

BRINGING ENTERPRISE-CLASS WIRELESS TO A HOSPITAL WHERE THE STAFF AND THE MISSION INCREASINGLY DEPEND ON CONNECTIVITY



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– Chris Flynn,
CEO,
Mater Health North Queensland



UNINTERRUPTED ACCESS WITH MINIMAL INTERFERENCE

Mater Health Services North Queensland (MHSNQ) provides private hospital and medical services to Townsville and the North Queensland region. It has a strong commitment to offering excellence in patient care by giving dedicated and skilled staff the latest in medical equipment and technology.

Mater Health Services North Queensland first implemented a basic wireless solution several years ago. But with the use of wireless equipment on the rise—both medical equipment and communications technology such as smartphones and iPads—the individually programmed legacy access points were showing limitations, such as the inability to support multiple SSIDs (service-set identifiers), which enable separate policies for different categories of users.

The hospital needed a more sophisticated system to handle the growing demand.

MHSNQ's federally funded Education Unit in particular needed more and better wireless connectivity. A joint project between MHSNQ and James Cook University, the unit needed access to the James Cook network through Eduroam, a worldwide education roaming service that lets students connect as if they were on campus, without having to request a guest account.

According to MHSNQ chief executive officer Chris Flynn, “The hospital needed a wireless enterprise system to ensure uninterrupted wireless access—with minimal interference so that medical equipment was not compromised.

“After researching available solutions and speaking with James Cook University,

DETAILS

CUSTOMER: Mater Health Services

INDUSTRY: Healthcare

LOCATION: North Queensland, Australia

CHALLENGES

- Meet the growing demand for wireless medical and communications technology.
- Deploy a wireless network that will cover wards, operating theaters, and public and outdoor areas.
- Deliver uninterrupted, enterprise-class wireless service to the hospital's Education Unit.
- Avoid interference with hospital medical equipment.

DEPLOYMENT SUMMARY

- MC3000 series controller
- 51 access points
- Fortinet Network Manager software
- SA200 service appliance

BENEFITS

- Uninterrupted wireless Internet access for operating wireless medical equipment.
- The ability to handle up to 100 simultaneous connections at any one time for students in the Education Unit.
- A single channel for the entire hospital.
- Minimal interference, critical to the health and safety of patients and staff.
- The ability to track down and address network issues quickly.

a partner of the hospital who also has a Fortinet wireless LAN solution, we chose Fortinet. With the increase in wireless equipment and applications, we wanted a solution that was able to grow with the hospital—and Fortinet was ideal for that.”

PERVASIVE COVERAGE AND SEAMLESS MOBILITY

Fortinet delivered a wireless local area network (WLAN) that provides wireless coverage in wards, operating theaters, public areas, outdoor areas, and the Education Unit. The solution, consisting of a controller, access points (APs), and network management software on a service appliance, can accommodate current traffic easily and handle more if traffic increases rapidly, as Flynn expects it to.

Fortinet’s ability to enable MHSNQ to face the future with confidence is based largely on a unique approach that differs significantly from legacy solutions that include a controller or switch-based networks of thin APs that are designed for mobility at the edge of the network.

Fortinet’s centrally controlled network—which has built-in capabilities for automatically preventing system overloads, boosting performance, and delivering seamless mobility—makes it possible for users to experience the same access and service levels as wired users, even in high-density, high-volume environments, which hospitals can easily become.

MORE COVERAGE WITH FEWER APs—AND ON A SINGLE CHANNEL

In addition to uninterrupted access for medical equipment and communications across the entire hospital, the Fortinet solution can handle high density in the Education Unit. With five lecture rooms and an 80-seat conference center, the unit can have up to 100 active connections at one time as students train and network using iPads and laptops. The Fortinet solution

supports this traffic volume with a single AP.

MHSNQ IT manager Ian Evans says, “The health service currently has one AP servicing the Education Unit, providing ample client density where previously it would have needed eight or nine.” This is a result of Fortinet’s “network in control” design philosophy. The Fortinet Virtual Port gives each client an individual and separate time allocation, so devices never compete for the same airtime.

Another unique aspect of the Fortinet architecture is that it lets all APs operate on a single, seamless channel, virtually eliminating the need for complex coverage surveys, channel planning, and constant management. The network looks like a single cell to each mobile device, so IT doesn’t have to worry about channel planning when adding or moving APs.

According to Evans, “One of the biggest benefits of the Fortinet solution is being able to operate the entire hospital on a single channel, which makes wireless management simpler.”

GETTING AROUND LEAD WALLS AND PROTECTING EQUIPMENT FROM INTERFERENCE

“One of the unique challenges faced by hospitals,” says Evans, “is lead-lined walls in operating theaters, which Fortinet is able to address by correct placement of APs. MHSNQ also has metal panels in hallway ceilings, which means the APs need to be in exactly the right place to optimize coverage. Fortinet is working with the hospital to ensure this.”

And while they were making sure the hospital’s construction doesn’t interfere with wireless signals, Fortinet planners made sure the signals don’t interrupt the use of medical equipment. Fortinet’s ability to deploy a Wi-Fi network as either a single-channel architecture, a microcell architecture, or a channel-striped hybrid of both enables the hospital’s IT team to avoid the disruption of mission-critical areas.

“With more and more wireless equipment being introduced to the hospital,” says Evans, “we need to be sure that wireless transmissions create as little interference as possible. This is critical to the health and safety of patients and staff. Now that we have a system that makes this possible, we can take advantage of wireless devices available in the market.”

SIMPLIFIED NETWORK MANAGEMENT

To give MHSNQ effective control over network performance, Fortinet included the E(z)RF Network Manager, which offers instant access to real-time and cumulative performance metrics on each client and access point. It also provides continuous event recording, data mining, and knowledge-based inference to accelerate troubleshooting and minimize downtime.

Working together with an SA200 service appliance, E(z)RF Network Manager simplifies network management and helps IT track network issues and drill down into the system to find black holes and address them.

The reliability this lends to the network is making it possible for MHSNQ to pilot the use of iPads. “Maintenance managers are using iPads to make adjustments as they move around the hospital,” says Evans. “For example, if someone reports that the air conditioning is too hot or cold, maintenance can adjust it on the spot on the iPad.”

MOVING FORWARD WITH MORE FORTINET

When asked what lies ahead for MHSNQ, Evans points out that the hospital is looking to deploy a real-time location service (RTLS) application, which uses radio frequency identification (RFID) tags, in the near future. In an environment where equipment moves around constantly, staff spend valuable time hunting down wheelchairs, IV stands, bariatric lifts, and other mobile property—time that could be applied more directly to patient care. With RTLS technology, staff can easily track and locate clinical equipment without having to call each ward.

RTLS can be used to track people as well. Staff can keep track of children in the pediatric ward or psychiatric patients, for instance. “It will also help with dementia patients,” says Evans, “as it will let the hospital put up virtual fences and raise an alarm when a patient goes outside of those fences.”

It can be used for lone-worker protection. If the only respiratory therapist on the night shift, for instance, has to go alone to a department in the basement that is closed for the night to get or return equipment, someone will know where she is.

So as Mater Health Service North Queensland finds innovative ways to turn wireless connectivity into better patient care and staff efficiency and safety, Fortinet is there to make sure that the connectivity delivers the capacity, performance, and mobility the mission demands.



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