JAMES COOK UNIVERSITY AUSTRALIA

JAMES COOK UNIVERSITY DELIVERS WORLD-CLASS EDUCATION AND RESEARCH WITH A SIMPLER, MORE POWERFUL NETWORK

Summary

Company:
James Cook University

Industry:
Education, Scientific Research

Business Challenges:
Digital transformation that meets the needs of a world-class research university focused on life in the tropics

Technology Solution:
- *QFX5100 Switch*
- *EX4300 Ethernet Switch*
- *Junos Space Network Management Platform*

Business Results:
- *Improved information and communication technology service (ICT) levels, including providing students with anytime access to more than 49,000 lecture recordings*
- *Enabled researchers to collaborate with peers across Australia and around the world*
- *Simplified network design and operations to free up ICT staff for innovation*
- *Aligned with university's sustainability focus with power-efficient switches*

James Cook University is a leader confronting the challenges that face the tropics. Brilliant students and researchers come to the university to make a global impact on tropical ecosystems, economies, people, and health. The university is also leading the way in the digital transformation of education, and that demands a state-of-the-art network. With the Juniper Networks QFX Series Switches and EX Series Ethernet Switches in its data center and campus networks, the university has built an agile infrastructure that delivers uncompromising connectivity while supporting stringent sustainability goals.

Conducting groundbreaking, internationally recognized research that makes a difference to people in the tropics and beyond; finding new ways to respond to the threats facing the Great Barrier Reef; understanding how to save the world's plants and animals from climate change; leading efforts to eliminate the world's most devastating parasitic diseases; solving the mystery of how Aboriginal peoples first reached Australia—these are just a few of the critical topics researched at James Cook University (JCU), a public university in Queensland, Australia.

Better Living in the Tropics

One of the top 250 research universities in the world[1], JCU is known for groundbreaking research in marine sciences, biodiversity, sustainable management of tropical ecosystems, tropical healthcare, and genetics. It is ranked first in the world for marine and freshwater biology and second in the world for biodiversity conservation.[2]

"The university's key strategy is digital," says Swain Kirk, Head of ICT Infrastructure Services at JCU. "We want to immerse all aspects of the campus into a digital space. Whether it's blended learning or research, we are bringing together a coordinated view of how we address the future of the university."

JCU has approximately 22,000 students and nearly 5,000 staff across its three campuses—in Townsville, Australia's largest tropical city; Cairns, a popular tourist destination; and most recently, in vibrant, multicultural Singapore.

"Our researchers can now seamlessly access critical applications, such as bioinformatics, ecoinformatics, and IoT analytics, which generate multi-terabyte datasets."

Swain Kirk, Head of ICT Infrastructure Services, James Cook University

[1]"JCU now ranked in the top 250 of world's universities," James Cook University, September 5, 2017 https://www.jcu.edu.au/news/releases/2017/september/jcu-now-ranked-in-the-top-250-of-worlds-universities
[2]"Facts and Figures 2017," James Cook University, 2017 https://www.jcu.edu.au/__data/assets/pdf_file/0005/492692/FINAL-Web-Version-JCU-Facts-and-Figures-2017-amended.pdf

Teaching the Digital Generation

People everywhere want digital conveniences. Students don't want to give a second thought to connectivity, whether they are cramming for their wetlands ecosystems exams or engaged in a late-night Fortnite battle. Meanwhile, researchers who need to transfer and manipulate massive data sets as they simulate, model, and visualize complex systems require flawless connectivity as they work with university, government, and corporate research partners around the world.

To support the university's mission to enhance learning with digital technology, JCU needed a strong IP network foundation that delivers a superior experience for students and researchers. With a high-density, high-performance network from Juniper, the ICT team at JCU can meet increased levels of network traffic from very demanding users without compromising scalability, sustainability, or manageability.

With the Juniper solutions in place, JCU researchers can achieve new levels of research and analysis. "Our researchers can now seamlessly access critical applications, such as bioinformatics, ecoinformatics, and Internet of Things (IoT) analytics, which generate multi-terabyte datasets," says Kirk.

With blindingly fast connections, researchers can work without barriers, exchanging massive data sets with peers across great distances in a fraction of the time it took previously. That makes it easy to collaborate with other researchers on campus, with colleagues at the University of Queensland and the University of New South Wales, and around the world.

As for students, they have no excuse to miss classes. The university has recorded more than 49,000 lectures; students can watch the videos to learn what they missed from anywhere on campus. "We're expecting 50 percent growth in classroom recordings next year," Kirk says.

Even the Wi-Fi Was Better

Refreshing the wired network solved long-standing complaints about poor Wi-Fi. "We rolled out the Juniper switches before we refreshed the wireless, and the feedback was 'what did you do to the wireless?' We replaced the underlying switching, and the wireless performance increased tenfold," says Kevin Lane, senior ICT infrastructure engineer and a JCU graduate.

"Students' priority is food and high-speed Wi-Fi," quips Kirk. "When we moved to Juniper switching and with new access points, student complaints about the Wi-Fi all disappeared."

That's important, because students are quick to take their dissatisfaction to social media for all to see—including potential students. "Student satisfaction reflects on the university as a whole," says Kirk. "If they don't like the environment, they will let everyone else know. With a sound and reliable network, we remove that obstacle and receive good student feedback."

"Service-impacting work can be scheduled overnight without requiring the engineer to do anything manually."

Kevin Lane, Senior ICT Infrastructure Engineer, James Cook University

Built for Reliability and Scale

JCU has a cloud-first policy, and with Juniper, it now has the foundation for secure, automated multicloud, giving the university flexibility to accelerate use of the private and public cloud resources that best fit its objectives.

The network has a consistent design for the core, data center, and campus using the Juniper Networks® QFX5100 Switch and Juniper Networks EX4300 Ethernet Switch, delivering significant operational simplicity. The ICT team can consistently apply policies and operations across multiple campuses, clouds, and other locations.

A multicloud-ready network makes it easier to segment the network to deliver a better experience. If there are any reliability issues or security breaches, the negative impact is far more contained than with a legacy network design. "Previously, if one switch went offline, it could take down seven floors or three buildings," says Lane. "Now, with a highly resilient, redundant network design, we can lose a piece of equipment in the chain without impacting the user experience."

Sustainability a Priority

A space- and power-efficient Juniper network fits with the university's focus on sustainability, with the goal of ensuring that its actions today don't limit the social, cultural, environmental, and economic options open to future generations. "Sustainability is built into our DNA," says Kirk. "By reducing the power and cooling of the network, we are doing the best we can as an organization to uphold the university's goals." In addition, the e-waste life-cycling of end-of-life equipment ensures that JCU ICT aligns to the wider goals of the university.

Letting the Network Drive

As digital transforms higher education, the ICT team won't be bogged down by complexity that limits the university's education and research mission. The simplicity and powerful automation framework and tools of a Juniper network overcomes complexity.

"The Juniper platform supports multiple scripting tools as well as Juniper Networks Junos Space®, which allows us to schedule and push out firmware updates, mass configuration changes, and reboots without requiring an explicit login to each switch," says Lane. "Service-impacting work can be scheduled overnight without requiring the engineer to do anything manually. The engineer wakes up and verifies that everything went according to plan. This reduces stress on the staff as well as operational costs with maintenance."

Automated configuration and management of the Juniper switches allows the ICT team to move rapidly as administrative objectives evolve. Automation empowers field support technicians and frees the central infrastructure team for more strategic work.

"We're looking at advancing our use of automation with Juniper," says Kirk. "A less skilled technician will be able to make changes by clicking on a button, and the back-end changes will be made automatically."

Supporting Life in the Tropics

Some 40 percent of the world's population lives in the tropics, which are under threat from population growth and climate change. Tropical diseases like dengue fever and malaria are spreading faster than ever. As forests are destroyed, climate change could force unprecedented human migration. But with a flexible, agile network from Juniper that connects all its campuses seamlessly, JCU can attract the best and the brightest minds to solve the world's most pressing problems.

For More Information

To find out more about Juniper Networks products and solutions, please visit www.juniper.net.

About Juniper Networks

Juniper Networks brings simplicity to networking with products, solutions and services that connect the world. Through engineering innovation, we remove the constraints and complexities of networking in the cloud era to solve the toughest challenges our customers and partners face daily. At Juniper Networks, we believe that the network is a resource for sharing knowledge and human advancement that changes the world. We are committed to imagining groundbreaking ways to deliver automated, scalable and secure networks to move at the speed of business.

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