

SCOTRAIL

Refreshing the network with Ruckus ICX Switches and a first-class ticket to the future



CASE STUDY



CHALLENGE

Improve operational efficiency and deliver an outstanding passenger experience

SOLUTION

- Ruckus ICX 7250 Switches for nationwide LAN
- Ruckus ICX 6430 Compact Switches for high functionality in areas with limited space

RESULTS

- Increased network management efficiency through network-ride monitoring and access to data
- Gained operational agility with ability to stack and add switches seamlessly
- Future-proofed network with ability to support new services and move easily to IPv6
- Enhanced train operations with support for Wi-Fi and mission-critical ticketing applications

BENEFITS

- Able to facilitate new education platforms and initiatives.
- Secure device authentication across all campuses.
- Shared responsibility between IT and faculty for device onboarding.

ABELLIO SCOTRAIL

Based in Scotland, ScotRail operates 796 trains to 346 stations, handling 7.4 million passenger journeys in the first month of 2017 alone. From Dunbar in the southeast to the far north stations of Wick and Thurso, ScotRail relies on its network to deliver a great passenger experience. What began as a small mobile ticketing project turned into a complete network refresh that gives ScotRail a first-class ticket to the future.

BLOWING THE WHISTLE ON INADEQUATE CAPABILITIES

Every part of ScotRail relies on the IT team and network infrastructure. Passengers buy tickets online and through local ticket vending machines, which connect to financial systems over the network. Electronic gate lines automatically read tickets and allow entry to the train platforms. Visual displays of train numbers, arrival and departure times, platform numbers, and destinations depend on connection to the scheduling system.

“ScotRail needed a network infrastructure that would improve current services and allow us to deploy new services,” said Max Eaves, IT Technical Project Engineer at Abellio ScotRail. “New trains will enable easy Wi-Fi connectivity for passengers.

We’re also planning for Voice over IP (VoIP) and digital Closed-Circuit Television (CCTV) deployments.”

Until recently, the network had expanded with ad hoc additions of hubs and switches. The legacy equipment was mostly unsupported, and each deployment location was different. The switch infrastructure didn’t support monitoring across the country, which made it difficult to identify and troubleshoot problems and required technicians to physically visit locations. Maintaining consistent security across the network was nearly impossible.

Action was needed when the network had to support a new mobile ticketing solution that required Power over Ethernet (PoE). ScotRail began looking for basic switches that offered PoE and PoE+ with the ability to monitor via Simple Network Management Protocol (SNMP).

“We wanted to provide additional services to our internal staff,” said Eaves. “With only a small team to cover the country, we needed a manageable solution. And we weren’t just looking for machines—we were looking for a partnership.”

A SWITCH FOR EVERY SPACE

After reviewing switches from the major vendors, the ScotRail team chose Ruckus® ICX® 7250 Switches. Not only do they give ScotRail the PoE+ and SNMP monitoring capabilities it needed, they also deliver a number of other capabilities that greatly expand ScotRail’s opportunities for innovative services.

“Ruckus switches gave us the best value for our investment by a huge margin,” said Eaves. “We started with 11 switches and quickly grew to more than 300 after we saw the immediate improvement in network performance.”

Ruckus ICX 7250 Switches are deployed across Scotland in stations, depots, and administrative offices. They easily support an existing, multivendor wireless network environment that gives passengers and mobile IT technicians Wi-Fi connectivity.

“We have a mixture of legacy network equipment running at 10Mbit/s to complex high speed 10G,” said Eaves, “all catered under one device.”



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MAX EAVES

IT Technical Project Engineer, Abellio ScotRail

ScotRail also uses Ruckus ICX 6430 Compact Switches to provide connectivity for tram, train and bus screens and in environments with limited space or restricted airflow.

“The Ruckus ICX 6430 Compact Switches are brilliant and an incredibly good value,” said Eaves. “Like the Ruckus ICX 7250 Switches, they give us huge network flexibility with full Layer 2 or 3 support, fibre uplinks, full monitoring, and fantastic edge port management.”

KEEPING SERVICES ON TRACK

The Ruckus ICX Switches not only resolved ScotRail’s initial challenge of powering wireless access points through PoE, they have transformed manageability and scalability. ScotRail’s manageability of its assets is now far easier and secure, and Eaves says that the switches have allowed them to pull the diverse pieces of its infrastructure together and deliver a secure, managed service. The IT team now has network data, metrics, and control for viewing its bandwidth and service requirements in detail—which was impossible before.

For the first time, ScotRail could connect its Dynamic Host Configuration Protocol (DHCP) services to the network switches. With centralized control, the IT team can automatically assign, release, and renew IP addresses when adding or removing devices. They no longer have to manually configure LAN devices across Scotland to connect or update sites. And with advanced Layer 3 services on the Ruckus ICX 7250 Switches, ScotRail can offer shared services across the network without having to rip and replace devices.

ON-TIME AGILITY

Ruckus stacking technology enables ScotRail to quickly respond to new demands.

For example, the IT team initially tried stacking Ruckus ICX 7250 Switches at several primary locations to achieve 10 GbE capacity. They simply applied the stacking license to the new switches and off they went—seamlessly. When ScotRail needs to replace

a legacy switch, they just install a new Ruckus switch. Stacking makes management much easier, because the entire stack is managed as a single logical switch.

“Ruckus ICX Switches do everything for us, from a simple 24-port PoE switch to large stacked installations running mission-critical systems,” said Eaves. “And they’re rugged beasts—they’re installed everywhere from ticket offices to racks in unheated cabinets.”

TICKET TO THE FUTURE

Ruckus ICX 7250 Switches now carry backhaul traffic from ticket vending machines and the ITSO smart ticketing system, which checks cardholders’ permissions, authenticates and validates their electronic tickets, and stores journey data for

further processing. They deliver real-time data to customer information screens. They increase convenience by enabling passenger Wi-Fi and ticket sales directly from the ScotRail website. And when ScotRail is ready to move to IPv6, its Ruckus network is already enabled.

“We can support new services from third-party providers and securely segment them on the network, which wasn’t possible before,” said Eaves. “We’re also Wi-Fi-enabling our trains so that they automatically connect and download operations data when they’re at a railway depot or at the station. That saves an employee from having to manually do this at every stop.”

Alan Manclark, Head of IT at Abellio ScotRail said, “We’re using these switches to enable several key projects that are delivering staff and customer-facing services and data. They’ve enabled my team to deliver these projects successfully and given us visibility and increased control over our national network.”

ITS ALL ABOUT THE PASSENGER

Ultimately, the passenger experience is what drives the railway. “Ruckus switches are enabling better onboard train systems,” said Eaves, “and better customer information systems and services, which is fantastic. When passengers have a better customer experience, everybody is happy.”

For more information visit www.ruckuswireless.com