



INDUSTRY
Healthcare

LOCATION
Sydney, Australia

KEY CHALLENGES

- Deliver a custom electronic medical record and other applications to doctors and administration workers
- Streamline and speed the delivery of patient care
- Provide a consistent end-user computing experience throughout the hospital and other facilities

SOLUTION
VMware Horizon View

BUSINESS BENEFITS

- Improved patient care by allowing doctors to monitor and issue instructions to nursing staff from home if necessary, and enabling pharmacists, physiotherapists and other allied health staff to access more complete patient records
- Streamlined clinical workflow by enabling doctors and other clinicians to access a virtual 'follow-me' desktop using fixed and mobile devices throughout the hospital



SYDNEY ADVENTIST HOSPITAL

Sydney Adventist Hospital Revitalises Its Patient Care and Administration

Sydney Adventist Hospital (SAH) is the largest single-campus private hospital in New South Wales. With the healthcare industry recognising patient electronic medical records as a cornerstone of reforms, SAH decided to review how it delivered systems and applications in a clinical environment. By deploying systems based on VMware Horizon View, the hospital has streamlined patient care and boosted the productivity and performance of its medical practitioners.

Founded in 1903, SAH is the largest single-campus private hospital in NSW. SAH is run by the Seventh Day Adventist Church and is part of the Adventist HealthCare Group. Based on the upper north shore of Sydney, SAH has 360 beds, and supports more than 700 medical practitioners and 2,200 employees.

The Challenge

Modern healthcare increasingly relies on the creation and accessibility of an electronic medical health record for each patient. These records include summaries of patients' health history and information such as medications, allergies, immunisations and medical test results. By capturing this information electronically, healthcare providers can ensure it is widely available to people involved in patient care, rather than being confined to a paper file that resides in a practitioner's office or on a ward. They can minimise the risk of misplacing or losing patient information while enabling multiple people to look at the same file at the same time.

"For safety, regulatory and patient care reasons, the healthcare industry is increasingly moving to a consolidated electronic medical record," said Barbara MacKenzie, Head of IS Operations & Infrastructure, SAH. "At SAH, we have been working to achieve this for more than a decade."

In 2010, SAH began developing the SanCare e-Pathways application, which allows doctors and nurses to enter notes

on patients' progress into an electronic medical record, rather than use pen and paper. After two and a half years, SAH completed the development and rollout of the SanCare application across all medical specialties in the wards.

This project complemented the October 2010 deployment of a system known as MetaVision. Delivered through VMware Horizon View™ and accessed by Samsung zero clients, MetaVision provided a complete electronic medical record for patients in critical care areas such as intensive care and cardiac care units. "The SanCare and MetaVision systems were catalysts for SAH to review how we were delivering systems and applications into a clinical environment," said MacKenzie.

SAH also had to account for the fact that clinicians needed to visit multiple locations within the hospital—and work outside its premises—to complete their duties.

As SAH undertook its review, the emergence and rapid takeup of 'bring your own device' policies lent new impetus to its efforts to become more flexible about how it delivered its applications.

“By implementing VMware Horizon View, we have greatly improved our doctors’ efficiency of access to clinical systems, thereby increasing their ability to deliver timely care to our patients.”

Barbara MacKenzie,
Head of IS Operations & Infrastructure,
Sydney Adventist Hospital

The Solution

After reviewing its options, SAH decided to test a virtual desktop infrastructure using VMware Horizon View. “It was a very simple exercise designed to determine whether SanCare was compatible with the VMware product,” said John Hoang, Solutions Architect, SAH. Following encouraging early results, the project gained momentum when VMware released View 4.0 featuring support for the PC-over-IP protocol, which delivers physical desktop-standard performance for virtual desktops.

The VMware Horizon View deployment enables users to access a secure, consistent desktop environment from a range of devices, including notebooks, zero client terminals, tablets and smartphones. For example, doctors can log in to SanCare from their home personal computer or notebook to review clinical records and access medical monitoring systems to see how patients are progressing.

It is not just SAH doctors who are accessing virtual desktops. Other clinicians and allied health staff, including physiotherapists, occupational therapists, clinical pharmacists, case managers and dietitians, can also use them to contribute to the electronic medical record. “The entire team involved in patient care has access to timely information that could impact on clinical decisions and what is best for the patient,” said MacKenzie.

SAH has also used VMware Horizon View to make available a dietetics and mobile menu application for patients, and office management and rostering systems to the supervisor that looks after the premises outside regular operating hours. In total, 700 accredited medical professionals and 800 nursing and allied health staff have access to virtual desktops at SAH.

Business Results & Benefits

For SAH, VMware Horizon View has proven that it can support a wide range of demanding business requirements.

Once a doctor logs in, they can access the same session at any time during the following three days. Each time they do, the session is extended for a further three days.

This enables doctors who are moving quickly through the hospital to access the

same session on devices in a number of locations, and when they return home.

“We have received feedback from a significant number of doctors and other clinicians that the virtual desktop environment has enabled them to be considerably more efficient,” said MacKenzie. “Not only can we make their desktops available anywhere within our premises, we can also make them available securely when doctors and other clinicians are outside the walls of the hospital.”

Dr Andrew Booker, an SAH obstetrician, is one practitioner who has reaped rewards from the new system. “VMware has revolutionised my practice, there’s no doubt about that,” he said. “It’s improved my efficiency and through that it improves patient care.”

Dr Booker can now log in from his office or from home to monitor an expectant mother, rather than attend at the bedside. He can also check on women in labour, or use the system after he has completed his rounds to make notes about a patient undergoing post-natal care.

The system has also improved the efficiency of a mobile menu system used to meet the needs of the 40 percent of SAH patients who have modified dietary requirements. Nutrition assistants bring around a cart-mounted laptop running VMware Horizon View with a mobile menu system named CBord which they use to enter the patient’s meal choice.

“These patients choose from a list of items that they’re allowed to have based on their current diet, allergies and post-surgery protocols,” said MacKenzie. “We can now only offer them items that they can consume without difficulties.”

The combination of the mobile menu process and VMware Horizon View means patient orders can be sent directly to the kitchen as soon as the nutrition assistants select ‘save’, expediting food preparation and production.

“Prior to the introduction of this system, staff had to use Palm Pilot devices to collect patient selections,” said Sarah Liston, Nutrition and Dietetics Manager, SAH. “This method relied on ‘hot syncing’ data multiple times a day rather than providing real-time data as the mobile menu process does.

VMWARE CASE STUDY

“The VMware Horizon View platform scales out beautifully—we’re regularly increasing the number of zero clients we deploy and continue to achieve consistent performance.”

Barbara MacKenzie,
Head of IS Operations & Infrastructure,
Sydney Adventist Hospital

VMWARE FOOTPRINT

- VMware vSphere 5.1, featuring VMware ESXi
- VMware vCenter Server
- VMware Horizon View 5.2
- VMware Workstation
- VMware Fusion

APPLICATIONS VIRTUALIZED

- SanCare electronic medical records application
- Microsoft Office suite
- MetaVision critical care application
- CBord dietetics food service and mobile menu product
- Clinical pharmacy application
- Digital signage application

PLATFORM

- Intel Server System SR2600 platform
- Two EMC VNX5300 storage systems with solid-state drives
- Samsung zero client terminals
- Samsung Ultrabooks
- Dell Latitude Laptops
- Panasonic Toughbook tablets
- Apple iPads
- Microsoft Windows 7

“The old system also provided limited information about the food items available and whether they complied with a patient’s diet. This forced us to spend more time calling and liaising with the patient after they had selected their meal.”

The new digital system has made it easy for a range of healthcare professionals at the hospital to provide the right care to patients. “With the new system, we are capturing a lot more information about patient treatment, analysis and clinical reasoning,” said Helen Kelly, Inpatient Team Leader and Clinical Educator (Physiotherapy), SAH. “The physiotherapy department here has a lot of part-time workers, so more information makes the flow of patient care a lot easier across the week.”

The virtual desktops have also enabled the hospital to install zero client terminals—rather than less robust ‘fat client’ personal computers—through which doctors can access their virtual desktops. “We haven’t had a failure of the zero clients and if one does collapse, all we need to do is send someone to that location to plug in a new screen,” said MacKenzie.

With SAH undertaking an expansion program involving major construction works due for completion in 2014, the scalability of the virtual desktop infrastructure has been invaluable.

“The VMware Horizon View platform scales out beautifully—we’re regularly increasing the number of zero clients we deploy and continue to achieve consistent performance,” said MacKenzie. “As new buildings come online and our expansion program ramps up, the desktops in those buildings—clinical and administrative—will be delivered using the virtual desktop infrastructure.”

The ease of manageability of the virtual desktop infrastructure means SAH has been able to keep support team numbers at the same level, and maximised efficiencies to minimise additional resource requirements.

With patient demand fuelling a planned increase in services of about 50 percent, SAH expects the move to a digital system will stop it from having to increase

its employee headcount by a similar percentage. The expansion program includes adding 200 beds to its existing 360 beds, reaffirming SAH’s position as the largest single-campus private hospital in New South Wales.

The program also includes building an integrated cancer centre, adding another 12 operating theatres to its existing 20, and stepping up the range of support services for the SAH radiology department.

In addition, SAH is extending its use of desktop virtualization to deliver SanCare applications to the Dalcross Adventist Hospital in Killara, which is also owned by Adventist HealthCare.

The system is initially accessible to 20 users and the organisation is establishing a foundation to scale out clinical systems to the Dalcross Adventist Hospital. This would allow doctors and staff to use the same systems in either hospital, minimising waste and duplication and delivering a range of other efficiencies.

The hospital is now extending the virtual desktop environments to administrative staff with the emergency care department planned next. It is also developing a single sign-on process linked to an RFID system, which will allow doctors to ‘tap in’ to their virtual desktops using their smartphones.

“When it comes to a clinical workflow, it’s not necessarily about doctors and medical staff taking mobile devices with them; it’s about the staff being mobile and wanting to access the systems wherever they need to,” said MacKenzie. “We want to improve their speed of access to terminals or other devices.”

