MATRIXCNI
COMPLETENETWORKINNOVATION

aruba
a Hewlett Packard Enterprise company

Enabling the Digital Classroom

www.arubanetworks.com/en-au

From K-12 to universities, today's campus network infrastructure needs to be custom-built to support hundreds of users and devices, requiring intelligent 802.11ac APs and multi-gigabit switches for seamless, high-speed access across all your sites. Aruba offers a complete solution - from the core to the access layer - enabling the secure, high-speed wired/wireless connectivity necessary for the Optimised Digital Classroom.

ARUBA INSTANT OR CONTROLLER–BASED?

Depending on your infrastructure requirements, you may be able to use our controller-less solution, Aruba Instant. It's easy to set up, and loaded with enough security and smarts to get your campus connected without breaking the budget.

ARUBA INSTANT

Aruba Instant is simple yet powerful, with automatic RF management to ensure the strongest Wi-Fi connection for all mobile devices. Quick and simple to deploy, it can be managed via the cloud or on-premises, with stateful policy-based firewall, deep packet inspection and Web filtering, as well as User Bandwidth Policies intrusion detection and prevention.

ADDITIONALLY:

- There are no licenses required. An Aruba Instant AP won't suddenly cease working due to an expiring subscription.
- The Aruba Instant solution can be easily migrated to a full controller-based solution, meaning the need to scale won't require you to replace your existing APs.
- It is up to 10x faster than competition at high-density, optimising Wi-Fi channel use and power to speed up clients.
- It has the most flexible architecture on the market, with local, cloud, and on-premises management options.

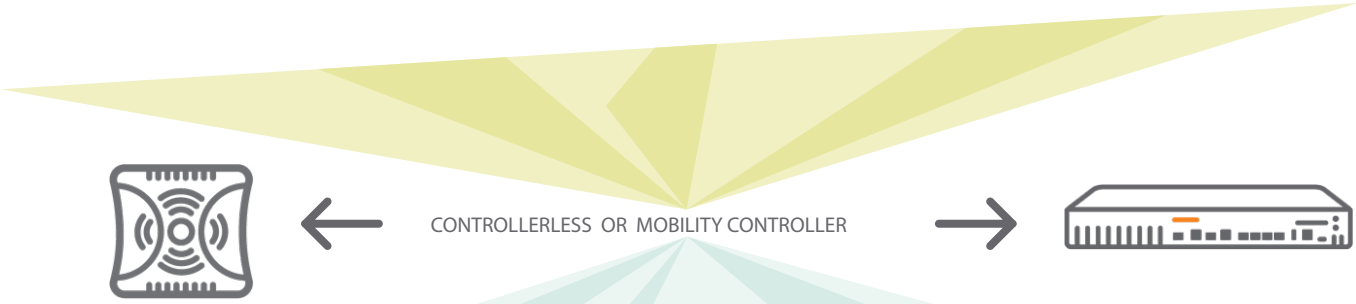
CONTROLLER-BASED

For larger deployments, you'd likely benefit from using an Aruba Mobility Controller. Mobility Controllers improve your scope for scalability, as they easily allow for the installation of more APs for your network, while simplifying their management and configuration by communicating with all APs at the same time.

MOBILITY CONTROLLERS:

- Allow for consolidated management of your entire wireless network in one place.
- Feature Lync SDN-API as well as advanced options for performance tuning.
- Provide the configuration for your APs and function as the switch for all AP traffic.
- Require two controllers for redundancy.
- APs require licensing, and maximum number of APs is determined by controller model.

Most all large-scale wireless networks are managed by controllers, due to their role in streamlining the management of your network infrastructure. Whatever your network needs, Aruba has the appropriate solution.



ARUBA ACCESS POINT (AP)/ INSTANT ACCESS POINT (IAP)

AP/IAP 205

- Ideally suited to medium-density Wi-Fi environments, supporting 50 active users
- Cost-effective two spatial stream 802.11ac solution at 1.2Gbps
- Choice of operating mode: Controller-managed or automated configuration via InstantOS

AP/IAP 325

- MU-MIMO simultaneously up to 3 clients
- Aruba ClientMatch® with MU-MIMO grouping
- 4SS for up to 1.7 Gbps with 80MHz channels
- Integrated BLE and dual GbE uplink for greater power and speed efficiencies
- ArubaOS 6.4.4 / InstantOS 4.3.0

AP/IAP 315

- Perfect for high performance deployments supporting 75+ active users
- High performance and superb user experience for mobile devices, Internet of Things (IoT) devices and applications in secondary schools
- Integrated Bluetooth Aruba Beacon simplifies the remote management of the network
- Advanced security via integrated wireless intrusion protection and IP reputation and security services
- Priority handling and policy enforcement for unified communication apps, including videoconferencing, voice, chat, and desktop sharing

AP/IAP 335

- The fastest gigabit data speeds and superb user experience for mobile devices and applications in a digital classroom workplace – our flagship AP
- 5Ghz Antenna Polarisation diversity and VHT160 support
- 2.5Gbps connectivity servicing the highest density deployments of 125+ active users, with 4x4 MU-MIMO capability, Smart Rate (2.5GBASE-T) and Dual Uplink
- Increased network capacity and efficiency as 802.11ac Wave 2 devices are automatically detected and classified under a single Wave 2 radio, realising the full performance benefits of multi-user MIMO
- Institutions can leverage their multi-gigabit Ethernet wired network infrastructures to eliminate bottlenecks
- Integrated Bluetooth Aruba Beacon simplifies the remote management of the network
- New, Intelligent Power Monitoring (IPM) to monitor and optimise power consumption

ACCESS SWITCHES

All access switches are covered by a comprehensive Original Owner Lifetime warranty, with any required replacements shipped out the next business day. Additionally, phone support is offered 24x7 for 90 days.

ARUBA 2920

The Aruba 2920 Switch Series is ideal for use in mid to large scale campus environments. A powerful ProVision ASIC delivers low latency, more packet buffering, and adaptive power consumption.

- Aruba Basic Layer 3 switch series with stacking, static & RIP routing, IPv6, ACLs, and sFlow.
- Modular 10GbE uplinks (SFP+ and 10GBASE-T).
- Removable and upgradeable power supplies for up to 1440W PoE+.
- Software-defined Network (SDN) Ready with OpenFlow support.
- Supports ClearPass Policy Manager and AirWave Network Management.

ARUBA 2530

The Aruba 2530 Switch Series provides security, scalability, and ease of use for small to medium sized campus environments. 10GbE uplink capabilities. 70% more energy efficient, for up to 41% savings.

- Fully managed Layer 2 access switches - choice of 8-, 24-, 48- port 10/100 and Gigabit switches
- Affordable optional 10GbE uplinks for bandwidth intensive applications
- Up to 370W of PoE+ power for phones, cameras and wireless APs
- Energy savings with Energy Efficient Ethernet and low power mode settings
- Quiet fanless models
- Industry leading warranty and no software licensing
- Simplified management with Aruba AirWave

ARUBA 2930F

The Aruba 2930F Switch Series is designed for customers creating digital workplaces across all campus sizes, optimized for mobile users with an integrated wired and wireless approach. These basic Layer 3 access switches are easy to deploy and manage, with advanced security and network management tools like Aruba ClearPass Policy Manager and Aruba AirWave.

- Aruba Basic Layer 3 switch series with static, Rip and Access OSPF Routing, ACLs, and robust QoS
- Consistent wired/wireless experience with Aruba AirWave and Aruba ClearPass Policy Manager
- Convenient built-in 1GbE or 10GbE uplinks and up to 370 W PoE+
- Ready for innovative SDN applications with OpenFlow support
- Simple deployment with Zero Touch Provisioning

CORE SWITCHES

Ensuring growth and flexibility in your network starts with your network core. To guarantee your wired infrastructure can support and adapt to various Wi-Fi use cases, you should ideally invest in multi-gigabit solutions that can increase bandwidth speeds per port on existing cabling, allowing for cost-effective and convenient network upgrades without sacrificing your current investments.

ARUBA 5400R ZL2 SWITCH SERIES

Your administrative office could benefit most from the HPE 5400R zl2 series – an advanced, intelligent switch that is easy to deploy, operate and maintain, it can be implemented in a granular fashion and scaled as required.

- Quality of Service, Full Layer 3 routing and advanced SDN functionality
- Multi-gigabit, gigabit, 10 gigabit and 40 gigabit Ethernet interfaces
- Choice of Power-over-Ethernet (PoE) or non-PoE capability
- Enterprise-class resiliency with hitless failover and power supply redundancy
- Advanced L2 to L4 feature set with OSPFv3, IPv6, IPv4 BGP4 and policy based routing
- Redundant management and power
- Virtualisation with Advanced Services zl2 modules
- Scalable 1 GbE and 10 GbE connectivity
- Line rate 40 GbE uplinks
- SDN ready with OpenFlow 1.3 support
- License free software
- Leading warranty with HPE Limited Lifetime Warranty

ARUBA 3810 SWITCH SERIES

Alternatively, you could deploy Aruba's 3810 series as your core switching solution. With low latency and resiliency, backplane stacking and Advanced Layer 3 capabilities, the 3810 can also be deployed as an access layer switch to provide seamless, high speed connectivity across all campus sites. Supporting the latest Wave 2 11ac APs with PoE+SmartRate multi-gigabit Ethernet, it unleashes the full potential of gigabit Wi-Fi for to help deliver media-rich learning experiences across your entire campus.

- The ultimate in copper port switching
- Mobile campus access solution for enterprises, SMBs and branch office networks
- Full PoE+ provisioning available on 48-ports
- Outperforms the Cisco Catalyst 3850 in all specs

POLICY ENFORCEMENT
AND VISIBILITY

Aruba ClearPass Policy Management Platform

With the enhanced capacity afforded by an 802.11ac/Wave 2 network, the challenge turns to managing the sheer number of users, devices, and access scenarios it enables. Device density, student movement and peak times of access can result in difficulties in monitoring and security plus load-balancing issues, which can affect overall network performance.

To combat these concerns, Aruba offers a number of intelligent solutions that serve to manage traffic flow, refine access, and deliver unparalleled insight into, and control over, the network.

It all begins with Aruba's ClearPass Policy Manager and its associated applications: ClearPass Exchange, ClearPass Guest, and ClearPass Onboard – the most advanced policy management platform available today that works in any environment.

ClearPass provides context-aware security and access management of the network based on user identity, device type and time-specific usage of resources.

By using Aruba ClearPass, the behind-the-scenes operations of a school or campus network become dramatically simplified. For example:

IDENTITY

All network access can be based on identity which is crucial, since teachers and administrative staff require different access privileges to school resources than students.

DATABASE

Student IDs can be assigned to specific application suites or internal databases, and easily refreshed or updated at the start of each year or semester.

APPLICATION

Application-layer control can prevent students accessing unauthorised services or websites, a vital consideration with the degree of questionable material widely available online.

LOCKED DEVICE

Lost or stolen devices can be readily identified and locked-down if the need to do so should arise.

VISITOR PASS

Visitors to the school – be they guests, parents or contractors – will similarly have specific requirements. With ClearPass Onboard and ClearPass Guest, single sign-on authorisations can be configured, and limits set to the number of devices – and what type of device – that can access the network.

A secure, efficiently managed network has tangible benefits. Aruba's ClearPass platform allows for a refined approach to network access management, allowing students, staff and guests safe, trouble-free connection. And it works in any environment, so you can attach ClearPass to any Wi-Fi solution.

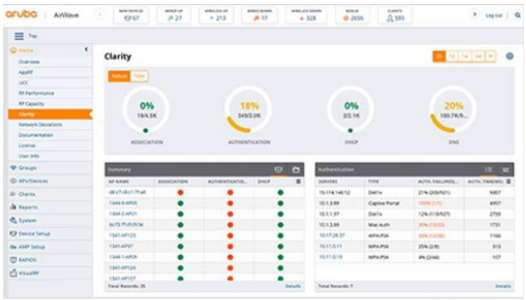
ARUBA NETWORKING SOLUTIONS – SIMPLE TO MANAGE, AFFORDABLE TO OWN, RELIABLE TO OPERATE.

Aruba AirWave Network Management

MULTI-VENDOR WIRED & WIRELESS MANAGEMENT

Networks of any size require regular oversight to ensure maximum performance – something that, for many, can prove frustrating and time-consuming. Aruba has changed that with AirWave Network Management.

Offering granular visibility into wired and wireless networks, AirWave is the only management platform designed with mobile devices and apps in mind. By proactively monitoring the health and performance of all things connected, AirWave lets IT gain the insights they need to support the digital workplace.



AirWave is a powerful and easy-to use network operations system that manages wired and wireless infrastructures from Aruba and a wide range of third-party manufacturers, providing for proactive alerts, historical reporting and fast, efficient troubleshooting through a centralised and intuitive user interface.

By using AirWave Network Management, schools gain unprecedented and streamlined control over multiple areas of their campus infrastructure, including (but not limited to)

VISIBILITY

- Automatically track every user and device – wireless and remote – on the network.
- Monitor wired infrastructure that connect wireless controllers and APs.
- Drill down rapidly from network-wide to device-level monitoring views.

DEVICE DISCOVERY

- Automatically discover WLAN infrastructure devices.
- Operate in any network environments, including large distributed networks with multiple locations.

TROUBLESHOOTING AND DIAGNOSIS

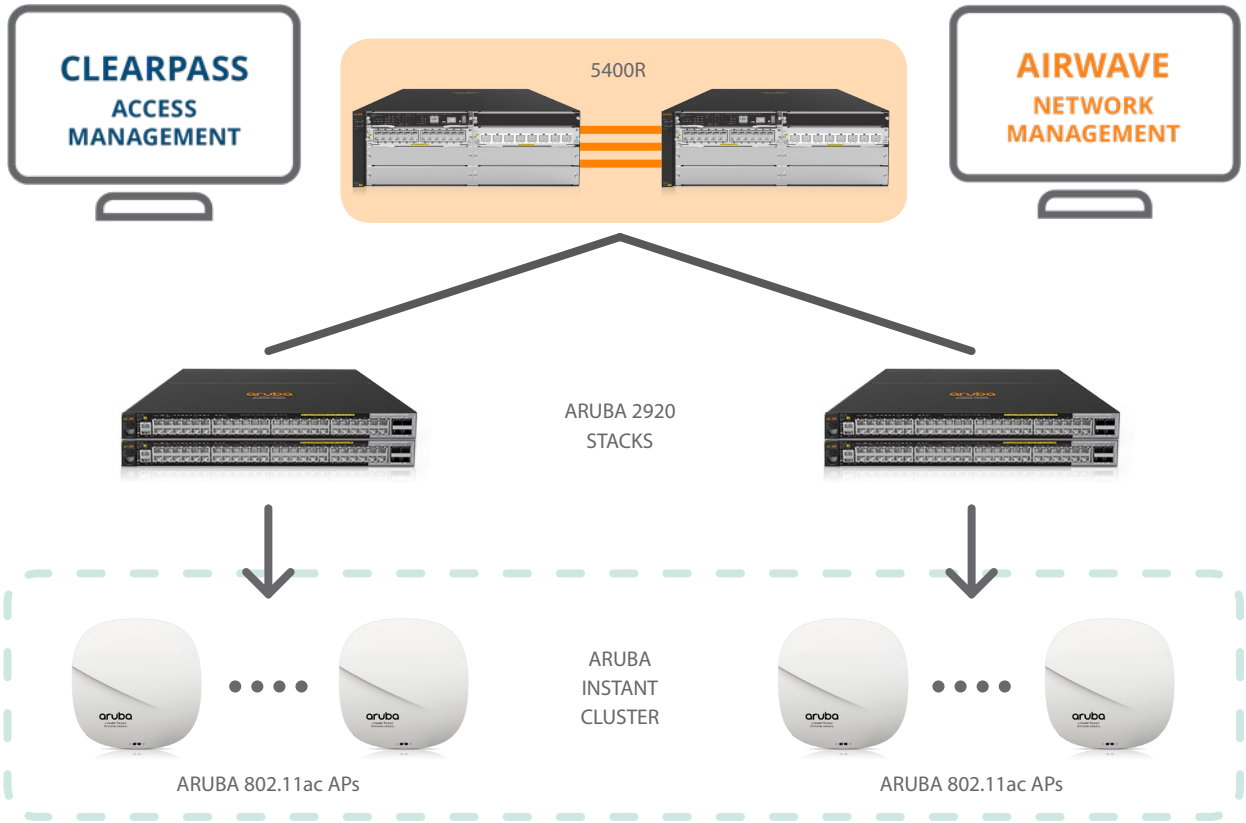
- View client device data from ArubaOS, Aruba Instant and Aruba ClearPass Policy Manager including device type, operating system, operating system details, manufacturer and model.
- Overlay client health on a floor plan to diagnose issues specific to the client or to an area on the floor plan.

CONFIGURATION MANAGEMENT

- Automatically configure APs, controllers, Aruba Instant, and Aruba Switches.
- Configure Aruba Instant APs to provision large number of campus locations with ease.
- Efficient remote software distribution, eliminating time-consuming and error prone manual updates.

The easy, end-to-end oversight into and control of your infrastructure enabled by AirWave means schools spend less time wrestling with network issues, and more time catering to the needs of their staff, students, and guests. It's what Network Management is supposed to be.

Mobile-First Campus Design



Taken together, the typical controller-less network design for a mid to large size, mobile-first campus would look very similar to this. Two 5400R zl2's sit at the top of your network tree, forming the backbone across which all your traffic will pass.

At the access layer, the stackable 3810 series - or in this instance, the 2920 series, a cost-effective, comprehensive and scalable solution with flexible and easy to deploy uplinks and stacking, offering enterprise class features - provides high-speed gigabit connectivity to the 802.11ac APs that service the wireless connections to your classrooms, lecture halls, or outdoor environments.

Finally, ClearPass provides the policy management to securely regulate identity and device access, while AirWave provides the end-to-end visibility required to monitor the health of your network environment and troubleshoot where required.

Such a network design allows you to support the device-density and rich applications of today's learning environments, protects your investment in wired infrastructure, grants unprecedented visibility into and control over your networks, and ensures a capacity for growth where required.

An intelligent, robust, secure and scalable high-speed wired/wireless network... the foundation of the Optimised Digital Classroom, enabled by Aruba.

CATHOLIC EDUCATION OFFICE, SYDNEY

30,000 STUDENTS | PRIMARY & SECONDARY | K-12

PROJECT DRIVERS

- Sought better connectivity at higher speeds by replacing an aging 802.11n network
- Required the ability to onboard any device type across the staff and student population – whether school-issued or BYOD – to enable individuals to connect multiple devices simultaneously
- Able to service 30,000 students over 39 school locations in Sydney, NSW
- Needed to provide excellent value with minimal ongoing support requirements
- Seamless integration with Novell Identity Management System

TECHNOLOGY

- Integrated 802.11ac network composed of Aruba 7210 Management Controllers and Aruba AP225s
- AirWave Management Software, and ClearPass Access Management System - including ClearPass Policy Manager with Security Assertion Markup Language (SAML).

> "We're now focused on empowering students and teachers... to use their device at home and then come back to school and seamlessly connect"
>
> **Milton Scott**,
> CTO for the CEO

KEY OUTCOMES

- Installation of high performance 802.11ac wireless network – at the time, the largest deployment of its type in the world - to support the demands for seamless, high-speed access across each school location
- Extraordinarily efficient implementation, averaging three hours per school, three schools per day – an unprecedented pace
- Improved network security and reduced burden on IT & Helpdesk resources
- Enabled Single Sign-On for 30,000 users, improving on-boarding and guest access capabilities across a wide range of devices and device types
- ClearPass with SAML ensured secure integration with Novell Identity Management System

'Matrix CNI stood out because their consulting team demonstrated that Aruba's solution was working and able to operate at full 802.11ac,' Scott asserted. **'Effectively, Aruba's competitors couldn't do that'.**

CADDIES CREEK PUBLIC SCHOOL

900+ STUDENTS AND 50 STAFF | PRIMARY

PROJECT DRIVERS

- High speed, reliable network with sufficient bandwidth for hundreds of devices, including laptops, desktops, tablets, printers and Apple TVs
- Required to build upon existing infrastructure to future-proof their platform for the school's 21st century learning strategy
- Scope for fluid remote management of the network
- Ability to securely onboard parents and guests without involving IT
- Minimal ongoing support requirements

TECHNOLOGY

- Integrated 802.11ac network with 50 Aruba APs,
- Aruba Networks Virtual Controller for remote management

> "We never have any trouble listening or watching dense and rich media files, from YouTube clips to podcasts, which are often integrated into a teacher's learning exercises."
>
> **Anthony Moyes,**
> Computer Coordinator, Caddies Creek Public School

KEY OUTCOMES

- Installation of high performance 802.11ac wireless network, to support the demands for seamless, high-speed access across 36 classrooms, staff room, and library
- Reliable connectivity across 200 iPads, 160 Microsoft Surfaces, 50 laptops and more, driving the research and reporting capabilities for students without impacting performance
- Smart Wi-Fi bandwidth allocation ensures fluid and reliable streaming of media-rich content, enhancing the learning experience
- Secure, automatic guest connectivity for temporary staff and visiting parents
- Wi-Fi remotely managed by Department of Education's Technology for Learning Support Division via Aruba Networks Virtual Controller
- Easily extensible, future-proofed network able to add capacity as required

'Easy access to high-speed wireless in learning environments today is vital,' Moyes observed. **'We didn't have any Wi-Fi before... and the network has been running brilliantly for us.'**

ARUBA / EDUTECH CASE STUDY SUMMARY 3 – UNIVERSITY OF SYDNEY

UNIVERSITY OF SYDNEY

50,000+ STUDENTS | UNIVERSITY | HIGHER EDUCATION
PROJECT COMPLETED: 2013

PROJECT DRIVERS

- Needed to replace cumbersome authentication of up to 60,000 devices via limited VPN servicing up to 400,000 authentications a day
- Desired greater insight into and flexibility of network access control over a complex user environment spread across 13 sites
- Required the capability to separate guest and enterprise traffic securely
- Sought greater capacity for user self-service and reduced IT demands

TECHNOLOGY

- Aruba's ClearPass Solution with third party integration and ClearPass Guest

> "We required an integrated solution that automated and simplified the provisioning of network access for guests, but also provided expansive security features that kept enterprise traffic separate from guest traffic. ClearPass provided us with a cost-effective, secure solution."

Srdjan Luzajic,
University's Acting Manager of Infrastructure and Operations Information and Communications Technology

KEY OUTCOMES

- Enabled a seamless Wi-Fi experience across staff, students, and guests without any change to their existing infrastructure
- Empowered users to self-configure and secure devices without IT involvement
- Provided centralised management of network policies for 35,000 unique users, authenticating up to 60,000 devices daily through single pane of glass, eliminating cumbersome VPN authentications
- Granted role and device-based network access control to separate guest and student/staff access

'From the moment we deployed Aruba's ClearPass solution, we could shift our focus onto other aspects of the University's technology requirements, relying on ClearPass to get the job done,' recalled Luzajic. **'It has proven to be a superior way to manage and authenticate our increasingly hungry mobile staff and students'**.

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