us as our requirements evolve," said van Domburg. "We have the high bandwidth and high throughput we need available now through the 10 Gb/s core infrastructure, and it's scalable to 100 Gb/s or more for the future."

According to van Domburg, the installation of the new systems went well. "Alcatel-Lucent and their Business Partner were flexible, which was helpful in coping with the demands of a busy construction site – overall the implementation was very successful!"

The End-To-End Communication Infrastructure Solution included:

IP Telephony
- Alcatel-Lucent OmniPCX™ Enterprise Communications Server
- Alcatel-Lucent 8 Series IP Touch™ Extended Edition Telephones
- Alcatel-Lucent OmniTouch™ 8118 wireless handsets

Data Network
- Alcatel-Lucent OmniSwitch™ 9000
- Alcatel-Lucent OmniSwitch™ 9700
- Alcatel-Lucent OmniSwitch™ 6850
- Alcatel-Lucent OmniAccess™ WLAN wireless LAN controller
- Alcatel-Lucent OmniAccess™ WLAN wireless access points

Network Management
- Alcatel-Lucent OmniVista™ 4760 Network Management System
- Alcatel-Lucent OmniVista™ 2500/2700 Network Management System
- Alcatel-Lucent OmniVista™ 3600 Air Manager
- Alcatel-Lucent OmniVista™ Mobility Manager

Liverpool Hospital Snapshot 2011/2012
Births: 3,139
Emergency department visits: 65,775
Admissions: 69, 976
Out-patient services: 900,701
Theatre operations: 14,063

With tailored end-user training and documentation supplied by Alcatel-Lucent, the hospital ensures staff were able to transition to the new network and phone system effortlessly.

"We ran training sessions and provided tutorials on our intranet, and acceptance was great," says van Domburg. "We helped ensure the phones were simple to use by standardizing on two handset models, which helps our staff who move between different wards, and makes using the IP phones easier for temporary and contract staff."

BENEFITS

"Having a very reliable high-speed network has really contributed to our ability to provide better patient care," says van Domberg. "Good communications systems help people work better – they can hear one another clearly, and they don't have to deal with dropped calls or wait for calls to be re-established, which creates better workflows and maximizes their use of time. It means that staff don't have to re-transmit files, and the system is fast so they don't have to wait several minutes for large PACS images to load, all of which helps them to provide better and faster care for patients."

The most important application running on the network – the new electronic medical record – is available throughout the hospital, from the emergency department to in-patient areas and ambulatory clinics, as well as at satellite locations in the surrounding area, allowing staff to access and work with the same patient data no matter where they are located.

Wireless access makes the eMR even more portable, and has made critical information available on tablets and smartphones. The wireless network is also used by computers on wheeled carts in areas such as the Emergency department, accelerating diagnosis and care delivery by providing rapid access to all relevant data.

Being able to adopt the eMR has several additional benefits for Liverpool Hospital, including reducing the storage space required to store medical data, freeing staff that worked on paper document storage and retrieval to work on other, higher-value activities, and produced a significant environmental benefit by reducing the amount of paper, printers and copy machines used within the hospital.

"The ultimate goal of any hospital is to improve patient and community health and this network is supporting us at every stage of the process," says Schembri. "It lessens the time it takes to admit patients and improves communications between staff, so helps to reduce medical errors. The ability to call up full patient histories at any time or location helps to contribute to outcomes such as reducing lengths of stay, manage outpatient work and improving the continuity of care by always having a patient's history close at hand."

NEXT STEPS

"This network has become a critical piece of infrastructure for us – and we've come to be able to rely upon it without having to question if it will work or not, it just does," says van Domburg. "As we think about adding new systems or applications, we can be confident that the network we put in place will be able to support whatever direction we decide to take. That frees our staff to concentrate on what's really important, improving outcomes for our patients."

"We're now looking at what added value we can deliver with this infrastructure in terms of directory services, messaging services and mobility," says van Domburg. "We've kicked off the process of building on our existing system, and Alcatel-Lucent is working with us to add new capabilities."

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