

How an IT network modernisation project digitally transformed the student experience at Cardiff University

33,985 Students

7,230 Staff

13th Largest University in the UK



With tech at the forefront of modern education, Cardiff University was already ahead of the curve. At the first sign of change they engaged ARO (Previously Circle) to start a journey that would revolutionise their campus with best-in-class technology.

Picturesque Cardiff University is ranked among the top 25 universities in the UK and was named Welsh University of the Year 2023. With the onslaught of the pandemic, existing, well-planned roadmaps for student and University success were steamrolled and confronted with online-focused learning. Cardiff University had to fast-track digital transformation to deliver better student and staff experiences.

Partnership matters

In 2019 ARO's, partnership with Cardiff University started with a clear roadmap to modernise the campus network. The 100-acre campus spans over 300 sites, including student residences and academic buildings.

Cardiff University looked to partner with an organisation who shared their vision of innovation. After a significant process, the selection of ARO as a partner was not only because of their technical and commercial fit, but also their commitment to the social and cultural values of the Cardiff University and wider community.

"It is a pleasure to work with an organisation that shares our values for giving back and we value the relationship not only transforming our IT infrastructure but our relationships with our stakeholders across the community".

Lee Evans, Assistant IT Director, University of Cardiff

A network for the next century

Today's world is unrecognisable from the one that existed when Cardiff University opened its doors in 1883. The dawn of the internet age disrupted higher education forever. As a world-ranking institution that has always led from the front, Cardiff University acted fast to build a network that would meet the needs of online and onsite learners. The initial installation included a state-of-the-art wired and wireless network across the entire campus. The digital transformation project included a three-year rollout period and 5 years' support with the option to extend. Eileen Brandreth, the now retired CIO at, University of Cardiff had already recognised a need for change. Never a place to rest on its laurels, the University had to evolve to meet the demands of top-tier students and remain a global standard for third-level education.

"Learning is no longer something you need to be in a lecture hall or library to do. The University is part of a global community that operates 24/7. Staff and students are involved in international collaborations that they need to be able to dive into at short notice, from whatever device is at hand. We needed to upgrade our network so it can connect students seamlessly and securely whilst handling huge volumes of data without any time delay."

Lee Evans, Assistant IT Director, University of Cardiff

Enter ARO and HPE Aruba Networking

With a pedigree in education and being a long-standing preferred supplier to Cardiff University, ARO was a natural fit to partner with the University to modernise their network to a world-class standard. Being a Gold Partner of HPE Aruba Networking meant ARO could give the University access to

market-leading technology and work side by side with them on the design, pre-staging, configuration, and network operations. After consulting with the Cardiff University IT team and understanding their vision, HPE Aruba Networking and ARO designed a phased approach to the 5-year network modernisation plan as the foundation for a future-proof network. This included

- Increase network capacity from a 20Gb/s to a 40Gb/s (student & academic buildings).
- Integrate wired data networks including core, distribution, and access capability.
- Transform wireless data networks including control and access points.
- Deploy Data Centre networks & Core Network Services including DDI (DHCP, DNS, IPAM - IP Address Management), NTP.
- Deliver HPE Aruba Networking ClearPass, to deliver security and authentication including policy driven role-based access control, cyber threat detection and protection.
- Roll-out perimeter security across the wired and wireless network.
- Provide 24/7 management and monitoring including SIEM systems.

"The University original infrastructure was struggling to meet the demands of modern education; some components were close to retirement and limiting the speed, capacity and throughput of the WAN and LAN. The network needed a refresh so the University could have the bandwidth and confidence to apply new thinking, integrate emerging applications and excel at the highest level."

Roger Harry, CTO, ARO

Laying a new foundation

Remote learning and video conferencing are here to stay, IoT devices are going mainstream, and students need resources on tap both across academic building and accommodation. The smooth flow of data in large volumes is critical to the modern university and legacy networks were struggling to keep up. With one eye on the future, Cardiff University had anticipated the challenges ahead. This institution thrives by matching the ambitions of its students. Rather than plug some gaps, here was a chance to think bigger and prepare for advances to shape the next generation of learning.

"The network is the foundation for everything. This project was about more than updating hardware - by giving our infrastructure a new lease of life we've moved the University forward and into the future. The HPE Aruba Networking technology is the building blocks that hold the whole system together."

Lee Evans, Assistant IT Director, University of Cardiff

Built on cloud-native principles, the extensive IT modernisation roll-out gives IT teams the flexibility to deploy a single switch operating system from edge to core. Automation, high availability, and secure segmentation are designed to support intuitive management tools, distributed analytics, and enterprise-grade security. Today's students rely on high-performance video, voice, and cloud applications to better learn, collaborate, and socialise. They need 24/7 network availability, even during software upgrades. By unifying management of all network infrastructure into a single control panel the HPE Aruba Networking technology reduces network complexity, simplifies troubleshooting, and speeds up response times.

Implementing a "digital first" campus

Replacing the existing legacy network with HPE Aruba Networking core and edge switches, the University has significantly reduced IT overhead in comparison with the previous legacy solution. The solution was crafted by the expert tech team at ARO and powered by HPE Aruba Networking technology. Visibility, automation, and access control with pre-approval mean students can only be given access to the applications they are aligned to, and staff and students can only access a learning environment or classroom they were assigned to. This means that Cardiff University avoids scenarios where students and staff can accidentally connect to devices in nearby classrooms or to the unsecured devices of classmates.

Visitors can now join the University network without the need for IT to manage permissions and connect or disconnect them, so time and budgets are saved. The explosion of IoT devices requires superior endpoint protection, all devices need to have the latest patches and firmware updates. HPE Aruba ClearPass addresses this issue by checking whether devices have the most recent anti-virus and anti-spyware patches and hotfixes before they connect to the network. Whenever it finds devices that aren't up to standard, it automates a response for the ARO team to take action with the onsite IT team.

Cardiff's tight-knit community is part of its appeal, it has over 5,500 rooms for undergraduates and graduates across the residential halls and houses. All these students rely on the LAN to work on group projects, collaborate internationally and use a "pre-shared key" network for personal IOT devices to

enhance the living on-campus experience. ARO's engineers were really accommodating. There was no issue working off hours and at weekends to deliver the upgrades.

"We were offline for seconds at the most during the whole HPE Aruba Networking upgrade so there was zero service disruption; they kept everything flowing without drawing attention. The big result for us is that we completed a network refresh in what seemed to users like the flick of a switch."

Ben Cook, Head of Building Services at Cardiff University.

When it comes to sustainability Cardiff University is already one step ahead

Cardiff University is committed to leadership in sustainability and improving environmental performance. Their vision is to build an inclusive, sustainable, and resilient future for their community and to bring about environmental benefits not only to Cardiff and Wales but on a global scale. The University digital transformation and focus on sustainability extends to the network infrastructure transformation and its impact on the student experience. By setting the gold standard as a "Campus of the Future", enabling students to learn from anywhere, Cardiff University is now at the forefront of technology, sustainability and learning outcomes

The next chapter

The place where Neil Kinnock, The Labour Party politician and MP graduated with an industrial relations and history degree more than 50 years ago is on to the next chapter in its history. Cardiff University now has an IT network infrastructure powered by HPE Aruba Networking, that's in a league of its own. Adaptive, high speed, secure and resilient, the modernised network gives Cardiff University the flexibility to move more functions from on-premise to the cloud, scale, and flex to facilitate expansion and deliver insights in a visual way that facilitates instant action. Backed by industry leading services from ARO, Cardiff University has the network foundation they wanted to deliver next generation services and experiences to their staff, students, and worldwide community.

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Only better.



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