

RCSI

An AI-powered wired and wireless network from Juniper Networks revolutionises the digital academic experience for thousands of students and staff

Overview

Founded as the national training body for surgery in Ireland, the Royal College of Surgeons in Ireland (RCSI) has been at the forefront of healthcare education since its establishment in 1784.

It is an innovative, world-leading international health sciences university and research institution offering education and training at Undergraduate, Postgraduate and Professional level.

RCSI delivers education and training across the healthcare spectrum through Schools of Medicine, Pharmacy and Biomolecular Sciences, Physiotherapy, Population Health, Nursing & Midwifery, Postgraduate Studies, and the Graduate School of Healthcare Management.

The university currently has 5,000 students, over a thousand staff and several hundred researchers. It is currently undergoing a digital transformation with the aim of improving the student learning experience and developing a sense of community.

The ultimate aim is to turn its base in Dublin city centre into a state-of-the-art medical quarter.

Business Challenge

The university is currently developing a smart building at 118 St Stephen's Green. This will serve as a large multi-use building with a public engaging space, lecture theatres and laboratories. As a key component of its ongoing digital transformation plans, it also served as a trigger for a broader campus-wide refresh of the wired and wireless infrastructure.

Part of the project challenge was to provide digital-based examinations in RCSI's large lecture theatres. Here, 4K streaming video is used to conduct those examinations with large concentrations of students simultaneously accessing a huge volume of multi-media traffic.

In addition, the campus itself is comprised numerous buildings dating back to the late 18th century, long before wireless networks were ever on the horizon.

When it became clear that the current infrastructure was unable to handle the demands placed on it, the university decided to go to market for a wired and wireless infrastructure refresh. Juniper Networks, together with its Elite Plus partner, Agile Networks were chosen for the project.

Proof of Concept

With the previous network, Kevin Brew, network architect with RCSI noticed that technical issues on the wireless network were becoming more frequent, to the point that in some cases, lectures had to be halted.

He decided to deploy a proof of concept (PoC) using Juniper Networks wireless devices at the Mercer building. A small number of access points (APs) were deployed at first to trial some of the advanced technology elements. However, an immediate improvement in Wi-Fi performance was noted, so much so, that a decision was taken to extend the trial to a much larger, 600-seater theatre, using the PoC kit.

"600 seats typically means 600 laptops, 600 smart watches and 600 phones; anything up to 1,800 devices connecting to that same segment of the wireless network at any one time. Within a few days of deploying the PoC, it was clear that the network was performing much better than I had expected. It was obvious we had found our solution and we decided to migrate the rest of the campus as soon as we could."

Kevin Brew, Network Architect, RCSI

Kevin noticed during exam season at high traffic volumes that the radio resource management or auto-tuning capability of the access points removed a huge overhead from the network team in terms of optimising the network for a true experience-first Wi-Fi service.



Pic l-r: Sean Nolan, Agile Networks, Kevin Brew, RCSI and Ronan McCarthy, Juniper Networks

"In a lot of cases, when we're engaged with a customer around an advanced Wi-Fi solution like this, we end up in a technical conversation comparing data sheets between different vendors. Here we were focused on performance of the Wi-Fi network and superior user experience in a very heavily utilised academic environment."

Sean Nolan, Business Development Manager, Agile Networks

Technology At A Glance

Radio Resource Management

Radio resource management (RRM) describes the Juniper Mist™ AI-driven machine learning technology available in both Juniper APs and the Juniper Mist cloud.

It is capable of continuously optimising wireless coverage and capacity at the level of individual APs, for example by adjusting channel width. RRM also continuously optimises wireless coverage and capacity across an entire site, for example to maintain service-level expectations (SLEs).

"The radio resource management or auto tuning, using Mist AI removed a huge administration overhead in terms of delivering an experience-first Wi-Fi service to the students. You can observe in real-time on the Mist platform as it retunes all the various radios it detects and the underlying use case. That's a really big deal for us and it demonstrates the value of the product to RCSI."

Kevin Brew, Network Architect, RCSI

Swift rollout and elimination of Wi-Fi related support tickets

Using zero touch provisioning, Kevin and his team migrated the Wi-Fi network during live lectures and even during exam times. They were able to 'politely enter' the learning space, remove the existing AP and mount the new Juniper AP.

As it was already provisioned on the network, it would auto-discover and be back online within 1 - 2 minutes, eliminating prolonged periods of network downtime and offering students continuous access to the Wi-Fi service.

"We managed to migrate 350 access points within around seven days, including all of the set up and the mapping completed. In terms of troubleshooting the wireless network, there is none. It's something that's disappeared and other than having to increase capacity, which is again demonstrated to us by Juniper's Mist AI, it wasn't something I had to figure out myself. It told me I needed to do it."

Kevin Brew, Network Architect, RCSI

"Juniper Networks has brought real innovation to the networking space with the world's first AI driven campus network. This is transforming the way RCSI are engaging, interacting with and managing the network infrastructure. 18 of the top 20 universities globally are using Juniper Networks to deliver a world class education environment."

Ronan McCarthy, Business Development Manager, Juniper Networks

Juniper's Mist AI will proactively tell staff at RCSI about issues on the network. For example, with some buildings over 230 years old, it will alert to degraded cabling allowing RCSI to replace them or re-terminate them before the service itself starts to fail. This delivers a level of resiliency and dependability that RCSI didn't have before.

"That's how Juniper Networks delivers a real value proposition for the end user. It's a real tangible benefit that has nothing to do with data sheets, nothing to do with throughputs and speeds and feeds of access points. It's a real game changer."

Sean Nolan, Business Development Manager, Agile Networks

Technology At A Glance

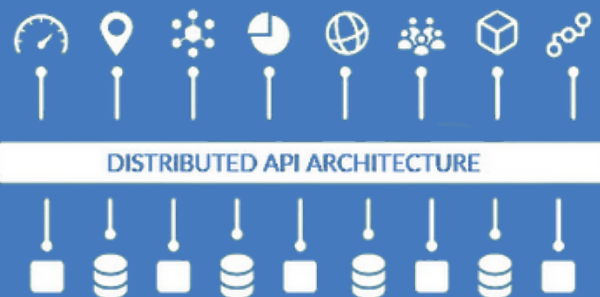
What is the AI-driven enterprise?

Juniper Mist solutions make networking predictable, reliable and measurable with unprecedented visibility into the user experience.

Time-consuming manual IT tasks are replaced with AI-driven proactive automation and self-healing capabilities, lowering networking operational costs and saving substantial time and money.

Juniper also brings enterprise-grade Wi-Fi, Bluetooth® LE and IoT together so businesses can increase the value of their wireless networks through personalised location services, such as wayfinding, proximity notifications, and asset location.

Juniper also extends AI operational efficiency and insights to the wired side of the business, including campus fabrics and SD-WANs.



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Project Success and Futures

Following the success of the Wi-Fi proof of concept, the decision was taken to roll out a similar pilot with Juniper switching. Thanks to Juniper Mist Wired Assurance, which combines cloud management and Mist AI™ to campus fabrics, the transition from old to new hardware was seamless.

Kevin now enjoys end-to-end visibility across the wired and wireless infrastructure, thanks to this replacement with a Juniper Mist fabric.



"Juniper Networks provided us with something that nobody else has in the marketplace right now. We're able to talk about things like AI in a networking context, automation, natural language, chat bots and location services."

Sean Nolan, Business Development Manager,
Agile Networks

The team at RCSI is in the early stage of using the BLE-location services in Mist AI to manage spatial occupancy. Currently, each classroom or meeting space is its own occupancy zone and Kevin can see in real-time on the Mist AI dashboard, how busy or quiet a particular area might be. Thresholds have been set to alert on capacity breaches.

Eventually, Kevin wants to look at further integration between the Juniper Mist solutions and the building management system, managing everything from lighting, air conditioning and water.

Benefits At A Glance

- Robust, resilient and intelligent wired and wireless infrastructure
- Experience-first network services provision to students and staff, elevating the learning and exam environment
- Exams, which involve streaming 4K video to hundreds of students simultaneously, can proceed seamlessly
- Troubleshooting of Wi-Fi and wired connections has been eliminated
- End-to-end visibility of entire network infrastructure on Mist™ platform
- Location services allows for estate capacity planning and integration into the Building Management System (BMS)

"Working with Agile Networks has been a great experience. Our account manager has been a great help in brokering this, getting our TCO inline and demonstrating the value of the project and the product to management here in RCSI."

Kevin Brew, Network Architect, RCSI

