Australian University Addresses Growth in Mobility Needs

University of New South Wales deploys 802.11n network to improve the student experience and prepare for growth.

EXECUTIVE SUMMARY

The University of New South Wales

- Higher education
- Sydney, Australia
- 42,100 students; 5,600 employees

CHALLENGE

- Improve the quality of the wireless network to meet growing mobility needs
- Deploy a secure wireless network that would simplify management while providing high levels of performance and scalability

SOLUTION

- Unified wireless network providing a no-charge Wi-Fi service to students and flexible network access to staff
- Cisco 5500 Wireless Controller to facilitate migration to 802.11n and repurpose a/b/g access points for staff home use
- Wireless control system to manage controllers and access points while streamlining configuration

RESULTS

- Optimized IT resources, saved on capital expenditure, and protected existing investment
- Grew the number of access points proportionally without adding headcount to manage the wireless network
- Boosted the key role of the wireless network in providing a high-quality student experience and reinforcing the university's top ranking

Challenge

Established in 1949, the University of New South Wales (UNSW) is one of Australia's leading research and teaching universities. Dedicated to educational excellence and global engagement, UNSW is a founding member of the prestigious Group of Eight research-intensive universities in Australia and a member of the Universitas 21 international consortium. The university offers more than 300 undergraduate and 600 postgraduate programs to an international student body from more than 130 countries. "UNSW is committed to exploring and developing new and innovative approaches to education and research. Supporting our students and scholars with the right technology is an important part of this mission," says Greg Sawyer, manager of communications services at UNSW.

In 2007, UNSW wanted to improve the quality of its wireless network to meet the growing mobility needs of its students. "Previously, the wireless network provided poor coverage, and the access points were difficult to deploy, requiring the installation of a VPN client on user devices," says David Rees, senior network engineer. With a drive towards web-based interactions between the university and its students and a growing number of students expecting greater capacity from the wireless network, UNSW wanted to provide the most effective wide-scale wireless access with the capability to support new and developing learning environments. The university needed a secure mobility solution that would simplify management while providing the highest levels of performance and scalability.

In addition, the demands of media-rich content, including high-quality video and the launch of UNSW TV with dedicated student channels, had increased dramatically since 2007. To ensure the wireless network would continue to provide the highest levels of performance, further capacity was required.

Solution

Building on the partnership with Cisco from the UNSW network tender in 1998, the university worked closely with the Cisco team to plan a careful migration from its existing wireless network to the eventual deployment of an 802.11n network.

In 2007, the university replaced its existing base stations with Cisco Aironet® 1240AG and 1130AG Series Access Points. A year later, UNSW migrated to the Cisco Unified Wireless Network by deploying Cisco Catalyst® 6500 Series Wireless Service Modules and a Cisco Wireless Control System (WCS). The standalone access points were upgraded to lightweight operation. "The centralized architecture of the Cisco Unified Wireless Network made it

possible for us to increase the number of access points from 120 to 350, improving coverage as well as network security," says Greg Sawyer.

After a successful stage one implementation in 2009, UNSW began migrating to 802.11n with the planned deployment of 600 Cisco Aironet 1140 Series Access Points. To facilitate this migration, UNSW deployed Cisco's 5500 Series Wireless Controllers, as they provide a built-in secure tunnel between the controller and the access points. The Office Extend capability of the 5500 also enables the university to repurpose its 1130AG access points for home use as they are replaced with the new 802.11n network on campus. "We've started giving our IT team members the access points to take home and, subject to successful testing, we intend to make all 200 access points available to faculty and key staff members in the future," says Rees.

UNSW currently uses the Cisco WCS to manage its controllers and track the status of all access points. "Once the template was created, the WCS interface provided an easier way to configure multiple access point deployments," says Rees. "To move the access points from the Wireless Service Modules to the 5500 Wireless Controllers, all we had to do was apply the WCS template we'd created. Within a minute, 250 access points joined the 5500 controller."

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> **—Greg Sawyer, manager of communications services, UNSW**

Results

The deployment of the Cisco Unified Wireless Network improved UNSW's ability to provide free Wi-Fi to students in key areas around the university and gave staff flexible access to their applications and data. Wireless access in classrooms, lecture halls, and libraries now make it possible for students to access the Internet, as well as learning and course-management applications such as Blackboard. While instructors connect to the wired or wireless network from the speaking lecterns, students are able to access teaching material via the wireless network.

The high reliability and management capabilities of the Cisco Unified Wireless Network have resulted in significant time savings for the university's IT team and a better service for its students. In the past, base stations lost connectivity too often, and the IT team were constantly writing scripts. "Now we have real-time visibility into the status of our access points, making it easy for us to apply necessary changes or upgrades instantly through the centralized architecture," says Sawyer. "The Cisco Unified Wireless Network lets us do more with the time we have, so we can provide better support to students, faculty, and staff."

Simplified management, as well as close support from the Cisco team, has made the growth of the university's wireless network easier. Today, the university has 400 access points but plans to expand to 600 by year's end. "The Cisco Unified Wireless Network enabled us to grow the number of access points significantly with minimal retraining for the existing staff," says Sawyer. "We wouldn't have been able to do this without the ease of operation that centralized management provides. Cisco's system engineering team guided us every step of the way, presenting us with opportunities and helping us meet our goals."

By providing reliable, high-speed wireless networking, the Cisco Unified Wireless Network helps the university attract students and scholars, reinforcing its top competitive standing. At the beginning of the academic year, UNSW surveyed its students to find out which university services they liked and what improvements they suggested for the future. "Ninety-percent of our students loved our existing wireless capabilities. They only asked for faster speeds,

which we are already addressing by migrating to 802.11n," says Sawyer. "Mobility plays a key role in providing a high-quality student experience. Our ability to meet the needs of our students by providing the most innovative wireless services complements the excellence in research and teaching that has consistently ranked UNSW as one of Australia's leading universities."

Deploying the new 802.11n network helps the university save on capital expenditure while protecting its existing investment. "Because each Cisco 5500 Wireless Controller supports up to 250 access points, we don't have to buy as many controllers as we continue to grow," says Rees. "And the Office Extend capability gives UNSW the option of reusing our existing equipment to provide the benefit of wireless home networking to our staff." Because the 802.11n network is backwards compatible, the university will also continue to use its a/b/g access points as it transitions. "Each 802.11n access point provides better coverage, so the new network will require less equipment in the long-run," says Rees.

PRODUCT LIST

Wireless

- Cisco Aironet 1140 Series Access Points
- Cisco Aironet 1240AG Series Access Points
- Cisco Aironet 1130AG Series Access Points
- Cisco Catalyst 6500 Series Wireless Service Modules
- Cisco 5500 Series Wireless Controllers
- Cisco Wireless Control System

Routing and Switching

- Cisco Catalyst 6500 Series Switches
- Cisco Catalyst 4500 Series Switches
- Cisco Catalyst 3750 Series Switches
- Cisco Catalyst 3560 Series Switches
- Cisco Nexus 2000 Series Switches
- Cisco Nexus 5000 Series Switches
- Cisco Nexus 7000 Series Switches
- Cisco MDS 9500 Multilayer Directors
- Cisco Content Switching Module
- Cisco SCE 8000 Series Service Control Engine

Security and VPN

- Cisco VPN 3000 Series Concentrators

Next Steps

Migrating to Cisco's 802.11n network will play a crucial role in the university's ability to support the growth in number of users, applications, and devices expected in the future. "We currently have 21,000 unique users accessing the wireless network using a variety of devices, including laptops and smartphones," says Rees.

Within the next two years, an Australian government initiative plans to provide all secondary school students in years nine through twelve with a laptop. According to Sawyer, "Today, university students with mobile devices expect reliable, high-bandwidth wireless services. But in the near future, it is expected that all students entering university will have laptops as well as other mobile devices, most likely doubling our current number of users. Cisco's 802.11n network assists UNSW to prepare for this increased demand." The university also plans to use wireless to continue to improve its teaching, learning, and research capabilities. "We intend to provide more online content that students can access via the network. Cisco is helping us reach the highest levels of educational excellence," says Sawyer.

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 the University of South Wales, visit: http://www.unsw.edu.au/.

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