

CASE STUDY



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CENTRALLY-MANAGED HIGH PERFORMANCE NETWORK DELIVERS HOME-FROM-HOME EXPERIENCE FOR OXFORD STUDENTS



Establish home-from-home wireless experience for students, staff and visitors to some of the UK's most historic university colleges



For the University of Oxford's colleges, seamless connectivity that enables masses of data to flow through their historic buildings' networks is becoming crucial. It's even helping to sharpen their competitive edge.

"We want to provide the best and most appropriate IT services for students and be at the forefront of technology," says Simon Thomson, Head of the Joint Information Communication Technology Service (JICTS), which provides IT services for Oxford's Pembroke, Christ Church and St Peter's Colleges and Campion Hall.

PROVIDING AN AT-HOME EXPERIENCE IN COLLEGE

"We're managing a corporate-type network for which we need to maintain a high level of security and resilience but we're also providing the sort of experience students would get at home so that they can relax and use multiple devices like Alexa or Xbox and get the best of both worlds," continues Thomson. "We want to provide the best experience across the board, from academic studies to conferences, social events, gaming or whatever."

Connecting an estate of many historic buildings spread across four sites, many of which are listed by Historic England, is not without its challenges. The University of Oxford's 38 colleges and six permanent halls operate as independent, self-governing entities with their own students, academics and administrative staff. Most provide accommodation, meals and social events and all are responsible for providing their own library and IT facilities.

UNIFYING SEPARATE COLLEGES TO DELIVER COST SAVINGS

"The college system is a very important part of the Oxford experience because each college is, in effect, a mini university



REQUIREMENTS

- Centrally manage and secure high-performance Wi-Fi across historic city centre location
- Establish consistent network performance across many buildings over four sites
- Future-proof network investment with room to grow and integrate new functionality

SOLUTION

- Aruba AP-515 Wi-Fi 6 Unified Access Points
- Aruba 7220 Series Mobility Controllers
- Virtual Mobility Conductors
- Aruba 3810M Series Core and Distribution Switches
- Aruba 2930M Series Distribution and Access Switches
- Aruba 2930F Series Access Switches
- Aruba 2530 Series Access Switches
- AirWave Network Management Appliances
- ClearPass Policy Manager Appliances
- ClearPass NAC
- ClearPass Guest
- AirGroup for 'Student Bubble'
- User Experience Insight (UXI) Sensors

OUTCOMES

- Simplifies network access for students, staff and visitors
- Provides scale to accommodate future growth in network demand
- Delivers home-from-home experience for students, creating a service point of difference
- Strengthens network management with granular visibility of users and usage

that allows each student to have one-on-one tutorials actually within their own college," explains Thomson. "From a welfare and academic perspective, it works very well because it's a smaller community within a larger whole and the college is much closer to the teaching."

Having so many entities sourcing their own IT inevitably led to higher costs and issues with efficiency and visibility. That's



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Head, Joint Information Communication Technology Service (JICTS)

where JICTS came in, allowing the institutions served by the organisation to make savings by combining their buying power and developing ways of more efficiently managing their networks.

“Previously, each college we looked after was completely separate and had a mix of network providers,” says Thomson. “Very good networks were in place, but we were looking for better visibility and more consistency across the colleges. We needed one solution that we could manage efficiently and, if necessary, grow.”

WI-FI 6 IMPROVES USER EXPERIENCE

Through its engagement with Aruba, JICTS created a unified network approach across Pembroke, Christ Church and St Peter’s Colleges and Campion Hall. By bringing together the wired and wireless experience under a single management pane, JICTS established a unified security and access position.

“Where there were separate networks and separate policies, now we have a global solution,” says Thomson.

The Aruba 3810M switches, managed by Aruba AirWave, deliver resiliency at the core with flexibility and scale. The wireless deploys Aruba Wi-Fi 6, the first Oxford college to do so.

The latter proved fortuitous as the UK went into its first lockdown in response to the Covid pandemic. Lockdown meant more tutorials, lectures and the like were carried out via video conferencing and the evening use of streaming, gaming and chat services by students unable to visit Oxford’s nightspots went through the roof. All this, of course, meant higher demands on JICTS’s network.

“Aruba Wi-Fi 6 gives us the channel capability, higher data rates and improved performance and power efficiency in environments with multiple connected devices that you’d expect, so it was a great improvement over what we had previously,” says Thomson. “Especially during the pandemic period, the understanding, flexibility and visibility it has given us has been invaluable.”

Enabling seamless multiple connections with ClearPass

JICTS’s servers are housed in Pembroke and Christ Church Colleges, the two largest institutions in its estate. They are connected to the networks of St Peter’s College and Campion Hall via newly laid dark fibre, allowing the communication of huge amounts of data. Students can register multiple mobile devices with the network using Aruba ClearPass Guest portal and share with friends and colleagues.

“It’s not as simple as it used to be when we had total control of the environment because everyone now is communicating on multiple devices with people across the world using Teams or Zoom,” continues Thomson. “So, if someone calls and says the Wi-Fi is no good, there could be any number of factors that are outside our control causing it.”

When connectivity issues that cannot be resolved remotely arise, it’s critical that Thomson and his team quickly and efficiently identify what the problem is. To that end, JICTS is deploying Aruba User Experience Insight Sensors (UXI) in key locations and temporarily in perceived problem spots. “If somebody comes back with a Wi-Fi issue and it’s not clear what the problem is, we’re able just to put one of those in the room and analyse what’s going on over the next 24 hours to give us a very clear picture of what’s happening,” he explains.

“Nine times out of ten it won’t be a problem with the network but an issue with their hardware, the person they are com-





municating with on the other side of the world, an outage in a certain area or interference. For example, most buses in the city have Wi-Fi so you may lose connectivity every time the number 6 goes past because you've used that service before and you're leaving our network. So maybe we need to get rid of that network from your device."

Securing networks to give peace of mind

After JICTS established 'student bubbles' for those studying at the institutions it serves, allowing them to connect multiple devices anywhere within the network, next on the agenda is extending these services to visitors to the conferences and summer schools that take place at the colleges out of term.

"Oxford, as you can imagine, has some very beautiful buildings that are very old and expensive to maintain," says Thomson. "We can't expect students to shoulder those costs, so the colleges turn into conference centres out of term. These conferences are very important to us commercially and enhance the academic atmosphere. These events can bring in 300 or 400 people at a time, so having the ability to provide quality services and maintain security is critical."

Secure network connectivity is no longer a 'nice to have' for these events' organisers, delegates and visitors. It is a 'must have' business imperative. In turn, the importance of these events to the University of Oxford means that secure network connectivity is crucial for the long-term future of the colleges themselves.



"It's absolutely critical," says Thomson. "We're seeing huge data spikes and the Wi-Fi is changing every minute. When you are running such a wide network, it needs to be self-monitoring and adjusting to accommodate the changes in demand. We have access to automated systems at every single site which are profiling the network. We are getting to the point where networking is becoming one of those things in the corner that just works. That is the future."



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