Hospital Improves Patient Safety

Business Challenge

University Hospitals (UZ) Leuven provides medical and paramedical services to ambulant and hospitalized patients at five campuses. The hospital is deeply committed to delivering high-quality care and creating a better, safer environment for patients. In addition to becoming recognized as a leading research center, UZ Leuven sought, and received, accreditation from the Joint Commission International (JCI) an external, independent organization that accredits approximately 90 percent of hospitals in the United States. UZ Leuven is the first Belgian hospital to achieve this distinction, which acknowledges its focus on quality of care and patient safety.

As part of its commitment to state-of-the-art medical care, UZ Leuven wanted an IT infrastructure that leveraged the latest technology to help staff work more quickly and effectively and provide secure access to patient records and medical applications in a paperless environment. But it did not want to increase the drain on its power circuits, or the number of cords and outlets in rooms that were already packed with electrical equipment. Electrical cords can be hazardous in healthcare settings, with people tripping over multiple cords on the floor, cords getting caught in other equipment and possibly fraying, and wall sockets growing loose with improper use. UZ Leuven also wanted to help ensure compliance with IEC 60601 standards for the safety and effectiveness of medical electrical equipment.

“For patient safety, the network cable and the electrical power to equipment located near the patient in critical care areas must have the same ground potential,” says Reinoud Reynders, ICT manager at UZ Leuven. “A difference in potential can generate a micro current, which can be fatal to a patient in critical condition. With electrical current and network coming from the same source, the potential is the same, and the risk is eliminated.”

EXECUTIVE SUMMARY

Customer Name: UZ Leuven (University Hospitals Leuven)
Industry: Healthcare
Location: Leuven, Belgium
Number of Employees: 8,500
Number of Beds: 2,000

Business Challenge

• Deliver easy, secure access to online patient records and medical systems
• Support better patient care by increasing number of access points in intensive care and operating rooms
• Maintain high level of safety within critical care environments

Network Solution

• Deployed virtual desktop infrastructure built on Cisco Catalyst 4500E Switches with Cisco Universal Power Over Ethernet (Cisco UPOE) and Samsung zero clients, powering clients and screens over IP network

Business Results

• Enhanced patient care by allowing medical professionals to access multiple systems simultaneously
• Improved safety and system management by reducing number of cords in intensive care and operating rooms
• Supported scalability and expansion within existing power infrastructure
After researching options, UZ Leuven discovered that Cisco and Samsung had collaborated to offer the industry’s first integrated zero client display powered over the Ethernet network. Instead of using a PC, medical staff could use Samsung zero clients to access virtual desktops hosted in the data center, for higher security, more resilience, and greater manageability than any PC could offer. Plus, with the Cisco Catalyst® 4500E Switch with Cisco® Universal Power Over Ethernet (Cisco UPOE), the zero clients could use the Ethernet cabling both to hospital, which has 2,000 beds, immediately moved forward with an implementation where its need was most critical: the 120-room intensive care unit (ICU).

**Network Solution**

Today, a doctor, nurse, or other medical staff members working in the ICU at UZ Leuven can access a patient’s medical information, and record vital signs and drug dosages from a single monitor. They can work quickly and effectively, with secure access and real-time response from the applications running in the hospital’s data center. In addition, the Samsung zero-client monitors are designed for medical environments, and are easy to clean and manage in a sterile environment.

Cisco Catalyst 4500E switches work behind the scenes at UZ Leuven to deliver both network connections and power directly to the Samsung NC220P PCoIP zero clients through Ethernet cables using Cisco UPOE technology.

The Cisco Catalyst 4500E switch platform with Supervisor Engine 7-E provides line-rate switching to all user access ports and the comprehensive borderless network services critical for VDI deployments, such as high availability with full hardware redundancy, and software features such as In-Service Software Upgrade. With Cisco UPOE, the Cisco Catalyst 4500E Switch supports powered devices up to 60W to connect over a single Cat 5e cable, helping to extend the benefits of power resiliency, management, and efficiency to a wider range of devices. The core switching infrastructure is built on Cisco Nexus® 7000 Series Switches, and additional Nexus Switches act as the data center access layer. Redundant Cisco 8500 Series redundant wireless controllers and Cisco Aironet® 2600 Series Access Points support UZ Leuven’s high-performance, reliable wireless infrastructure. The hospital is fully IP networked, including the elevators.

**Business Results**

The combination of Samsung zero clients and Cisco Catalyst 4500E Switches with reliable, always-on Cisco UPOE helped enable UZ Leuven to comply with safety regulations more easily and less expensively than in the past. The solution also provides its ICU staff with better computer access to critical information and applications. Doctors and nurses appreciate the large, easy-to-read monitors, and the fact that the units do not have fans, because this means they are quiet and do not create airflow, minimizing impact to the patient environment. Other groups in the hospital see different benefits of this solution: Cleaning staff notice that the Samsung units are easy to clean, and maintenance specialists are glad that these systems are easy to manage and do not add to the load on the hospital’s electrical circuits.

“By using Cisco Catalyst switches to power our zero clients over the Ethernet, we get all the advantages of VDI: the security, scalability, and ease of management that allow us to put multiple monitors in every room, but without adding to in-room power demands,” says Reynders. “The solution also increases uptime in case of power failure and enables IT staff to conduct yearly power tests with no disruption to service.”

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With no software to install, update, or troubleshoot, the Samsung zero clients require almost no maintenance from Reynders’ 46-person team, saving operation costs. The PCoIP zero client operates under the VMware View environment for VDI, so any software issues can be resolved at the server level. This means IT staff does not need to enter critical patient areas for maintenance and troubleshooting.

The hospital expects to save power, too. The low-power LED panel of the NC220 consumes a maximum of 51 watts of power, and when used with Cisco Energy Management technology, devices can power down automatically when idle for an additional 50 percent energy savings.

In addition, adding a zero client is as easy as connecting an Ethernet cable, a keyboard, and a mouse, and logging in to the VDI. With the Cisco UPOE-powered Samsung units, UZ Leuven can add monitors at will without increasing the load on the circuit or having to plan for new outlets or higher capacity.

Helping ensure quality care with reliable back-end infrastructure

With all data stored in the data center and data images encrypted as they travel over the Cisco Catalyst switches, the system provides high availability, protects data security, maintains control of critical patient information, and supports regulatory compliance.

Pleased with the results to date, UZ Leuven is planning to extend its use of Cisco Catalyst 4500E Switches with Cisco UPOE and Samsung zero clients to the hospital’s 100 operating rooms. Operating rooms are an even more challenging environment than the ICU: they need three computers or zero clients per room, but because they are on a closed electrical circuit, the number of outlets is limited.

“With the ability to add VDI devices without adding to electrical demand, the Cisco and Samsung solution future-proofs our electrical infrastructure so we can continue to grow easily and efficiently,” says Reynders.

For More Information
To learn more about Catalyst 4500E Switches, go to http://cisco.com/go/4500
To learn more about Cisco Energy Management, go to www.cisco.com/go/energymanagement
To learn more about Cisco Universal Power Over Ethernet (Cisco UPOE), go to http://cisco.com/go/upoe