

# University Enhances Student Learning and Administration Productivity

Loughborough University uses its wireless network to improve access to education and administration applications and looks to future 802.11n deployment.

EXECUTIVE SUMMARY
<p><b>LOUGHBOROUGH UNIVERSITY</b></p> <ul style="list-style-type: none"> <li>• Higher Education</li> <li>• Loughborough, Leicestershire</li> <li>• 18,000 students and employees</li> </ul>
<p><b>CHALLENGE</b></p> <ul style="list-style-type: none"> <li>• Extend access to online communication, learning, and administration services across the whole campus</li> <li>• Maintain and increase Loughborough University's reputation as an innovative centre of learning</li> <li>• Create a single network infrastructure capable of supporting multiple applications and functions</li> </ul>
<p><b>SOLUTION</b></p> <ul style="list-style-type: none"> <li>• Cisco® Unified Wireless Network</li> <li>• Cisco Aironet® 1250 Series access points supporting 802.11n (trial in-progress)</li> <li>• Cisco Aironet 1130 and 1240 Series access points</li> <li>• Cisco Catalyst® 6500 Series Wireless Services Modules (WiSM)</li> <li>• Cisco Wireless Control System (WCS)</li> <li>• Cisco Wireless Location Appliance</li> </ul>
<p><b>RESULTS</b></p> <ul style="list-style-type: none"> <li>• Improves the way students learn by increasing collaboration and interaction</li> <li>• Provides a key differentiator for students selecting Loughborough University</li> <li>• Paves the way for delivering new and innovative services and applications</li> <li>• Significantly improved university administration efficiency</li> </ul>

## Challenge

Loughborough University in Leicestershire is ranked among the top ten higher education institutions in the country, with an international reputation for excellence in teaching and research and strong links with industry. Loughborough has been awarded five Queen's Anniversary Prizes for Higher and Further Education—an achievement bettered by no other institution. Situated on the largest single-site campus in the country, of 433 acres, Loughborough has 3000 staff and nearly 15,000 full- and part-time students.

Loughborough was one of the first universities to use IT to improve education and university life for students with HallNet, a network connecting 5000 student bedrooms. More recently, the strategy has been to expand that network to provide high performance, high-quality communication, and information-sharing services to the whole university community, including students, lecturers, and administration staff.

The large, near-town site means students spend most of the day on campus and, if off-site, tend to live nearby, making the campus the ideal situation for using wireless technology to improve communications and data sharing.

Dave Temple, Assistant Director of IT at

Loughborough University says, "We needed a solution that would be highly scalable, that could be managed centrally, and that serves all teaching areas and learning resource centres on campus. We also wanted to help ensure that there would be full wireless coverage in less formal meeting areas on campus like cafés, indoor and open spaces, and social areas. The challenge was to provide a very easy-to-use service that wouldn't require much expertise on the part of the students, but also one that balanced easy access with the best security."

Another requirement was to provide a wireless networking hotspot service when the campus is being used for commercial conferences during holiday periods. Loughborough decided to standardise its entire infrastructure on Cisco foundation technologies.

Dave Temple says, “Our initial reason for going with Cisco was reliability. We’d had bad experiences with some other vendors, and we wanted to make sure that we were buying into something that was being heavily used in environments like ours without any problems. We have since discovered that the Cisco wireless solution is significantly easier to configure and manage than a lot of the other solutions that we considered. Also, the wealth of knowledge and training available and the transferability of that knowledge for Cisco’s wireless solution proved invaluable.”

**“Having a wireless network of the quality and performance that Cisco provides helps us maintain our reputation and competitive edge, and that makes it essential to the university.”**

—Dave Temple, Assistant Director of IT, Loughborough University

### **Solution**

Loughborough has deployed a Cisco Unified Wireless Network, which provides secure, scalable, cost-effective connectivity to every part of the university. It comprises around 300 Cisco Aironet Series access points across the campus and residential accommodations supported by Cisco Catalyst 6500 Series Wireless Services Modules (WiSM) and the Cisco Wireless Control System (WCS) for management. This solution allows the university to serve a variety of user groups with a single wireless network using multiple service set identifiers (SSIDs). Unencrypted wireless access is available for simple web browsing. Controlled access is offered for visitors. Secure access to the university’s learning applications and administration tools is provided for students, faculty, and staff.

“To maximize our investment, we migrated our existing standalone Cisco Aironet access points to run lightweight access point protocol (LWAPP) and operate with Cisco WiSM,” said Matthew Cook, Network and Security Manager at Loughborough University. “We used Cisco’s free software migration tool, and the process was very easy.”

A Cisco Wireless Location Appliance has been deployed to support location services. “Location tracking is a relatively new idea for us,” says Matthew Cook. “We have several academic research groups that are interested in tracking the congregation patterns of people on campus using anonymised data. We’re also looking at location tracking to help us manage rogue access points that may be issuing attacks or causing interference on our network.”

The Cisco technology has allowed the university to deploy wireless networking at a much faster rate than would otherwise be possible. All of the wireless deployment has been done in house with a relatively small team. The university has deployed a large wireless network, simply and easily using the centralized management features of Cisco WCS.

Dave Temple says, “Our experience with the Cisco Unified Wireless Network has given us the confidence that we will be able to maintain reliable and consistent wireless services to meet the needs of our students and staff. With Cisco WCS, we have real-time visibility into the performance of the WLAN. This allows us to respond and react to incidences as they occur. Cisco’s WLAN also supports dynamic load balancing across access points, which is extremely helpful as students move in and out of classrooms and areas on campus.”

## Results

“The Cisco wireless network is crucial to virtually all aspects of the university’s business,” says Loughborough’s Pro Vice-Chancellor for Teaching, Professor Morag Bell. “It is essential that we have a reliable and highly available network to support teaching, learning, research, and administration. A considerable proportion of the communication between the university staff and students is now carried out via email. Nearly all teaching materials and learning resources are online, and making these available when and where they are needed via a wireless network is crucial to effective and efficient student learning.”

Loughborough is starting to see that technologies like the Cisco Unified Wireless Network are changing the way students learn and interact. Dave Temple says, “We are seeing a lot more informal and group learning via the network. Our library recently invested in making more space available for interaction using the Cisco wireless network. This includes such things as making a large area where social interaction is easier, essentially providing a platform for the human network, where greater communication and interaction between people are made possible. This is a significant shift from the traditional model of libraries, where talking, eating, and drinking are banned. In this area, tables are arranged so that people can sit together in groups. They are allowed to talk as much as they want, and there is even a café facility. It has proved very popular with students.”

Using the Cisco Unified Wireless Network, the university has enabled everyone to access essential learning and administration systems from anywhere on the campus, either from desktop PCs with a wireless card or, more importantly, a laptop. As many as 70 percent of the students at the university have laptop computers, and increasingly more students are starting to use hand-held mobile devices, making wireless connectivity a key part of university life.

Key characteristics of the Cisco network, such as quality of service, security, and reliability enable greater social interaction without compromising personal privacy.

Dave Temple says, “Having a wireless network of the quality and performance that Cisco provides helps us maintain our reputation and competitive edge, and that makes it essential to the university. Quality IT services certainly do seem to be a deciding factor for some students, and, although not the only factor, the services can make the difference when students are comparing two otherwise similar universities. We know from past experience that some students have commented on our HallNet service as being something that attracted them to Loughborough.”

The Cisco Unified Wireless Network is also having an impact on university administration as many common tasks are now increasingly carried out over the wireless network. IT Services and the Finance Department have recently migrated to a new finance application, and purchasing operations such as ordering, processing invoices, and making secure payments can now be initiated over the wireless network, providing the university with significant efficiency gains.

## Next Steps

One of the most significant factors of the wireless network is as a platform for developing and delivering advanced services and applications. Dave Temple says, “The first step has been providing a sound infrastructure and improving the services that we offer to our staff and students. Now, we are keen to look at how we can develop more innovative ways to use wireless networking such as more location-based services, telephony, and IPTV over the wireless network.”

Matthew Cook says, "In collaboration with JANET(UK), we are looking at business cases where mobile IP technology, such as voice over WLAN would be useful. We think that using dual mode cellular and Wi-Fi phones may help us reduce cellular charges for staff while they are on campus. It may also prove useful for cost-effectively communicating with our administrators and maintenance personnel as they roam between networks both on and off campus throughout the day."

Loughborough is also looking ahead to deploying next-generation, high-speed 802.11n wireless for high-density locations such as lecture halls, social areas, cafeterias, and the library.

### For More Information

To find out more about the Cisco Unified Wireless Network solution, visit <http://www.cisco.com/go/unifiedwireless>.

To find out more information about Loughborough University, visit <http://www.lboro.ac.uk/>.



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