University Embraces Bring-Your-Own-Device with Wireless Network

University of South Florida creates borderless academic network to enrich teaching and learning environment.

EXECUTIVE SUMMARY

Customer Name: University of South Florida
Industry: Higher education
Location: Tampa, Florida
Number of Users: 40,000 mobile device users

BUSINESS CHALLENGE

- Support growing number of personal devices requesting access to wireless network
- Expand wireless coverage throughout campus
- Deliver secure wireless access anytime, anywhere on campus to 11,000 simultaneous users

NETWORK SOLUTION

- Cisco Unified Access solution with integrated mobility, management, and intelligence

BUSINESS RESULTS

- Enriched learning environment
- Increased productivity by enabling multiple personal mobile devices to connect wirelessly
- Easily managed and scaled wireless network for 11,000 simultaneous users campuswide

Business Challenge

The University of South Florida (USF) opened its doors in 1960 to 2,000 students. Today, USF serves more than 47,000 students in Tampa and surrounding areas. The Chronicle of Higher Education's Almanac of Higher Education (2011) recently reported that, with a 252 percent increase in federal research expenditures, USF was the nation's fifth fastest growing research university between 1999 and 2009. USF is committed to providing a dynamic academic environment, which increasingly means keeping faculty and students connected to each other and to the larger world over the Internet. But unlike just a few years ago, when wireless was considered an optional service and most users depended on the wired network, users today rely on the wireless network as their primary means of connectivity. On a given day, USF supports 40,000 wireless users, 11,000 of them accessing the network simultaneously. They tap the wireless network on a wide array of personal devices, from laptops and tablets to smartphones; Bring Your Own Device (BYOD) is thriving at USF.

"Wireless access on multiple mobile device types is a critical requirement in higher education," says Joe Rogers, senior network engineer for University of South Florida. "We need to provide continuous, fast, and reliable wireless services to students so they can get what they pay for and study wherever they wish."

The critical business requirement of supplying wireless access across a sprawling, 200-building campus environment translates into a tall order for the IT team: expand campus coverage, accommodate virtually any device, improve dependability by mitigating sources of interference, and scale to meet escalating demand. At the same time, IT must manage the wireless network with modest resources.

"Reaching tens of thousands of users who want to do what they need, wherever they need to, and overseeing 2800 access points as we do requires a holistic view of the entire network and real-time visibility and automation for easy changes and upgrades," says Rogers. "With vast wireless networks like USF's, manual troubleshooting and network management are costly and untenable."

Network Solution

To supply connectivity in this demanding and constantly evolving environment, USF turned to Cisco. Using Cisco® wireless access points, controllers, and management tools, the technology staff has created a borderless network that allows the university to connect anyone (student, faculty, or guest) to any device or service, virtually anywhere on or nearby campus, at any time. The surge in BYOD has not presented an issue: university IT provides continuous connectivity for mobile device users of all kinds through the IPv6 communications protocol on its wireless network. USF can provide this connectivity securely, reliably, and with excellent performance and manageability. Key to these capabilities is USF's core network, primarily built on Cisco Catalyst® 6500 Series and Nexus® 7000 Series switches with Wireless Services Module (WiSM) controllers.

> "With our Cisco wireless network, we can offer coverage in more places and support the growing 'Bring-Your-Own-Device' trend. Faster, more widespread wireless access is having a positive impact on student and faculty productivity."
>
> **— Joe Rogers, Senior Network Engineer, University of South Florida**

Delivering broader access and support for future devices

USF currently has wireless coverage on approximately 80 percent of the campus, with a concentration in major classrooms and gathering areas such as the main campus library, where 7,000 to 10,000 users are online all day, every day. For more widespread access, the university also has expanded wireless coverage for indoor high-density areas as well as outdoor stadiums by equipping them with Cisco Aironet® 1500 Series Lightweight Access Points.

To increase performance as well as capacity, USF is enhancing wireless capabilities with Cisco Aironet 3600 Series Access Points, which deliver up to three times more coverage and high data rates to assist when thousands of tablets, smartphones, and high-performance laptops are requesting network access. The Cisco Aironet 3600 Series includes Cisco CleanAir™ technology to automatically detect and mitigate RF interference for a self-healing, self-optimizing network, and Cisco ClientLink 2.0 to boost performance and range.

"In our experience, the Cisco Aironet 3600 Series Access Points perform well, and they allow us to support new three-spatial-stream technology, so we can establish a wireless foundation that will scale easily and be ready for the newest mobile devices," says Rogers.

Addressing network interference

For more reliable access and overall management, USF turned to Cisco 5508 Wireless Controllers. According to Rogers, they deliver reliable performance, enhanced flexibility, and zero service-loss for the university's mission-critical wireless network.

The university also pinpoints sources of RF interference such as video cameras, game consoles, and microwave ovens in residence halls. Cisco CleanAir technology, including the Cisco Mobility Services Engine, identifies and troubleshoots sources of interference, and then optimizes the wireless environment on its own through self-healing technologies that automatically mitigate the interference. The Cisco solution provides a comprehensive log of issues. When users call for help, IT is equipped with historical information. As a result, wireless users obtain more reliable access, and IT has fewer issues diagnosing problems.

In addition to accommodating multiple types of devices and improving overall coverage and dependability, the sheer scale of wireless services on campus is a constant management challenge. USF is using the Cisco Wireless Control System (WCS) and is in the process of deploying the Cisco Prime Network Control System (NCS) to speed troubleshooting related to multiple client devices. According to Rogers, NCS provides speed improvements so he can quickly run reports and obtain visibility into the vast and growing wireless network. The university is also employing the newest version of WiSM2 to support 1000 access points and more easily add or upgrade them.

PRODUCT LIST

Cisco Unified Access wireless solution

- Cisco Aironet 1120, 1130, 1140 Access Points
- Cisco Aironet 3500 and 3600 Access Points with CleanAir Technology and Cisco ClientLink 2.0
- Cisco 1500 Series Lightweight Access Points

Routing and Switching

- Cisco Catalyst 6500 Series Switches
- Cisco Nexus 7000 Series Switches

Network Management

- Cisco 5508 Wireless Controllers
- Cisco Mobility Services Engine
- Cisco Prime Network Control System
- Cisco Wireless Control System

Business Results

Enhanced teaching and learning environment

At USF, students and faculty benefit from continuous, secure access to online applications for interactive teaching and learning, regardless of network access location or device. Once they sign in and register a device for security purposes, students and faculty can connect to the IPv6-compliant wireless network with multiple personal mobile devices anytime, anywhere, enhancing learning and interaction. Students can use their mobile devices to respond to multiple-choice questions, allowing professors to collect active feedback within minutes. Users can also access online applications such as MATLAB and Blackboard for anytime, anywhere learning using their preferred devices.

This capability, combined with the fact that wireless access is available in more far-flung areas of the campus, is improving convenience and promoting a richer learning experience. “The Cisco network definitely increases productivity,” says Rogers. “Students can remain connected and continue to access their coursework online, whether in high-density environments or outdoors at the stadium watching a game.”

Streamlined IT maintenance and reduced overhead

With Cisco tools, the IT team is more efficient and informed. They have greater visibility into sources of RF interference, reducing the time spent manually troubleshooting issues and improving network reliability. IT can support up to 1000 access points with the WiSM2 Controller for the Catalyst 6500 Series, reducing maintenance costs and enabling rapid, flexible scalability. And, through access point support for three-spatial-stream technology, the campus is well prepared to support the ongoing BYOD trend, including accommodating future mobile devices.

Making the most of BYOD

As smartphones become smarter, tablets become the norm, and wireless Internet access becomes ubiquitous, the practice of BYOD is gaining traction. And today, almost no matter where they are on the USF campus and what type of device they are using, students and faculty can have a hot spot at their disposal. They can connect to coursework, respond to quizzes, access learning applications online, and research information using their preferred mobile devices: getting things done at their own convenience. And for IT supporting the BYOD and wireless revolution at USF, burdens are eased through intelligent, easily managed mobile networking solutions from Cisco.

Says Rogers, “With wireless access as a must-have in higher education, USF is positioned well with Cisco solutions. We are prepared to accommodate virtually any personal mobile device and expand wireless access campuswide to enrich the learning experience and create a competitive advantage for the university.”

For More Information

To find out more about the Cisco Wireless go to: http://www.cisco.com/go/wireless.

To find out more about the Cisco Aironet 3600 Series, go to http://www.cisco.com/go/ap3600.

To find out more about the Cisco CleanAir Technology, go to http://www.cisco.com/go/cleanair.

To find out more about the Cisco Prime Network Control System (NCS), go to: http://www.cisco.com/go/ncs.

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