Blacktown Hospital beats the paging blues with Vocera Communications System from Cerulean™

Overview

- **The Challenge**
  Blacktown Hospital in Sydney’s fast-growing western suburbs needed a way to increase the efficiency of its emergency department, which treats approximately 30,000 patients each year. One major drain on productivity was the amount of time staff spent trying to contact each other as they moved around the hospital.

- **The Solution**
  The hospital engaged Cerulean to deploy the Vocera Communications System, a wireless voice technology that uses speech recognition and advanced call routing to make it easier for highly mobile staff in a hospital environment to contact each other. Cerulean built the server and infrastructure needed to support the system and helped the hospital design call routing and forwarding processes that matched its workflows.

- **The Benefits**
  A return on investment analysis found the hospital saved more than 6,000 hours in a year by reducing the time staff spent trying to find each other and waiting for colleagues to return calls. This equates to an annual saving of more than $105,000. Cerulean designed a centralised server deployment model that would allow other hospitals in the area to leverage the same infrastructure and implement their own Vocera Communications Systems.

About Blacktown Hospital
Blacktown Hospital opened in April 1965 with 160 beds, which has grown over the years to 365. It provides a wide range of clinical services to the local community including acute medical, rehabilitation and stroke care, coronary care, dialysis, intensive care, mental health, obstetrics and gynaecology, oncology, orthopedics, surgery and community health services. It employs more than [x] staff and treats approximately [x] patients each year.

Paging Dr Smith – efficient communications required
Blacktown Hospital is a 365-bed metropolitan healthcare facility in the fast-growing western suburbs of Sydney. The hospital operates a full intensive care unit, coronary care unit, 24-hour emergency department and medical and pathology services as well as providing general medical and surgical care and obstetrics and gynaecology services. Its emergency department has 27 beds and treats about 30,000 patients each year.

The hospital’s emergency department employs around 20 doctors and 45 nurses, who are rostered on rotation. Four or five doctors and seven to nine nurses are rostered on each shift. On busy days, the department might see more than 100 patients. In this high-pressure environment, any efficiency improvements would make life easier for staff and increase the quality of patient care.
The hospital identified the amount of time staff spent trying to find each other as one of the major drains on productivity.

“We had a very cumbersome process of paging staff members and waiting for them to call back or show up where needed, which added precious minutes to the time taken to treat patients. We needed a more efficient way of locating and contacting staff who were constantly on the move in an environment where mobile phones were not an option.”

– Dr Michael Hession, Director of Emergency Dept. Blacktown Hospital

In addition, as part of the Sydney West Area Health Service (SWAHS), Blacktown Hospital needed a solution that could potentially scale to other hospitals within the area and would integrate with SWAHS’s centralised technology systems which were based at Westmead Hospital’s datacentre around 10 kilometres away.

Cerulean deploys Vocera wireless communications system

Blacktown Hospital and SWAHS engaged Cerulean, a division of IBM to pilot a mobile communications system from Vocera in its emergency department. After overcoming some internal administrative hurdles, early in 2005 the hospital commissioned Cerulean to bring the solution into production.

The Vocera system uses wearable communications badges, which medical workers can wear on their lapels, pockets or around their necks. Staff can contact each other by speaking the name of the person into the device which triggers a call to that person’s Vocera badge or contact numbers.

“People don’t need to remember numbers or enter them into a keypad, they can just ask the system for a colleague by name or job role, for example ‘Get me Dr Smith’ or ‘I need a radiologist,’” said Hession. “It also allows us to set up workflow rules, for example if the person they’re looking for isn’t immediately available, it can redirect to a colleague or nurses’ station.”

The badges communicate over a standard 802.11b wireless local-area network and are controlled by a central server that routes calls between the badges, the hospital’s internal phone system, external phones and digital pagers.

Before implementing the Vocera system, Cerulean performed a full readiness assessment of its internal network and wide-area network links. After completing a site survey, Cerulean designed and implemented a wireless network consisting of overlapping cells.

“Carrying voice over a wireless network requires much greater cell density than data applications, where it’s OK to have the occasional drop-out or slow-down. Obviously in a hospital environment, the solution must work seamlessly so we had to engineer the network for that.”

– Craig Campbell, Advanced Technologies Business Executive at Cerulean.

With the servers located in Westmead Hospital’s datacentre, network traffic for the Vocera system needed to travel over existing microwave links between the two sites. Cerulean implemented quality-of-service rules to ensure there was always adequate bandwidth for voice traffic.

Cerulean integrated the Vocera system with the hospital’s existing PABX, allowing medical staff to make external phone calls using their Vocera badges.
Improved efficiency means better patient care

The obvious and immediate benefit of implementing this system was a dramatic reduction in the time hospital staff spent trying to locate colleagues.

“Being able to talk to the right person right away can make a critical difference to patient care,” said Hession. “We also need to be as efficient as possible with time and resources and the new system means staff can be located quickly and accurately.”

During the pilot phase of the project, Blacktown Hospital conducted a return on investment analysis that found it saved more than 1,500 hours per year in time spent locating staff and a further 4,700 hours from ‘page and wait’ delays. A survey found more than 80 per cent of staff agreed the Vocera system had improved workflow and efficiency.

“The success of the Vocera system at Blacktown Hospital has encouraged other SWAHS hospitals to investigate how they might use it. For example, Westmead Children's Hospital has started a pilot program of the Vocera Communications system in its emergency department. A single server and common database will enhance communication between the hospitals and reduce the workload on SWAHS’s IT staff, who will only have to manage one system.”

“Altogether these time savings represented the equivalent of 3.3 full-time staff and a cost saving of more than $105,000 per year just for the emergency department. We reduced waiting time for each staff member, speeding up patient flow through the department and reducing frustration for staff and patients.”

– Dr Michael Hession, Director of Emergency Dept. Blacktown Hospital

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“The way Cerulean implemented the Vocera system using a centralised server model means other hospitals in our area can leverage the same infrastructure to build their own systems,” said Hession. “These efficiencies and cost savings help us focus on providing better healthcare services for patients.”