

## New ICT Benefits New Zealand's Higher Education — Huawei Creates an Agile Campus for Lincoln University

Founded in 1878, Lincoln University is highly regarded as New Zealand's "specialist land-based university." It is the first university in the Southern Hemisphere to offer agriculture programs and landscape architecture majors, and is ranked as one of the world's five-star universities by the QS Stars University Rankings.

Lincoln University motto: "Feed the world. Protect the future. Live well."

### Challenges

Lincoln University has a large campus, but had not reconstructed its network since 2004. As a result, the university faced problems from aging devices, a non-scalable network, and insufficient bandwidth of wired and wireless networks. What's more, its many wooden buildings caused severe signal interference.

- Wired and wireless devices were deployed separately in Lincoln University's legacy network. The devices used the 802.11b standard and delivered only 11 Mbit/s of bandwidth that slowed the wireless network.
- Independent Access Controllers (ACs) created wireless traffic bottlenecks that required significant amounts of maintenance and troubleshooting time by network administrators and technicians.
- The complexity of network policies led to inefficient Operations and Maintenance (O&M), and poor wireless network coverage caused mutual interference.

All these issues interfered with the university's educational modernization. Obviously, the university needed a modern campus network to better serve teachers and students.

### Solution

The university decided it needed to invest in advanced ICT technologies such as Bring Your Own Device (BYOD), cloud computing, and Big



*"We're having a big push at Lincoln over the next couple of years to get a blended delivery format. That's, face to face, that's IT, that's bringing in all the types of resources that we can from around the world, using technology that Huawei is providing for us. It's exactly what we need to do, to ensure the most modern, up-to-date delivery methods."*

**Bruce McKenzie**

*Acting Vice-Chancellor, Lincoln University*

#### Sidebar (Executive Summary)

##### Customer

Lincoln University, Christchurch, New Zealand

##### Industry

Education

##### Challenges

- Large-sized campus needed improved communications
- Many wooden buildings caused severe signal interference
- Teaching and research systems required a high-performance, high-availability network
- Authorization configuration was complex due to diverse user roles and policies

##### Solution

- Network planning and optimization ensured full coverage with 802.11ac-compliant and dual-band APs that provide gigabit Wi-Fi access
- CSS2 clustering technology ensured a high-reliability 40G core that supports service development over the next 5 to 10 years
- Free mobility solution ensures user-centric, refined access control and graphical configuration
- Wired and wireless convergence solution ensures unified management by virtualizing network-wide devices as one logical device

##### Benefits

- 10G aggregation and 40G core layers accommodate bandwidth-hungry services such as scientific research and multimedia-based teaching
- Full wireless coverage with gigabit Wi-Fi access ensures ubiquitous learning.
- User-role-based, refined access control and graphical management improved network O&M efficiency by 95 percent

# CASE STUDY



Data. After careful study and a comparison of several vendors, the university chose Huawei's Agile Education Campus Network Solution for its high bandwidth, reliability, and easy O&M.

## High Reliability

Network reliability is vital to online teaching, mobile education, and high-definition video services. What's more, reliability at the core layer is a top priority because core switches perform wired and wireless user authentication and policy control. The Huawei S12700 series of high-capacity core switches is built specifically to support next-generation campus networks. Delivering 4  $\mu$ s inter-chassis transmission latency — the lowest in the industry — to smooth traffic transmission, the S12700 employs Huawei-proprietary Cluster Switch System Generation2 (CSS2) and 1+N Main Processing Unit (MPU) backup technologies for improved reliability.

## Virtualizing Campus Network into One Device

Huawei S12700 comes pre-integrated with native ACs that use Huawei's programmable Ethernet Network Processor (ENP) to enable AC functions. The S12700 provides unified wired and wireless traffic forwarding, service management, and user authentication. More importantly, the S12700 eliminates bottlenecks and simplifies device management by sharing wired and wireless bandwidth resources to centrally control network traffic — essentially virtualizing the entire campus network into one logical device.

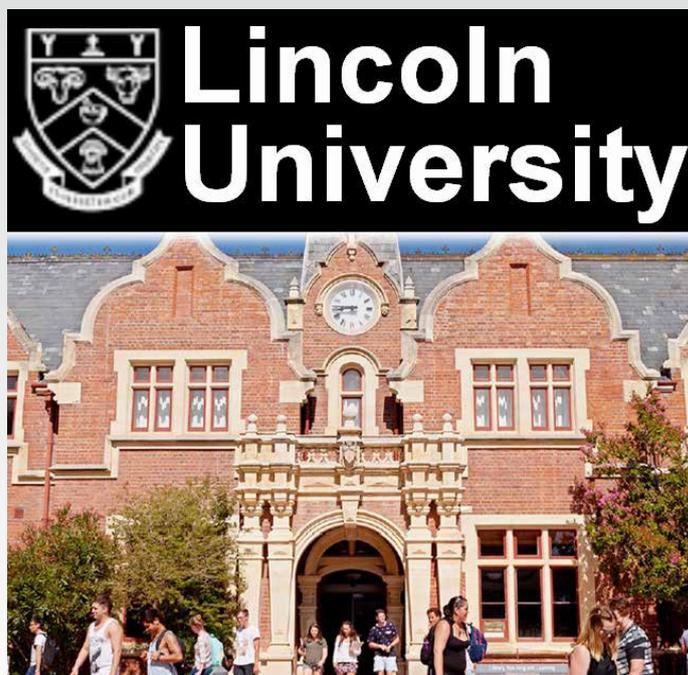
Huawei's campus network solution also capitalizes on its Super Virtual Fabric (SVF) technology. This technology:

- Contributes to effective network management by enabling administrators to easily locate and rectify faults.
- Is a vertical virtualization technology enabling cost-effective, fixed-configuration switches to act as remote interface cards for a parent switch.
- Turns APs into "super devices" by increasing the port density of the parent switch and facilitating centralized switch management.

## Consistent Service Experience

Huawei's campus network solution is particularly focused on mobile network availability. Huawei helped Lincoln University deploy an optimized Wi-Fi solution for classrooms, lecture halls, offices, dormitories, and outside areas that has improved wireless coverage to 95 percent or higher.

Lincoln University users were concerned if their access rights and experiences would be consistent whether they were working or studying. Huawei's solution applies centralized authentication



architecture on the basis of collaboration between the Agile Switch and Agile Controller. So no matter where teachers and students are, Huawei's solution provides them with a consistent, high-quality experience regardless of location or device.

## Benefits

Huawei created an agile campus for Lincoln University by constructing a highly reliable network that provides sufficient bandwidth, easy O&M, and complete coverage. This enables students to learn anywhere, anytime.

- Wired access bandwidth increased tenfold
- Wireless access bandwidth increased a hundredfold
- 10G aggregation and 40G core layers accommodate bandwidth-hungry services such as scientific research and multimedia-based teaching
- Network O&M efficiency improved by up to 95 percent through user role-based, refined access control, and graphical management

In the mobile Internet era, Huawei is aiding universities like Lincoln to embrace a variety of applications such as the education cloud, online teaching, and mobile video education.

For more information about the Huawei Agile Education Campus Network Solution, please visit:

# CASE STUDY



<http://e.huawei.com/en/solutions/industries/education>

## About Huawei Enterprise Business Group

Huawei Enterprise Business Group (“Huawei Enterprise”) is one of the three business groups of Huawei, a leading global Information and Communications Technology (ICT) solutions provider. Leveraging Huawei’s strong R&D capabilities and comprehensive technical expertise, Huawei Enterprise provides a wide range of highly efficient customer-centric ICT solutions and services to global vertical industry and enterprise customers across government and public sector, finance, transportation, electric power, energy, commercial businesses, and ISPs. Huawei Enterprise’s innovative and leading solutions cover network infrastructure, Unified Communications and Collaboration (UC&C), cloud computing and data centers, enterprise information

security, and industry application solutions.

For more information, please visit: <http://e.huawei.com>

## About Lincoln University

Founded in 1878, Lincoln University in Christchurch, New Zealand, is the third-oldest university in the country. Moreover, Lincoln University combines the advantages of traditional and emerging industries. It is regarded as one of the world’s 5-star universities, according to the QS Stars University Rankings. Lincoln University is the first university in the Southern Hemisphere to offer agriculture programs and landscape architecture majors.

For more information, please visit: <http://www.lincoln.ac.nz>

### More Information

For more information about the Huawei Agile Education Campus Network Solution, please visit:

<http://e.huawei.com/en/solutions/industries/education>

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