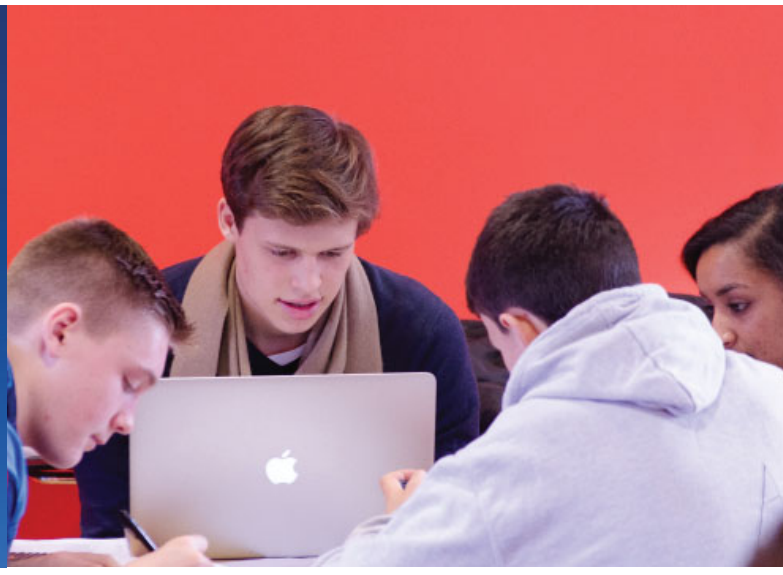
CASE STUDY

THE INSTALLATION OF MANAGED WIFI
for Oxford International College



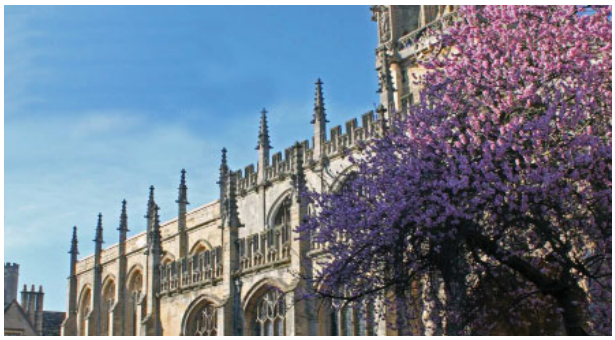
OXFORD INTERNATIONAL COLLEGE

DrayTek

Router - Switches - Managed Wireless - VoIP

INTELLIGENTWIRELESS
MANAGEDCONNECTIVITY

About Oxford International College



Situated in the centre of Oxford, the College offers private tuition to help students aged 15-21 to prepare for entry into the best British and international universities. The Academic programmes include GCSE, A-Level and IGCSE across a wide range of subjects.

With a capacity of around 100 residential students Oxford International College (OIC) offers bespoke tuition tailored to the needs of the student. This varies from one-to-one sessions for individuals that need specific help on a subject to small groups of talented students that receive support to aid rapid academic progress. OIC pride themselves on having the best tutors in the business, some of which are Oxford graduates, with teaching methods that bring the most out of the student whatever their background or academic level.

The College takes in both foreign and British students for specialist learning and is also an official examination centre with day visitors sometimes increasing the capacity to 300 or more individuals at peak times.

The Brief

OIC has steadily grown since its inception in 2002 and has relocated twice due to expansion. The new building, recently acquired, is on a long term lease and as a result the organisation decided to improve the IT infrastructure to deliver what is needed now and in the future for the benefit of the staff and students. The campus consists of a single five floor building with Halls of Residence nearby, and more student accommodation backing onto the main building. Each floor consists of between 10 and 15 classrooms ranging from the very small (designed for one to one tuition), mid-sized rooms for group sessions and a large study/examination room.

Claudia Williams, Deputy Principal Communications and Enrichment, explains...

> *" Once we moved into our new permanent building we wanted to provide a modern IT infrastructure that reaches all students and staff, wherever they are around the campus, that is also flexible and scalable for the future. There was an existing network but it was limited and was starting to become unreliable so we needed a marked improvement to deliver the services required. "*

The key requirements were:

- To provide a WiFi connection to all areas of the building that are freely available to staff and students.
- To provide a separate and secure "Staff" and "Student" network available throughout the building. Students require mainly internet access for their research, staff requires access to internal servers for administration purposes.
- The need to accommodate a variety of college-owned devices as well as the full spectrum of tablets, smart phones and laptops owned and brought in by the students.
- For areas of high density, such as the dining hall and communal areas, the ability to balance the traffic across multiple access points to avoid bottlenecks.

In addition to the above OIC also wanted a general refresh of other internal systems and enlisted the help of a trusted specialist IT services provider, Arubic Communications Ltd based in Epsom, covering Surrey and Oxfordshire.

As Jim Pipe, Arubic's Head of IT explains...

> *" OIC needed a clean fresh start, but with the constant demands from students and staff, very little downtime could be tolerated. We had no hesitation in recommending DrayTek's managed wireless solution as we knew it to be highly reliable, would address the demands of the business and importantly was very easy to implement. "*

The Solution

Arubic recommended a DrayTek Vigor 2925 router as the broadband connectivity device since it has a high WAN throughput (up to 200Mbps), and can accommodate two Ethernet WAN services simultaneously connected. In addition this also handled the isolation between the student network and the staff network for security, and better use of network resources where needed.

In the past the large number of student devices was putting a strain on the staff network resources e.g. DHCP, DNS and available network bandwidth. The Draytek Vigor 2925 was used to isolate the students and supply DHCP and DNS itself for them, leaving the staff to carry on using their existing server resources which the students do not need access to.

As well as providing the business class broadband access needed by OIC, the Vigor 2925 also acts as a wireless controller that manages multiple access points, positioned at strategic points throughout the building. The wireless controller allows the network administrator to set up an access point configuration once and then provision to many devices in a simple action thus minimising install time and reducing the likelihood of errors. In addition for high density areas the controller can be used to ensure traffic is balanced across multiple access points avoiding potential bottlenecks on the network.

The Solution continued

For the access points Arubic specified 12 x AP-900 Access Points to be positioned in strategic places over the five floors so as to ensure every classroom, hall and work area had WiFi coverage. The AP-900 supports Dual Band WiFi helping to reduce interference from other neighbouring devices and maximise throughput speed.

OIC is situated in a built up area in Oxford, and typical with many other urban areas in the country there is a high density of access points nearby that can interfere with the wireless signal that in turn can affect performance. The AP-900 provides as standard simultaneous dual band Wireless "n" that can help overcome any interference by utilising the 5.8Ghz as opposed to the 2.4Ghz spectrum. This proved to be very useful for OIC

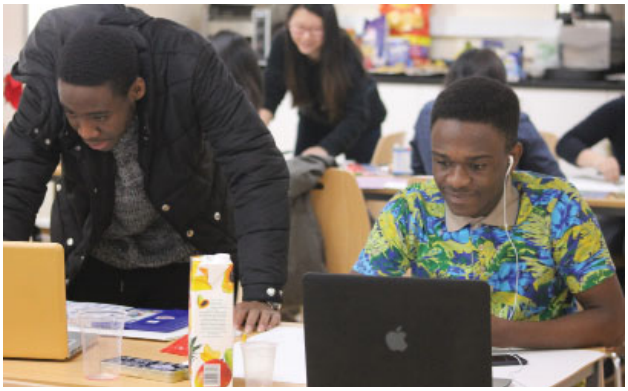
As Jim Pipe at Arubic explains...

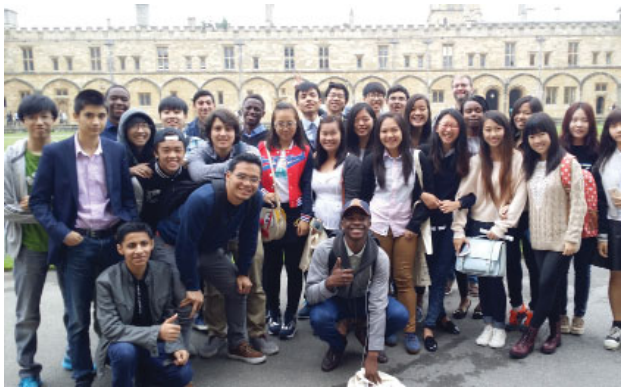
"We initially configured the network using the 2.4Ghz spectrum and all was fine until 10 users required simultaneous WiFi access in a given area when performance started to degrade. By changing settings to 5.8Ghz the problem immediately went away"

In the areas of the building where a high density of students (20 or so individuals) need simultaneous access to the network, DrayTek's managed wireless solution can be configured such that all access points within range share equal load. For example if there were 30 students and 3 access points within range the system would ensure that each access point accommodates a maximum of 10 users. This "load balancing" feature ensures that traffic is managed to eliminate bottlenecks in the network and thus maximise performance. Arubic submitted a detailed plan of the work, taking OIC through every stage and scheduled the new network implementation to take place on a Friday at 2.00 p.m.

As Claudia Williams goes on to explain...

"I have to admit that I was a little nervous over the weekend wondering if there was going to be a glitch and what we were going to face on Monday morning..... but I was delighted to receive no panic calls and when I got back in the office everything worked perfectly. It was just seamless, no one complained and we now have the system that I can proudly say does everything we want and takes us into the future with confidence."





Diagram

Across the campus two SSIDs were made available; “OXCOLL_STAFF” and “OXCOLL_STUDENTS” segmented by VLAN and different subnets for added security. Both SSIDs were made available on 2.4 and 5.8 Ghz wireless networks provided as standard in the AP-900 access points.