German Hospital Leads with 802.11n Mobility

Universitätsklinikum Essen uses Cisco 802.11n to deploy clinical wireless network that improves patient care.

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EXECUTIVE SUMMARY

UNIVERSITÄTSKLINIKUM ESSEN
- Healthcare
- Northrhein Westfalia, Germany
- 5300 employees

BUSINESS CHALLENGE
- Create a hospital-wide wireless network that could help transform clinical process workflow and improve efficiencies
- Deploy a wireless technology that would future-proof the hospital's investment despite long government funding decision cycles
- Provide enough bandwidth, security, and scalability to support mobile computing as well as clinical applications

NETWORK SOLUTION
- Unified wireless network with 802.11n access points makes it possible for nurses and doctors to record and access information at the patient bedside
- Unified wireless network interoperates with patient monitoring systems for smooth, real-time transmission of roaming-patient vital signs
- Advanced security features enabled the creation of 120 VLANs for hospital departments and secure guest access for patients

BUSINESS RESULTS
- Helped improve efficiencies in the hospital's clinical processes, increasing caregiver productivity and patient care
- Maximized hospital's constrained IT resources, resulting in time and cost savings for staff of three
- Enabled hospital to become one of the first in Germany to deploy a complete clinical wireless network

Challenge

Universitätsklinikum Essen (the University Hospital of Essen) is one of the leading teaching hospitals in Germany. Offering a wide range of modern diagnostic and therapeutic methods and procedures, the hospital's research specializes in cardiology, oncology, and transplants. With more than 1300 beds and 160,000 patients per year, the hospital is also one of the largest healthcare facilities in the country. "To remain at the leading edge of healthcare, we constantly look for new ways to improve clinical efficiency and communication throughout our 50 clinics and institutes," says Frank Ressing, head of the Network and Data Center Department at Universitätsklinikum Essen.

Universitätsklinikum Essen adopted wireless technology early on to provide students and office staff with mobile Internet access. In 2005, the hospital was ready to extend the benefits of mobility throughout its clinics, but needed to find a more robust solution. "We knew that the standalone access points that we had been using to create Internet hotspots on campus didn't provide the bandwidth or security required to support clinical applications," says Ressing. Knowing that government funding approval for a complete wireless network could take years, Universitätsklinikum Essen wanted to help ensure that the technology that the hospital chose would not become obsolete by the time it was deployed. "We needed to find a vendor that would work closely with us and provide a future-proof, medical-grade solution," he says.

> "Thanks to Cisco's 802.11n technology and close partnership, we are one of the first hospitals in Germany to build a wireless network for clinical applications."
>
> —Frank Ressing, Head of the Network and Data Center Department

Solution

As part of the government proposal process, Universitätsklinikum Essen tested five wireless solutions, requiring each vendor to build a demo pilot. Based on a centralized WLAN infrastructure that used two controllers and up to 15 access points, the individual pilots tested the security, management, and flexibility of each solution. Cisco deployed a pilot of its Unified Wireless Network in the hospital's radiology department. "All features of the Cisco Unified Wireless Network, especially the security capabilities, integrated perfectly with our existing Cisco infrastructure," says Ressing. "Besides providing the right capabilities, we liked the advantage of working with one proven vendor, which would save us additional time and money."

Once Universitätsklinikum Essen selected the Cisco® Unified Wireless Network, Ressing began discussing the possibility of using 802.11n technology. Even though the technology was not on the market yet, Ressing was convinced that adopting 802.11n as soon as it was available would protect the investment of the hospital in the future. "Cisco shared its roadmap with us, designed an 802.11 a/b/g network that we presented to the government for funding, and committed to changing our access points to 802.11n as soon as they became available," says Ressing. "Cisco was a true partner."

After receiving government funding in 2008, Universitätsklinikum Essen began deploying the 802.11n network. Today, the network is nearly fully deployed in the main hospital buildings, giving doctors, staff, and students mobile Internet and network access. To incorporate mobility into its clinical processes, Universitätsklinikum Essen began with one building as its test bed.

The introduction of the first mobile ward in the hospital caused positive changes in traditional clinical process workflow. Using laptops, tablet PCs, and PDAs, doctors and nurses now record and access data directly at the patient bedside, saving time and increasing accuracy. Healthcare givers also use PC carts to review lab results and radiology film right from their patients' rooms. "The 802.11n network supports all a, b, and g clients, making our transition to mobile patient care smooth and easy," says Ressing.

Universitätsklinikum Essen also uses Cisco's Unified Wireless Network in conjunction with its Drager and Phillips patient monitoring systems. Through the Cisco Compatible Extensions Program, both vendors' systems are certified with Cisco, helping to ensure transparent interoperability and reliability between the mobile equipment and network. "Thanks to the Cisco Unified Wireless Network, our doctors and nurses can now continue to monitor breathing and heart rates if we need to move patients between rooms," says Ressing. "The mobile monitors transmit this vital data to our caregivers via the wireless network in real-time."

The advanced security features of the Cisco Unified Wireless Network are critical for Universitätsklinikum Essen. "We've created 120 VLANs within the network, keeping each department, clinic, and user group within the hospital separate," says Ressing. When a user logs in, the network authenticates against the RADIUS server based on pre-defined user group policies. "Each user is automatically brought in to the correct VLAN," he says. "This also makes it easy for us to provide secure guest access to patients and visitors."

Results

The Cisco Unified Wireless Network is helping Universitätsklinikum Essen to improve efficiencies in its clinical processes, increasing caregiver productivity and patient care. "Cisco enables us to introduce completely new workflow processes that focus around the patient," says Ressing. In the past, doctors handwrote their notes at the patient bedside and later entered the information into a

computer. "The wireless network provides instant information access, freeing doctors and nurses to spend more time with patients and improving data accuracy," says Ressing. "This new way of working enables our hospital to offer the highest quality of healthcare."

The centralized architecture of the Cisco Unified Wireless Network has also resulted in significant time and cost savings for the hospital. "Today, our three network managers have to manage more than 5000 network ports and up to 1000 access points," says Ressing. "They don't have time to make manual changes or updates on each individual access point." With Cisco, Universitätsklinikum Essen managers simply make changes on the controller, updating all access points at once. "Centralized management helps us work more efficiently," says Ressing.

The speed, security, and scalability of the 802.11n network have made it possible for Universitätsklinikum Essen to implement a future-proof network that keeps the hospital at the forefront of healthcare. "Thanks to Cisco's 802.11n technology and close partnership, we are one of the first hospitals in Germany to build a wireless network for clinical applications," says Ressing.

Next Steps

As Universitätsklinikum Essen completes the deployment of the 802.11n network, it plans to focus on the mobile services that it will provide throughout the hospital. Within the next six months, the hospital intends to perfect its new mobile clinical processes. "We expect to customize some of our clinical applications to support our new workflow," says Ressing. In the future, Universitätsklinikum Essen plans to implement RFID tags for patients and medical equipment in order to track their location throughout the hospital. Voice over IP is also a possibility. "Cisco's 802.11n network has opened up many opportunities for us to continue improving efficiency and patient care. We look forward to growing our services with Cisco as our partner," says Ressing.

PRODUCT LIST

Wireless
- Cisco Aironet® 1252AGN Access Points
- Cisco Catalyst® 6500 Series Wireless Service Modules
- Cisco Wireless Control System

Routing and Switching
- Cisco Catalyst 6500 Series Switches
- Cisco Catalyst 3560E Series Switches with enhanced PoE

Security and VPN
- Cisco Secure IDS Sensor
- Cisco Secure ACS Server

For More Information

To find out more about the Cisco Unified Wireless Network and 802.11n technology, visit http://www.cisco.com/go/nextgen-wireless.

To find out more about Universitätsklinikum Essen, visit http://www.uniklinikum-essen.de/.

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