CASE STUDY: **CENTRAL COAST GRAMMAR SCHOOL**

K-12 School Leverages Technology to Pave the Path to Interactive Learning

Ubiquiti Networks® UniFi® AC APs deliver high-performance Wi-Fi coverage

UniFi AC EDU APs integrate an intuitive broadcast system

EdgeMAX® products reliably provide 10G routing and aggregation switching

Located in New South Wales, Australia, Central Coast Grammar School (CCGS) is an independent K-12 school that introduced a 1:1 laptop program in 1995. As a pioneer in the use of technology in education, CCGS continues to empower its students by continually upgrading their interactive learning tools and technology.

Currently, almost 1300 students and 150 staff members make up the school's user population. For the 1:1 program, grades 2-3 use iPads, grades 4-9 use school-issued Windows laptops, and grades 10-12 follow a BYOD (Bring Your Own Device) policy.

TECHNOLOGICAL CHALLENGE

The school's IT infrastructure had previously been a mix of wired and wireless networking devices on different platforms. Issues inherent with such mixed systems caused CCGS to seek a single-vendor networking solution that would meet high performance and reliability expectations for all users.

"[We wanted to achieve] simultaneous wireless video projection of HD video from any device to any or all of the projectors and wall-mounted LED screens in classrooms. This allows students to collaborate in small groups and switch source from any device from any student to any screen."

David Soede, Director of ICT, Central Coast Grammar School

Central Coast Grammar School

CUTTING-EDGE NETWORK SOLUTION

To select the products best suited for the school's applications, CCGS thoroughly tested different wired and wireless networking equipment together with a variety of WVP (Wireless Video Projection) products.

The ultimate solution is comprised of Ubiquiti® products, provided by the Somerville Group via the distributor Leader, which has been serving Australia for over 20 years.

CCGS deploys the following Ubiquiti products:

Model	Number	Purpose
UAP-AC-EDU	130	802.11ac wireless coverage with integrated PA system
UAP-AC-HD	15	802.11ac Wave 2 wireless coverage
UAP-AC-PRO	10	802.11ac wireless coverage
UAP-Outdoor-5	10	Outdoor wireless coverage
ES-48-500W	50	Gigabit switching with 10G SFP+ ports and PoE support
ES-16-XG	10	10G aggregation switching with SFP+ and RJ45 ports
ER-8-XG	1	10G routing with SFP+ ports

UBIQUITI® NETWORKS

UBIQUITI DEPLOYMENT

Classroom with UniFi AC EDU AP and UniFi AC Pro AP Installed

"With up to 4 screens in a classroom, and 8 screens in open-plan double classrooms designed for team teaching, and over 100 Mbps per HD video stream across the wireless video projection, plus other Wi-Fi data, the wireless bandwidth requirements were so high [that] only multiple Wireless Access Points (WAPs) running bonded or double channels in the 5 GHz 802.11ac spectrum in each classroom could cope."

David Soede, Director of ICT, Central Coast Grammar School

UniFi AC EDU AP installed in a classroom

Installing the UniFi AC EDU AP with a custom enclosure

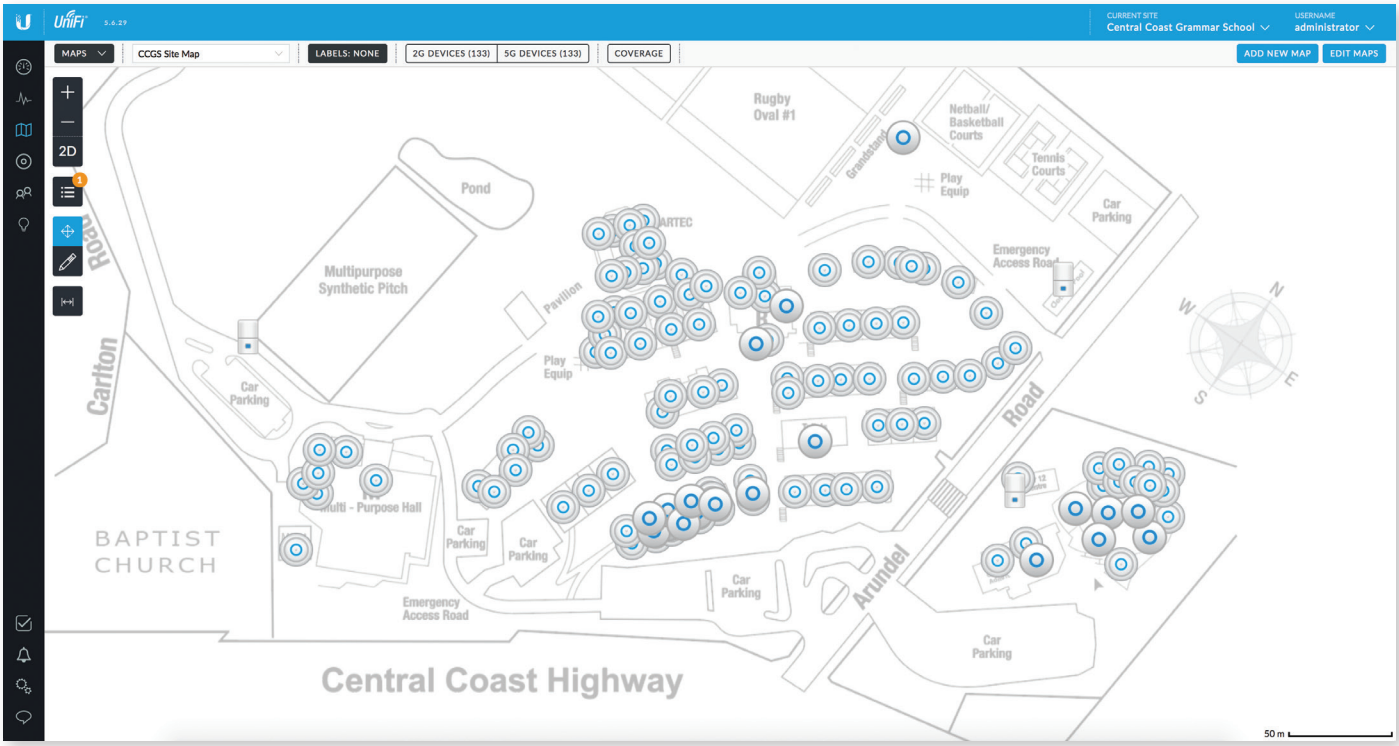
HIGH-PERFORMANCE 802.11ac WIRELESS COVERAGE

CCGS uses a variety of UniFi APs to deliver 802.11ac Wi-Fi to the students and staff:

- (130) UniFi AC EDU AP: Most of the school is equipped with the EDU model, which offers 802.11ac Wi-Fi combined with public address capabilities. A mobile announcement app called the UniFi EDU app allows for the broadcast of announcements from an iOS or Android-based device.
- (15) UniFi AC HD AP: The HD model offers 802.11ac Wave 2 MU-MIMO technology with 4x4 spatial streams to maximize multi-user throughput for high-density environments.
- (10) UniFi AC Pro AP: The Pro model offers 802.11ac Wi-Fi.

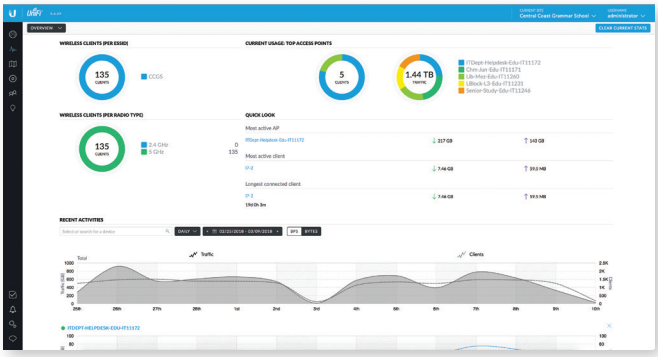
"Our teachers are no longer tethered to the front of the room, and thanks to UniFi's load balancing on bandwidth we are able to install two wireless access points in each room to handle the massive bandwidth requirements for simultaneous multiple wireless HD screen mirroring."

David Nichols, Senior Infrastructure Engineer, Central Coast Grammar School



UniFi Controller: Map screen showing UniFi APs

UNIFI CONTROLLER SOFTWARE



UniFi Controller: Statistics > Overview of UniFi APs and wireless clients

WIRELESS NETWORK MANAGEMENT AND MONITORING

UniFi products are bundled with the scalable UniFi Controller software, which manages UniFi devices through a web browser or the UniFi mobile app. It conducts device discovery, provisioning, and configuration of UniFi devices via an intuitive user interface.

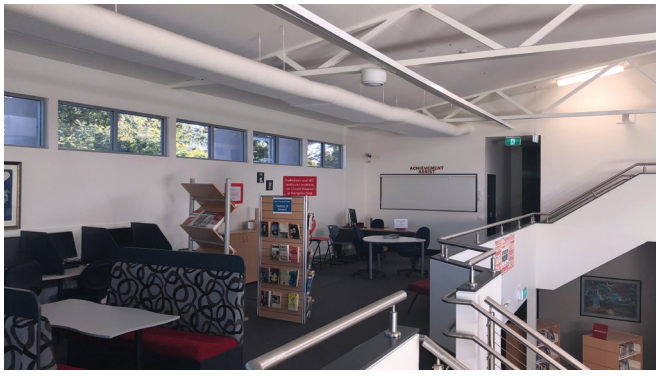
Close-up of the UniFi AC EDU AP in a custom enclosure

"The Controller... is a great single point of control for my wireless network, giving me the ability to change settings on individual WAPs or sitewide within one place with ease. Also mixed with its iOS and Android app, checking or making these changes can be done wherever I am and not just when I am in front of a computer."

David Nichols, Senior Infrastructure Engineer, Central Coast Grammar School

The *Map* screen shows the physical locations of all managed devices. As a convenient visual guide, CCGS uploaded a site map and placed each AP in its location on the map. Any AP can be selected to quickly access its status information and configuration settings. The *Map* screen also offers a 5 GHz Coverage option to display the approximate 5 GHz coverage area of each AP.

The school uses the UniFi Controller software to monitor the wireless network and traffic activity, including the individual UniFi APs and wireless client devices.



Library with the UniFi AC EDU AP installed

Tagging EdgeSwitches

POWERFUL ROUTING AND ENHANCED CAPACITY

The wired network is comprised of EdgeMAX products:

- (1) 8-Port EdgeRouter™ Infinity: With 80 Gbps aggregate throughput, the 10G router features SFP+ ports for fiber connectivity and hot-swappable modular power supplies for redundant power.
- (10) 16-Port EdgeSwitch® XG: Each 10G fiber switch offers 12 SFP+ ports and four RJ45 ports that support 10GBASE-T. It delivers maximum performance and low latency as an aggregation switch.
- (50) 48-Port PoE EdgeSwitches: Each provides data and PoE to the UniFi APs and offers dual SFP+ ports. The 48 Gigabit Ethernet ports conveniently feature auto-sensing IEEE 802.3af/at and configurable 24V Passive PoE.

"An integrated network switching fabric with at least 10 Gbps fibre uplinks, low latency, prioritisation and segregating of network packets through VLANs would be crucial, and an integrated monitoring and alerting system that could notify IT staff of issues is also critical."

David Soede, Director of ICT, Central Coast Grammar School

EdgeSwitches about to be powered on

Configuring EdgeSwitches

With the update to the EdgeRouter Infinity and EdgeSwitches – XG and 48-Port PoE models – which include SFP+ ports for 10G fiber connectivity, all of the network connections between school buildings grew to 10 Gbps throughput for a tremendous increase in switch backplane bandwidth.

Such an improvement enhanced the capacity of both the wired and wireless networks, thereby also facilitating interactive learning as CCGS pushes the boundaries of technology in education.

"Ubiquiti UniFi and EdgeMAX has allowed Central Coast Grammar School to significantly increase our network and wireless coverage and performance. As a result we have more connections on our wireless network all doing much more than ever before."

David Nichols, Senior Infrastructure Engineer, Central Coast Grammar School

School motto in Latin: Vita et Scientia (Life and Knowledge)

Visit the reseller, The Somerville Group, at somerville.com.au

Visit the distributor, Leader, at leader-online.com.au/ubiquiti/

Visit Central Coast Grammar School at www.ccgs.nsw.edu.au

For more case studies, visit www.ubnt.com/customers