University Becomes Leader in Wireless Video Surveillance

Marquette University improves campus safety and reduces crime with Cisco's outdoor wireless mesh solution.

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EXECUTIVE SUMMARY

MARQUETTE UNIVERSITY
- Higher education
- Milwaukee, Wisconsin, United States
- 11,000 students
- 2,500 employees

BUSINESS CHALLENGE
- Extend public safety coverage to off-campus urban areas
- Improve student and staff safety without adding headcount

NETWORK SOLUTION
- Outdoor wireless mesh access points extend Marquette network footprint, transmit video surveillance images, and enable immediate and effective crime control
- Cisco Unified Wireless Network enables centralized management, control, and troubleshooting, saving IT time
- Indoor wireless network allows public safety officers to watch surveillance video and complete reports while on patrol

BUSINESS RESULTS
- Extended campus security and reduced crime without having to run fiber across city property or add headcount
- Increased the accuracy of security data, resulting in more effective crime-fighting
- Improved the university experience for students and positioned Marquette as a leader in campus safety

Challenge

Founded in 1881, Marquette University is the largest private university in the state of Wisconsin and one of the largest Jesuit universities in the United States. Offering a wide range of undergraduate and graduate programs, the university has consistently gained nationwide recognition as one of the best universities in the United States. Both *Princeton Review* and *US News and World Report* ranked Marquette University as one of America's best colleges in 2008. Dedicated to providing a transformational experience for its students, the university is also recognized for its service and ethics-based curriculum. "Offering mobile services to our students and faculty has helped us deliver on our mission to foster excellence in the overall educational experience that the university provides," says Kathy Lang, chief information officer (CIO) at Marquette University.

Although Marquette has offered wireless access in its academic buildings and common areas since 2001, the university migrated to the Cisco® Unified Wireless Network to extend mobile services to its residence halls two years ago. In 2008, Marquette discovered another important use for the wireless network. "The Department of Public Safety, led by Chief Larry Rickard, approached our IT team to discuss how we could utilize the wireless network to improve campus security," says Dan Smith, senior director of IT services. Because Marquette is located in an urban neighborhood near downtown Milwaukee, the public safety team wanted to patrol the adjacent off-campus areas to improve student and staff safety. "But our public safety department's resources were stretched thin. They needed a way to extend their reach without adding headcount," says Lang.

Solution

When the Marquette public safety team proposed creating an outdoor wireless surveillance system, the IT team knew that Cisco could provide the right solution. "We were impressed by the controller-based architecture of the Cisco Unified Wireless Network and wanted to implement the same design for the new outdoor wireless surveillance system," says Smith. The Marquette IT team

deployed 15 Cisco Aironet® 1520 Series Lightweight Outdoor Mesh Access Points for wireless connectivity and Cisco Catalyst® 6500 Series Wireless Service Modules (WiSM) for centralized control.

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> **—Kathy Lang, CIO**

To survey, spot and prevent criminal activity, Marquette placed the Cisco outdoor wireless mesh access points on the outskirts of campus. Data captured by wireless security cameras transmits via the access points to a network digital video recorder (NVR) in the IT Services data center. Real-time transmission enables the public safety team to monitor the images captured from various cameras on a video wall and react immediately. "When a woman was robbed near campus, we were able to send out a picture of the assailants' vehicle to all officers. Even though the victim and an eyewitness provided different descriptions of the vehicle, the wireless video surveillance supplied the correct information, resulting in the assailants' arrest," says Lang. Based on the information received from the data center, officers are also able to follow criminals on the run and easily split up to capture multiple assailants when necessary.

"By backhauling traffic from areas where we have no fiber, the wireless mesh access points enabled us to extend the network footprint on campus and surrounding areas," says Chad Gorectke, network engineer for Marquette. Mesh access points use the 2.4 GHz band to send and receive information from the video cameras and use the 5 GHz band to backhaul traffic to root access points connected to Ethernet ports located inside campus buildings. "With the Cisco wireless solution, which uses a centralized controller, it's easy to configure and manage all of the access points at once, saving us a lot of time," says Gorectke.

Although the IT team decided to reserve the outdoor wireless network for transmitting real-time video streaming from the security cameras, the indoor network is available for all university constituents, including public safety officers. "Whenever our officers are near any of the campus buildings, they are able to use the WLAN to watch surveillance video via their laptops right from their squad cars. They also use the indoor Wi-Fi network to access reporting software, enabling them to complete and submit required paperwork in a timely and efficient manner," says Gorectke.

Results

The Cisco outdoor wireless network enabled Marquette University to reduce crime without having to invest in additional human resources. Ease of implementation and management of the wireless mesh network made it possible for the university to expand its public safety capabilities cost-effectively. "We didn't have to add staff or run wire across city streets, which would have been unaffordable and time-consuming," says Smith. After deployment, results were immediate. "Public Safety experienced a signification reduction in crime statistics in personal and property crimes," says Lang. Posted signs advise students, neighbors, and those in the immediate off-campus areas that cameras are part of a surveillance system. "Not only is the Cisco outdoor wireless mesh solution helping our public safety team apprehend criminals through real-time video surveillance, but it has now become a significant crime deterrent," says Lang.

The new system also increased the accuracy of security data, resulting in more effective crime-fighting. Recently, captured video revealed a false criminal complaint. "When we looked at the video taken when and where the alleged victim claimed the crime had occurred, we found that she wasn't there. Thanks to the wireless surveillance system, we were able to avoid sending out a public notice of a crime that didn't occur," says Lang.

PRODUCT LIST

Wireless
- Cisco Aironet 1520 Series Lightweight Outdoor Mesh Access Points
- Cisco Aironet 1240AG Series Access Points
- Cisco Catalyst 6500 Series Wireless Service Modules
- Cisco Wireless Control System

Routing and Switching
- Cisco Catalyst 6500 Series Switches

Cisco helped Marquette improve the overall university experience for its students. "The safety of students and staff has always been a top priority for Marquette University. The wireless surveillance system improved our crime-fighting capabilities, easing parent and student concerns regarding personal security," says Smith.

Marquette is now considered a leader in campus safety. The university's success in reducing crime on campus has gained the attention of several organizations and higher-education institutions. "City, county, and homeland security agencies and a number of universities are calling us to find out how we did it. Cisco has played a big role in our success," says Lang.

Next Steps

Marquette University is currently expanding the outdoor wireless network, growing the number of mesh access points to 40 in 2009. "We hope to use the outdoor network to provide additional services in the future, such as expanded mobility for our public safety officers," says Smith. The university is also growing its indoor wireless network to support an increasing number of students and wireless devices. "Cisco provides the scalability that we need as our indoor and outdoor mobility needs continue to develop. We know that we can count on Cisco," says Lang.

For More Information

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

To find out more about Marquette University, visit http://www.marquette.edu.