Top Healthcare Organization Optimizes 802.11n Performance

The Ohio State University Medical Center quickly adopts Cisco CleanAir technology as its standard for 802.11n wireless network.

EXECUTIVE SUMMARY

- **Customer Name:** The Ohio State University Medical Center
- **Industry:** Healthcare
- **Location:** Columbus, Ohio
- **Employees:** 16,000
- **Facilities:** Six hospitals, 20 research centers and institutes, 25 core research laboratories

BUSINESS CHALLENGE

- Enhance the wireless infrastructure with new technologies to avoid the impact of network interference
- Eliminate unnecessary burdens on IT administration
- Ensure the continuous delivery of 802.11n wireless connectivity

NETWORK SOLUTION

- Cisco Unified Wireless Network delivering reliable access to the multisite organization
- Cisco Aironet 3500 Series Access Points with integrated Cisco CleanAir technology
- Cisco Wireless LAN Controllers, Cisco Wireless Control System and Wireless Services Module, and Cisco Mobility Services Engine for network intelligence

BUSINESS RESULTS

- Decreased the task of wireless interference mitigation from hours to minutes or seconds
- Reduced routine access point maintenance to one-fifth the time
- Reduced cost per access point by 25 percent

Challenge

The Ohio State University Medical Center is known widely for helping to shape the future of healthcare. The Columbus, Ohio, healthcare facility is one of the largest and most diverse medical centers in the country, with six hospitals, 20 research centers and institutes, and 25 core research laboratories. Its staff of 16,000 focuses day to day on carrying out the center's mission of "improving people's lives through innovation in research, education, and patient care."

Ranked in the top 20 by **U.S News and World Report**, this medical center depends on its IT infrastructure to provide outstanding medical care to its patients. Whether doctors and radiologists need IP voice communications to collaborate across hospitals or nurses need the wireless network for bedside carts-on-wheels applications, everyone at the medical center relies on technology for patient care.

When developing the technology roadmap for its new inpatient/outpatient CarePoint East facility, IT management saw an opportunity to enhance its wireless infrastructure with new technologies for avoiding the impact of network interference. Two network engineers at the medical center support a 5-million-square-foot wireless network infrastructure. In the past, locating a single source of interference in one of its facilities could take an engineer several hours or longer. The organization needed a better approach to mitigating interference, and a more reliable way to sustain the delivery of applications critical to patient care.

"We face interference from motion sensors on doors, microwave ovens, Bluetooth devices, mobile hotspots, and many other sources," says Jason Eslick, the network engineering team manager for the medical center. "Nurses using wireless IP phones, for example, can experience dropped calls or choppy audio as a result. And previously, we would often hear about network interference problems days after they occurred, with no opportunity to zero in on the interference."

The organization decided on wireless technology for its new CarePoint East facility that would enable the IT staff to be proactive instead of reactive in its approach to wireless network interference. They needed to eliminate unnecessary burdens on IT administration and help ensure the continuous delivery of 802.11n connectivity to bedside devices in patient rooms, wireless ultrasound units roaming the hospital, cardiac monitoring equipment in the sports clinic, and other devices.

> "Our goals for the Cisco CleanAir and 802.11n technology were set from a cost, performance, scalability, and support perspective. To date, Cisco CleanAir technology is functioning as we expected and we are moving forward with expanding our use of the technology."
> **— Jason T. Eslick, Team Manager, Network Engineering, Ohio State University Medical Center**

Solution

The Ohio State University Medical Center selected Cisco® CleanAir technology for its new CarePoint East facility. With Cisco Borderless Networks, the Cisco Unified Wireless Network, and Cisco Unified Communications solutions already deployed across its six hospitals, the organization preserved its investment and easily transitioned to the more advanced Cisco CleanAir technology in the new facility.

The medical center deployed 90 Cisco Aironet® 3500 Series Access Points and two Cisco 5500 Series Wireless LAN Controllers in CarePoint East, providing end-to-end wireless coverage in the three-floor, 135,950-square-foot facility. Network engineers use the integrated Cisco CleanAir technology and Cisco Wireless Control System to mitigate interference through persistent device avoidance and spectrum event-driven radio resource management (RRM). The team has accelerated incident investigation from two hours to 5 to 10 minutes using the intelligent Cisco CleanAir technology.

IT management opted for integrated antennas in the Cisco Aironet 3500 Series Access Points and ceiling tile mounting. "The captured antenna model reduces deployment time and provides a clean installation model plus 802.11n wireless network technology," says network engineer Curtis Smith. Adds Eslick, "It takes us one-fifth the time to perform routine maintenance on the Cisco Aironet 3500 Series Access Points compared to other access points, which results in cost savings from a management and troubleshooting perspective. In addition, we've reduced the cost per access point by 25 percent."

The organization's complete Columbus, Ohio, wireless network infrastructure encompasses:

- 3200 Cisco access points, including Cisco Aironet 1130, 1240, 1250, and 3500 Series Access Points
- 31 Cisco Wireless LAN Controllers
- Cisco Mobility Services Engine
- 12 Cisco Catalyst® 6500 Series Wireless Services Modules
- 50 Cisco Aironet Workgroup Bridges

In addition, The Ohio State University Medical Center is home to one of the largest single-domain, full-roam deployments of the Cisco Unified Wireless IP Phone 7921.

Results

Within two weeks of deploying Cisco CleanAir technology, network engineers were alerted to devices with the potential to create wireless network interference in the CarePoint East facility. A field engineer was dispatched to the precise location in the facility and the rogue phones were taken off the network before they affected network users in the area.

"It was the first time we were able to be proactive with a potential or real interference problem," says Smith. "The technology detects the sources of interference and eliminates many of the physical troubleshooting steps we have historically used. The management system alerts us in seconds rather than involving us in a troubleshooting process demanding hours to try to identify the source ourselves."

PRODUCT LIST

Wireless

- Cisco Aironet 3500 Series Access Points
- Cisco Aironet 1100 and 1200 Series Access Points
- Cisco 5500 Series Wireless LAN Controller
- Cisco 4400 Series Wireless LAN Controller
- Cisco Wireless Control System
- Cisco Catalyst 6500 Series Wireless Services Modules
- Cisco 3300 Series Mobility Services Engine

Routing and Switching

- Cisco Catalyst 6500 Series Switches

Voice

- Cisco Unified Wireless IP Phone 7921

The Ohio State University Medical Center network engineering team has complete visibility into the Cisco Unified Wireless Network, while Cisco CleanAir technology helps deliver a self-healing, self-optimizing wireless network by automatically mitigating many sources of network interference. "The ability to view the entire network and know in real time about any potential interference to the wireless network has significantly reduced IT administrative time," says Eslick.

Cisco CleanAir technology provides the CarePoint East staff top 802.11n performance and the reliability to support its mission-critical applications. Administrators have ongoing access to outpatient medical records. Physicians and patients speaking different languages can communicate bedside via wireless video conferencing units delivering on-demand translation services, while others can utilize video interpretation devices for the hearing impaired. Patients and visitors have continuous access to guest Wi-Fi in all facilities. Nurses can receive critical broadcast pages to their Cisco wireless IP phones.

Next Steps

With the success of the Cisco Aironet 3500 Series Access Points and CleanAir technology in the CarePoint East facility, The Ohio State University Medical Center has plans to similarly enhance the rest of its wireless network. "Our goals for the Cisco CleanAir and 802.11n technology were set from a cost, performance, scalability, and support perspective," says Eslick. "To date, Cisco CleanAir technology is functioning as we expected and we are moving forward with expanding our use of the technology."

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 learn more about The Ohio State University Medical Center, visit: http://medicalcenter.osu.edu/

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