

CASE STUDY



REPUBLIC OF
IRELAND



HIGHER
EDUCATION

CREATING THE HIGH-PERFORMANCE MOBILE CAMPUS OF THE FUTURE

One of Ireland's foremost IT education providers and rated number one for research and teaching and Learning, Athlone Institute of Technology needed the right infrastructure to support the latest teaching approaches and attract international research funding being the Sunday Times leading Irish Institute of Technology over the past number of years. Athlone IT has created a new benchmark for network quality among Ireland's tech universities. The network is based entirely on IPv6 and campus-wide coverage is based on Wi-Fi 6, including EDUROAM access, which enables seamless access to cloud resources and even VDI over Wi-Fi.





As one of Ireland's foremost tech institutes, it is critical Athlone Institute of Technology (AIT) provides students and teachers with a first-class IT infrastructure. AIT wants the teaching environment to dynamic, mobile and flexible. In tech terms, it should be Ireland's gold-standard educational experience.

"Students should be able to access digital learning from anywhere on the site; lecturers want the freedom to use the latest applications," says Dr Michael Tobin, Dean of Faculty, Continuing, Professional, Online and Distance Learning. "For users, network access needs to be simple and secure. For network managers, usage needs to be visible and easy to manage."

BLANKETING THE CAMPUS WITH HIGH-PERFORMANCE CONNECTIVITY

For the start of the 2020-21 term, the vision is a reality. AIT has blanketed its 64,000 square metre campus with Aruba connectivity, including its 2,000-seat indoor athletics arena.

"It means students can access any piece of software they need, for any course, from anywhere on the campus," says Tobin. "It is a learning experience fit for a technology institute."

Put in place and delivered as a managed service by Vodafone, the Aruba architecture delivers secure connectivity today and prepares Athlone for the future. It is based entirely on Wi-Fi 6 and IPv6, creating what Athlone believes to be the most advanced wireless network in the Irish higher educational sector. Wi-Fi 6 or 802.11ax the latest wireless protocol delivers speeds of 1.2Gbps but also provides better



REQUIREMENTS

- Upgrade network infrastructure to prepare for increasing digitisation of education sector
- Establish first-class network platform to support digital learning and attract research funding
- Enable fully wireless experience for all students from anywhere on campus
- Operate the network exclusively on IPv6

SOLUTION

- Wi-Fi 6 Aruba wireless APs
- Mobility Controllers
- Mobility Conductor
- ArubaOS-CX Campus Core, Distribution and Access Switches
- AirWave for network management
- ClearPass Policy Manager for NAC and EDUROAM Authentication
- Aruba Dynamic Segmentation

OUTCOMES

- Enables seamless Wi-Fi access to heavy cloud-based applications and workloads
- Supports the use of VDI over Wi-Fi
- Delivers full EDUROAM access and roaming throughout the campus
- Delivers an all-digital student experience, from lessons to library access to campus facilities
- Creates a new benchmark for network quality among Ireland's tech universities
- Strengthens AIT's ability to attract cutting-edge research – and research funding
- Ensures the scale to accommodate future merger with Limerick Institute of Technology, doubling size of student body

coverage in higher density areas like lecture theatres. Over 320 Aruba AP-515 and AP-555 access points are coordinated via two Aruba 7210 Mobility Controllers coordinated by a cluster of two Mobility Conductors. The network is overseen and provisioned utilising the AirWave Network Management platform. The backbone is provided by a unified Aruba wired network architecture, based on the ArubaOS-CX Campus design. The core of the network is comprised of a virtual (VSX) cluster of Aruba 8325 switches, while the access for all APs is delivered by Aruba 6300F switches.



“Aruba unifies the network experience. For users, there is no difference whether you’re wired or wireless.”

IAN HALLISSY

Network Administrator, Athlone Institute of Technology

EDUROAM and guest access are fully secured and role-based authentication of all users is orchestrated by Aruba ClearPass Policy Manager. “We basically have one SSID and, through profiling, ClearPass allows us to connect users and devices to authorised resources.” exclaims Ian Hallissy, Network Administrator, “This makes our lives so much simpler and our network far easier to use.”

It is the latest chapter in a long-term engagement with Aruba. It delivers an upgrade in terms of network management, visibility and control, and establishes a platform for new digital services.

“Aruba unifies the network experience,” says Ian Hallissy, Network Administrator, Athlone Institute of Technology. “For users, there is no difference whether you’re on wired or wireless.”

AIT becomes the first organisation in Ireland to deploy a native IPv6 only network. The IPv6 protocol can handle packets more efficiently, improve performance and increase security. There are many applications and platforms such as Facebook, Office 365 and Teams, or Google Cloud which will increasingly work more efficiently on IPv6. AIT began its migration to IPv6 in 2012 with dual-stack IPv4 and IPv6 for its LAN. This was extended to the WLAN in 2016. This experience gave AIT the confidence to deploy an IPV6 only wireless network.

One protocol, zero-touch provisioning

The adoption of IPv6, continues Hallissy, is evidence of AIT’s confidence in embracing new technology: “We’re a tech institute. If we’re not comfortable trying the latest technology, then we’re doing something wrong.”

IPv6 delivers a number of advantages, he states. It enables AIT to remove VPNs and this entire project was configured remotely by allowing IPv6 connectivity between partner and client. IPV6 gives endpoint to endpoint connectivity and does away with NAT and other IPv4 address sharing techniques.

“We can do things with IPv6 and virtual applications that are so straightforward. We can create fast networks for every user. There is one protocol, and it’s so simple to deploy over Wi-Fi and LAN with Aruba’s Zero Touch Provisioning. It is the future and the support of Aruba gave us the confidence to go ahead.”

PREPARING AIT FOR UNIVERSITY STATUS

The engagement with Aruba and Vodafone establishes a quality benchmark ahead of major restructuring of Ireland’s tech institutes. AIT is planning to merge with its counterpart in Limerick, 100 miles to the southwest. The merger is part of consolidation of local institutes, creating larger, regional tech universities.

“University status will help us attract students, researchers and research funding,” says Dr Michael Tobin. “We’ll be better able to compete at an international level.”

AIT already specialises in research around AI, Data Analytics, Robotics Engineering and Biopharma, to list a few of the research domains. Tobin says the network infrastructure is the ideal platform for the sharing of data-heavy workloads and the use of the latest applications.

The merger will create a student body of around 14,000, with approximately 500 working in research.



Unfettered access to the best digital experience

The network also works, immediately, for students. It is there as an on-tap resource. “There is no aspect of student life that is not digital. From registration to lectures, to accessing the library, or even to paying, it’s all online,” says Tobin. “And we can’t underestimate the social impact. We have a high number of international students, and them being able to connect to WhatsApp and keep in touch with family back home is of huge importance.”



AIT has recently switched to Office 365. It conducts lessons via Zoom and uses Moodle as its virtual learning environment (VLE) online learning platform. Tobin says 'student taking online programmes at the Institute have risen from 80 in 2018, to 750 in 2019, to 1,500 in 2020 and indeed it is continuing to rise at an exponential rate annually and since Covid-19 All lectures are predominantly now taking place online, so the Institute has in excess of 6,000 availing of online classes daily!'

"Modern students are incredibly independent. They demand everything to be at their fingertips. We have that now," he explains.

Supporting a trend towards blended learning

The strength and flexibility of the network has proved crucial during Covid-19. AIT has been able to switch students to digital learning platforms, yet allow controlled, secure access to 'safe' parts of the campus. For instance, a sports hall has been converted into a study hall.

Though a short-term solution, this reflects a broader acceptance of blended learning: an easy mix of in-person and online learning.

Tobin says this will undoubtedly be the future trend.

"In terms of reach, this opens up the possibility of AIT becoming increasingly international. What's to stop a lecturer giving a class to remote learners in China at 6am, or us opening up our part-time flexible learning programmes to an international audience? The current situation prepares our faculty, our course content and our systems for the digital age."



CREATING A POINT OF DIFFERENCE IN A COMPETITIVE MARKET

When everything is digital, and everything is mobile, it can be a challenge to convince students to physically attend. How do universities create a point of difference? Tobin is confident AIT has compelling USPs.

"We have strong links to industry, which keeps our course-work relevant. Our research work is attracting new funding, which enables us to reinvest. And we have great staff. This is a place where people want to work."

"The Aruba architecture is a big part of making all three happen."