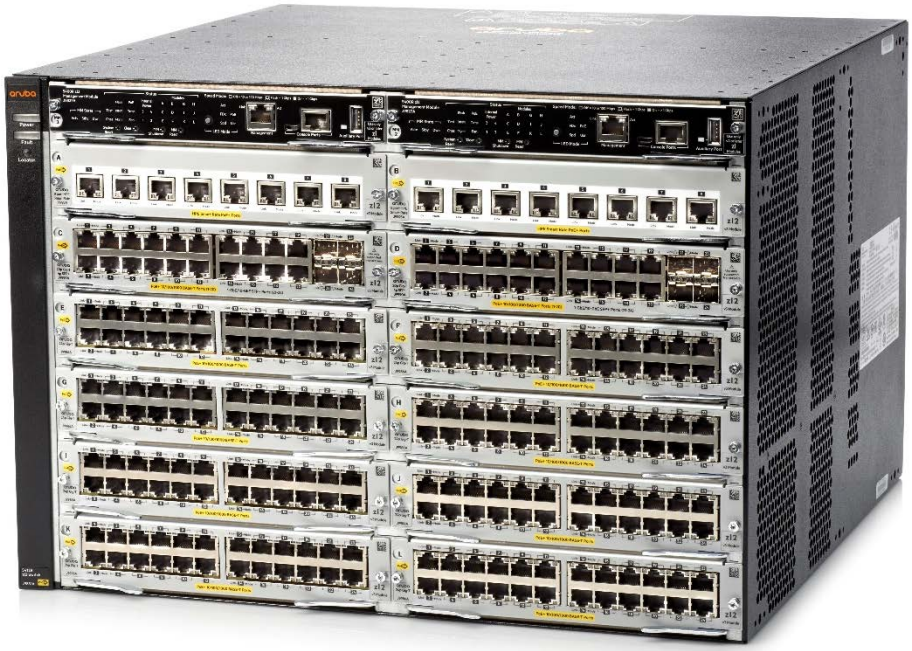
Overview

Aruba 5400R zl2 Switch Series

The Aruba 5400R zl2 Switch Series delivers enterprise-class resiliency with innovative flexibility and scalability for customers creating smart digital workplaces that are optimized for mobile users with an integrated wired and wireless approach. This modular series brings scalable aggregation with Virtual Switching Framework (VSF) stacking technology, hitless failover, and Fast Software Upgrade for 5400R VSF stacks. The advanced Layer 2 and 3 feature set includes OSPF, IPv6, IPv4 BGP, dynamic segregation, robust QoS and policy-based routing with no software licensing required.

Based on a powerful ProVision ASIC, the Aruba 5400R zl2 Switch Series has a high-speed, high-capacity architecture with 2 Tbps crossbar switching fabric with low 2.1µ robust feature support, and value with flexible programmability for the latest applications. This series offers flexible connectivity options with 6 or 12 slot compact chassis, line rate 40GbE, up to 96 line rate Smart Rate multigigabit or 10GbE ports and up to 288 ports of PoE+ for powering access points, cameras and IoT devices. The 5400R is easy to deploy, use and manage using Aruba AirWave or Aruba Central. Aruba ClearPass offers centralized security and external captive portal support. The switches include a Limited Lifetime Warranty.



Aruba 5412R zl2 Switch

Key Features

- Powerful Aruba Layer 3 modular switch with VSF stacking, dynamic segmentation, low latency and resiliency.
- HPE Smart Rate for high speed multi gigabit bandwidth and PoE+ power.
- Scalable with line rate 40GbE for wireless traffic aggregation.
- Resilient with redundant management and hot swappable power supplies.
- Up to 288 ports of PoE+
- Software-defined ready with REST APIs and OpenFlow support.
- Advanced security and network management via Aruba ClearPass Policy Manager, Aruba AirWave and Aruba Central

Overview

Models

Aruba 5406R zl2 Switch	J9821A
Aruba 5412R zl2 Switch	J9822A
Aruba 5412R 92GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch	JL001A
Aruba 5406R 8-port 1/2.5/5/10GBASE-T PoE+ / 8-port SFP+ (No PSU) v3 zl2 Switch	JL002A
Aruba 5406R 44GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch	JL003A
Aruba 5406R 16-port SFP+ (No PSU) v3 zl2 Switch	JL095A

Standard Features

Enhanced Capabilities

Simplified configuration and management

- **Aruba Central cloud-based management platform**
  Offers simple, secure, and cost effective way to manage switches
- **Zero Touch ProVisioning (ZTP)**
  Simplifies installation of the switch infrastructure using Aruba Activate-based or DHCP based process with AirWave and Central Network Management
- **Flexible management**
  Supports both cloud-based Central and on-premise AirWave without ripping and replacing switching infrastructure
- **IP SLA for Voice**
  Monitors quality of voice traffic using the UDP Jitter and UDP Jitter for VoIP tests (requires v3 modules).
- **Built-in programmable and easy to use REST API interface**
  provides configuration automation for campus networks
- **Remote intelligent mirroring**
  Mirrors selected ingress/egress traffic based on ACL, port, MAC address, or VLAN to a local or remote HPE 8200 zl, 6600, 6200 yl, 5400 zl, 5400R, 3500, or 3800 Switch located anywhere on the network
- **RMON, XRMON, and sFlow**
  Provide advanced monitoring and reporting capabilities for statistics, history, alarms, and events
- **IEEE 802.1AB Link Layer Discovery Protocol (LLDP)**
  Advertises and receives management information from adjacent devices on a network, facilitating easy mapping by network management applications
- **Unidirectional link detection (UDLD)**
  Monitors the link between two switches and blocks the ports on both ends of the link if the link goes down at any point between the two devices
- **Management simplicity**
  Provides common software features and CLI implementation across all HPE ProVision-based switches (including the zl and yl switches)
- **Command authorization**
  Leverages RADIUS to link a custom list of CLI commands to an individual network administrator's login; an audit trail documents activity
- **Friendly port names**
  Allow assignment of descriptive names to ports
- **Dual flash images**
  Provides independent primary and secondary operating system files for backup while upgrading
- **Multiple configuration files**
  Stores easily to the flash image

Connectivity

- **IEEE 802.3az Energy Efficient Ethernet**
  lowers power consumption in periods of low link usage (supported on v2 and higher 10/100/1000 and 10/100 modules)
- **IEEE 802.3at Power over Ethernet (PoE+)**
  provides up to 30 W per port that allows support of the latest PoE+ capable devices such as IP phones, wireless access points, and security cameras, as well as any IEEE 802.3af-compliant end device; eliminates the cost of additional electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments
- **Support for pre-standard PoE**
  detects and provides power to pre-standard PoE devices
- **High-density port connectivity**
  provides up to 12 interface module slots and up to 288 wire-speed 10/100/1000 PoE-enabled ports, 96 10-GbE ports , or 96 Smart Rate multi-gigabit ports per system
- **Jumbo frames**
  support high-performance remote backup and disaster-recovery services
- **Auto-MDIX**
  provides automatic adjustments for straight-through or crossover cables on all 10/100 and 10/100/1000 ports

Standard Features

Resiliency and high availability

- **Virtual Switching Framework (VSF)**
  creates one virtual resilient switch from two switches; servers or switches can be attached using standard LACP for automatic load balancing and high availability; simplify network operation by reduce the need for complex protocols like Spanning Tree Protocol (STP), Equal-Cost Multipath (ECMP), and VRRP (requires v3 modules).
- **Fast Software Upgrade**
  reduces downtime of the VSF stack during an upgrade by sequentially upgrading the members in the stack shrinking the downtime to a few seconds (requires v3 modules).
- **Virtual Router Redundancy Protocol (VRRP)**
  allows groups of two routers to dynamically back each other up to create highly available routed environments for IPv4 and IPv6 networks
- **Nonstop switching**
  improves network availability to better support critical applications such as unified communication and mobility; interface and fabric modules continue switching traffic during failover from active to standby management module
- **Nonstop routing**
  enhances Layer 3 high availability; OSPFv2/v3 and VRRP will continue to operate and route network traffic during failover from an active to a standby management module
- **Redundant management and power**
  provide enhanced system availability and continuity of operations
- **IEEE 802.1s Multiple Spanning Tree Protocol**
  provides high link availability in multiple VLAN environments by allowing multiple spanning trees; encompasses IEEE 802.1D Spanning Tree Protocol and IEEE 802.1w Rapid Spanning Tree Protocol
- **IEEE 802.3ad Link Aggregation Control Protocol (LACP) and Hewlett Packard Enterprise port trunking**
  support up to 144 trunks, each with up to eight links (ports) per trunk
- **Distributed trunking**
  enables loop-free and redundant network topology without using Spanning Tree Protocol; allows a server or switch to connect to two switches using one logical trunk for redundancy and load sharing
- **Optional redundant power supply**
  provides uninterrupted power and allows hot-swapping of the redundant power supplies when installed
- **Hot-swappable modules**
  allows dissimilar modules, and power supplies in a redundant power supply configuration to be added or swapped without interrupting the network
- **Sparing simplicity**
  with zl-common accessories (interface modules and power supplies)
- **Uplink Failure Detection**
  provides active-standby network path redundancy for servers that are configured for active-standby NIC teaming
- **SmartLink**
  provides easy-to-configure link redundancy of active and standby links

Performance

- **High-speed, high-capacity architecture**
  2 Tbps crossbar switching fabric provides intra-module and inter-module switching with 785.7 million pps throughput on the purpose-built ProVision ASICs
- **Selectable queue configurations**
  allows for increased performance by selecting the number of queues and associated memory buffering that best meet the requirements of the network applications

Software-defined networks

- **Multiple programmatic interfaces**
  Supports REST APIs, Openflow 1.0 and 1.3, and more, to enable automation of network operations, monitoring, and troubleshooting.

Standard Features

Quality of Service (QoS)

- **Advanced classifier-based QoS**
  Classifies traffic using multiple match criteria based on Layer 2, 3, and 4 information; applies QoS policies such as setting priority level and rate limit to selected traffic on a per-port or per-VLAN basis
- **Traffic prioritization**
  Allows real-time traffic classification into eight priority levels mapped to eight queues
- **Bandwidth shaping**
  - **Port-based rate limiting**
    provides per-port ingress-/egress-enforced increased bandwidth
  - **Classifier-based rate limiting**
    uses an access control list (ACL) to enforce increased bandwidth for ingress traffic on each port
  - **Supports per-port, per-queue**
    egress-based reduced bandwidth
- **Class of Service** (CoS)
  Sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, source port, and DiffServ
- Unknown Unicast Rate Limiting throttles unicast packets with unknown destination addresses and limits flooding on the VLAN

Unified Wired and Wireless Support

- **Supports unified wired and wireless policies**
  Using Aruba ClearPass Policy Manager
- **Switch auto-configuration**
  Automatically configures switch for different settings such as VLAN, CoS, PoE max power, and PoE priority when an Aruba access point is detected.
- **User role**
  Defines a set of switch-based policies in areas such as security, authentication, and QoS. A user role can be assigned to a group of users or devices, using switch-based local user role or download from ClearPass.
- **Improved network simplicity and security**
- Aruba Dynamic Segmentation automatically enforces user, device and application-aware policies on Aruba wired and wireless networks. Automated device profiling, role-based access control, and Layer 7 firewall features deliver enhanced visibility and performance for a better overall experience for both IT and end-users alike.
- **Dynamic segregation**
  Provides a secured tunnel to transport network traffic on a per-port or per-user-role basis to an Aruba Controller. In per-user-role Tunneled Node, users are authenticated with ClearPass Policy Manager which can direct the traffic to be tunneled to Aruba controller or switch locally.
- **Static IP visibility**
  Provides a way for ClearPass to do accounting for clients with static IP addresses

Layer 3 routing

- **Static IP routing**
  provides manually configured routing for both IPv4 and IPv6 networks
- **Routing Information Protocol (RIP)**
  provides RIPv1, RIPv2, and RIPng routing
- **OSPF**
  provides OSPFv2 for IPv4 routing and OSPFv3 for IPv6 routing
- **Policy-based routing**
  uses a classifier to select traffic that can be forwarded based on policy set by the network administrator (requires v2 or higher modules)
- **Border Gateway Protocol (BGP)**
- provides IPv4 Border Gateway Protocol routing, which is scalable, robust, and flexible

Standard Features

Layer 3 services

- **Bidirectional Forwarding Detection (BFD)**
  monitor link connectivity and reduces network convergence time for OSPFv2, and VRRP (requires v3 modules)
- **User Datagram Protocol (UDP) helper function**
  allows UDP broadcasts to be directed across router interfaces to specific IP unicast or subnet broadcast addresses and prevents server spoofing for UDP services such as DHCP
- **Loopback interface address**
  defines an address in Routing Information Protocol (RIP) and Open Standard Path First (OSPF), improving diagnostic capability
- **Route maps**
  provide more control during route redistribution; allow filtering and altering of route metrics
- **DHCP server**
  centralizes and reduces the cost of IPv4 address management

IPv6

- **IPv6 host**
- enables switch management in an IPv6 network
- **Dual stack (IPv4 and IPv6)**
- transitions IPv4 to IPv6, supporting connectivity for both protocols
- **MLD snooping**
- forwards IPv6 multicast traffic to the appropriate interface
- **IPv6 ACL/QoS**
- supports ACL and QoS for IPv6 traffic
- **IPv6 routing**
- supports static, RIPng, OSPFv3 routing protocols
- **6in4 tunneling**
- supports encapsulation of IPv6 traffic in IPv4 packets
- **Security**
  provides RA guard, DHCPv6 protection, dynamic IPv6 lockdown, and ND snooping

Layer 2 switching

- **VLAN support and tagging**
  supports the IEEE 802.1Q standard and 4094 VLANs simultaneously
- **IEEE 802.1v protocol VLANs**
  isolate select non-IPv4 protocols automatically into their own VLANs
- **VxLAN**
  encapsulation (tunneling) protocol for overlay network that enables a more scalable virtual network deployment (requires v3 modules)
- **GVRP and MVRP**
  allows automatic learning and dynamic assignment of VLANs
- **IEEE 802.1ad Q-in-Q**
  increases the scalability of an Ethernet network by providing a hierarchical structure; connects multiple LANs on a high-speed campus or metro network
- **MAC-based VLAN**
  provides granular control and security; uses RADIUS to map a MAC address/user to specific VLANs (requires v2 or higher modules)
- **Rapid Per-VLAN Spanning Tree (RPVST+)**
  allows each VLAN to build a separate spanning tree to improve link bandwidth usage; is compatible with PVST+
- **Hewlett Packard Enterprise switch meshing**
  dynamically load balances across multiple active redundant links to increase available aggregate bandwidth; allows concurrent Layer 3 routing with v2 or higher modules

Standard Features

Security

- **Control plane policing**
  sets rate limit on control protocols to protect CPU overload from DOS attacks
- **Access control lists (ACLs)**
  provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis
- **Multiple user authentication methods**
  - uses an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server to authenticate in accordance with industry standards
  - Web-based authentication provides a browser-based environment, similar to IEEE 802.1X, to authenticate clients that do not support IEEE 802.1X
  - Supports MAC-based client authentication MAC-based authentication
  - Concurrent IEEE 802.1X, Web, and MAC authentication schemes per switch port accepts up to 32 sessions of IEEE 802.1X, Web, and MAC authentications
- **Private VLAN**
  provides network security by restricting peer-to-peer communication to prevent a variety of malicious attacks; typically a switch port can only communicate with other ports in the same community and/or an uplink port, regardless of VLAN ID or destination MAC address
- **DHCP protection**
  blocks DHCP packets from unauthorized DHCP servers, preventing denial-of-service attacks
- **Secure management access**
  delivers secure encryption of all access methods (CLI, GUI, or MIB) through SSHv2, SSL, and/or SNMPv3
- **Switch CPU protection**
  provides automatic protection against malicious network traffic trying to shut down the switch
- **ICMP throttling**
  defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic
- **Identity-driven ACL**
  enables implementation of a highly granular and flexible access security policy and VLAN
- assignment specific to each authenticated network user
- **STP BPDU port protection**
  blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks
- **Dynamic IP lockdown**
  works with DHCP protection to block traffic from unauthorized hosts, preventing IP source address spoofing
- **Dynamic ARP protection**
  blocks ARP broadcasts from unauthorized hosts, preventing eavesdropping or theft of network data
- **STP Root Guard**
  protects the root bridge from malicious attacks or configuration mistakes
- **Detection of malicious attacks**
  monitors 10 types of network traffic and sends a warning when an anomaly that potentially can be caused by malicious attacks is detected
- **Port security**
  allows access only to specified MAC addresses, which can be learned or specified by the administrator
- **MAC address lockout**
  prevents particular configured MAC addresses from connecting to the network
- **Source-port filtering**
  allows only specified ports to communicate with each other
- **RADIUS/TACACS+**
  eases switch management security administration by using a password authentication server
- **Secure Shell**
  encrypts all transmitted data for secure remote CLI access over IP networks
- **Radius over TLS (RadSec)**
  allows users to use a more secure and reliable mode of communications between switch and radius servers over unsecure networks
- **Secure Sockets Layer (SSL)**

Standard Features

encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch

- **Secure FTP**
  allows secure file transfer to and from the switch; protects against unwanted file downloads or unauthorized copying of a switch configuration file
- **Open Authentication Role**
  simplifies first-time deployment of AAA in brownfield deployments by allowing full network access for failed clients and provides instant connectivity as soon as a client is plugged-in
- **Critical Authentication Role**
  ensures that important infrastructure devices such as IP phones are allowed network access even in the absence of a RADIUS server
- **MAC Pinning**
  allows non-chatty legacy devices to stay authenticated by pinning client MAC addresses to the port until the clients logoff or get disconnected
- **Management Interface Wizard**
  helps secure management interfaces such as SNMP, telnet, SSH, SSL, Web, and USB at the desired level
- **Switch management logon security**
  helps secure switch CLI logon by optionally requiring either RADIUS or TACACS+ authentication
- **Security banner**
  displays a customized security policy when users log in to the switch
- **IEEE 802.1AE MACsec**
  provides security on a link between two switch ports (1Gbps or 10Gbps) using standard encryption and authentication based on pre-shared key. MACsec software support not yet available for modules with Smart Rate ports (requires v3 modules)
- **Enrollment over Secure Transport (EST)**
  enhances the switch PKI infrastructure with a simpler, scalable and more secure method of certificate provisioning, re-enrollment and renewal

Convergence

- **IP multicast routing**
  includes PIM Sparse and Dense modes to route IP multicast traffic
- **IP multicast snooping** (data-driven IGMP)
  automatically prevents flooding of IP multicast traffic
- **Protocol Independent Multicast for IPv6**
  supports one-to-many and many-to-many media casting use cases such as IPTV over IPv6 networks
- **LLDP-MED (Media Endpoint Discovery)**
  defines a standard extension of LLDP that stores values for parameters such as QoS and VLAN to configure automatically network devices such as IP phones
- **PoE allocations**
  support multiple methods (automatic, IEEE 802.3af class, LLDP-MED, or user specified) to allocate PoE power for more efficient energy savings
- **Auto VLAN configuration for voice**
  - RADIUS VLAN: uses a standard RADIUS attribute and LLDP-MED to automatically configure a VLAN for IP phones
  - CDPv2: uses CDPv2 to configure legacy IP phones
- **Local MAC Authentication**
  assigns attributes such as VLAN and QoS using locally configured profile that can be a list of MAC prefixes

Standard Features

Warranty, Services and Support

- Limited Lifetime Warranty
  See **https://www.arubanetworks.com/support-services/ product-warranties/ for warranty and support information included with your product purchase**
- For Software Releases and Documentation, refer to **https://asp.arubanetworks.com/downloads**
- For support and services information, visit **https://www.arubanetworks.com/support-services/arubacare/**

Configuration Information

Build To Order:

BTO is a standalone unit with no integration. BTO products ship standalone are not part of a CTO or Rack-Shippable solution.

BTO Models

Rule #	Description	SKU
	Aruba 5406R zl2 Switch • 1 Power Supply required • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 4U - Height	J9821A
1, 2	Aruba 5406R 8-port 1/2.5/5/10GBASE-T PoE+ / 8-port SFP+ (No PSU) v3 zl2 Switch • 1 Power Supply required • 8 RJ-45 10GbE PoE+ ports • 1 - J9995A Aruba 8-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module included • 1 - J9993A Aruba 8-port 1G/10GbE SFP+ MACsec v3 zl2 Module included (min=0 \ max=8 SFP+ Transceivers) • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 4U - Height	JL002A
1, 2	Aruba 5406R 16-port SFP+ (No PSU) v3 zl2 Switch • 1 Power Supply required • 2 - J9993A Aruba 8-port 1G/10GbE SFP+ MACsec v3 zl2 Module included (min=0 \ max=16 SFP+ Transceivers) • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 4U - Height	JL095A
1, 2	Aruba 5406R 44GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch • 1 Power Supply required • 1 - J9990A Aruba 20-port 10/100/1000BASE-T PoE+ / 4-port 1G/10GbE SFP+ MACsec v3 zl2 Module included (min=0 \ max=4 SFP Transceivers) • 1 - J9986A Aruba 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module included • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 4U - Height	JL003A
	Aruba 5412R zl2 Switch • 2 Power Supplies required • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 7U - Height	J9822A

Configuration Information

1, 2	Aruba 5412R 92GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch • 2 Power Supplies required • 1 - J9990A Aruba 20-port 10/100/1000BASE-T PoE+ / 4-port 1G/10GbE SFP+ MACsec v3 zl2 Module included (min=0 \ max=4 SFP Transceivers) • 3 - J9986A Aruba 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Modules included • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 7U - Height	JL001A

Configuration Rules

Rule #	Description	SKU
1	The following Transceivers install into this Chassis :	
	Aruba 1G SFP LC SX 500m OM2 MMF Transceiver	J4858D
	Aruba 1G SFP LC LX 10km SMF Transceiver	J4859D
	Aruba 1G SFP LC LH 70km SMF Transceiver	J4860D
	Aruba 1G SFP RJ45 T 100m Cat5e Transceiver	J8177D
	Aruba 100M SFP LC FX 2km MMF Transceiver	J9054D
	Aruba 10G SFP+ LC SR 300m OM3 MMF Transceiver	J9150D
	Aruba 10G SFP+ LC LRM 220m OM2 MMF Transceiver	J9152D
	Aruba 10G SFP+ LC ER 40km SMF Transceiver	J9153D
	Aruba 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281D
	Aruba 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283D
	Aruba 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285D
2	The following Transceivers install into this Chassis:	
	Aruba 1G SFP LC SX 500m MMF TAA Transceiver	JL745A
	Aruba 1G SFP LC LX 10km SMF TAA Transceiver	JL746A
	Aruba 1G SFP RJ45 T 100m Cat5e TAA Transceiver	JL747A
	Aruba 10G SFP+ LC SR 300m MMF TAA Transceiver	JL748A
	Aruba 10G SFP+ LC LR 10km SMF TAA Transceiver	JL749A

Configuration Information

Rack Level Integration CTO Models

Rule #	Description	SKU
11	Aruba 5406R zl2 Switch • 1 Power Supply required • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 4U - Height	J9821A
1, 2, 11	Aruba 5406R 8-port 1/2.5/5/10GBASE-T PoE+ / 8-port SFP+ (No PSU) v3 zl2 Switch • 1 Power Supply required • 8 RJ-45 10GbE PoE+ ports • 1 - J9995A Aruba 8-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module included • 1 - J9993A Aruba 8-port 1G/10GbE SFP+ MACsec v3 zl2 Module included (min=0 \ max=8 SFP+ Transceivers) • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 4U - Height	JL002A
1, 2, 11	Aruba 5406R 16-port SFP+ (No PSU) v3 zl2 Switch • 1 Power Supply required • 2 - J9993A Aruba 8-port 1G/10GbE SFP+ MACsec v3 zl2 Module included (min=0 \ max=16 SFP+ Transceivers) • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 4U - Height	JL095A
1, 2, 11	Aruba 5406R 44GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch • 1 Power Supply required • 1 - J9990A Aruba 20-port 10/100/1000BASE-T PoE+ / 4-port 1G/10GbE SFP+ MACsec v3 zl2 Module included (min=0 \ max=4 SFP Transceivers) • 1 - J9986A Aruba 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module included • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 4U - Height	JL003A
	Aruba 5412R zl2 Switch • 2 Power Supplies required • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 7U - Height	J9822A

Configuration Information

1, 2, 11	Aruba 5412R 92GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch • 2 Power Supplies required • 1 - J9990A Aruba 20-port 10/100/1000BASE-T PoE+ / 4-port 1G/10GbE SFP+ MACsec v3 zl2 Module included (min=0 \ max=4 SFP Transceivers) • 3 - J9986A Aruba 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Modules included • 1 Fan Tray Included • 1 Management module included • 1 RJ-45 out-of-band management port • 7U - Height	JL001A

Configuration Rules

Rule #	Description	SKU
1	The following Transceivers install into this Chassis :	
	Aruba 1G SFP LC SX 500m OM2 MMF Transceiver	J4858D
	Aruba 1G SFP LC LX 10km SMF Transceiver	J4859D
	Aruba 1G SFP LC LH 70km SMF Transceiver	J4860D
	Aruba 1G SFP RJ45 T 100m Cat5e Transceiver	J8177D
	Aruba 100M SFP LC FX 2km MMF Transceiver	J9054D
	Aruba 10G SFP+ LC SR 300m OM3 MMF Transceiver	J9150D
	Aruba 10G SFP+ LC LRM 220m OM2 MMF Transceiver	J9152D
	Aruba 10G SFP+ LC ER 40km SMF Transceiver	J9153D
	Aruba 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281D
	Aruba 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283D
	Aruba 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285D
	Aruba 10G SFP+ LC LR 10km SMF Transceiver	J9151E
2	The following Transceivers install into this Chassis:	
	Aruba 1G SFP LC SX 500m MMF TAA Transceiver	JL745A
	Aruba 1G SFP LC LX 10km SMF TAA Transceiver	JL746A
	Aruba 1G SFP RJ45 T 100m Cat5e TAA Transceiver	JL747A
	Aruba 10G SFP+ LC SR 300m MMF TAA Transceiver	JL748A
	Aruba 10G SFP+ LC LR 10km SMF TAA Transceiver	JL749A
11	If the CTO Switch Chassis needs to be racked, Then the CTO Base Model needs to integrate (with 0D1) to the HPE Rack.	

Configuration Information

Enter the following menu selections as integrated to the CTO Model X server above if order is factory built.

Modules

Rule #	Description	SKU
	Management Modules	
	(J9821A, JL002A, JL095A, JL003A, J9822A, JL001A) System (std 1 // max 2) User Selection (min 0 / max 1)	
	Aruba 5400R zl2 Management Module	J9827A
	• No Transceivers	
	I/O Modules	
	J9821A only - System (std 0 // max=6) User Selection (min 0 / max=6) per Chassis	
	J9822A only - System (std 0 // max=12) User Selection (min 0 / max=12) per Chassis	
	JL002A, JL095A, JL003A only - System (std 2 // max=6) User Selection (min 0 / max=4) per Chassis	
	JL001A only - System (std 4 // max=12) User Selection (min 0 / max=8) per Chassis	
	Aruba 20-port 10/100/1000BASE-T PoE+ / 4-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module	J9991A
	• No Transceivers	
6	Aruba 20-port 10/100/1000BASE-T PoE+ MACsec / 1-port 40GbE QSFP+ v3 zl2 Module	J9992A
	• min=0 \ max=1 QSFP+ Transceiver	
1, 2	Aruba 24-port 1GbE SFP MACsec v3 zl2 Module	J9988A
	• min=0 \ max=24 SFP Transceivers	
1, 2	Aruba 12-port 10/100/1000BASE-T PoE+ / 12-port 1GbE SFP MACsec v3 zl2 Module	J9989A
	• min=0 \ max=12 SFP Transceivers	
2, 3, 5	Aruba 8-port 1G/10GbE SFP+ MACsec v3 zl2 Module	J9993A
	• min=0 \ max=8 SFP/SFP+ Transceivers	
2, 3, 5	Aruba 20-port 10/100/1000BASE-T PoE+ / 4-port 1G/10GbE SFP+ MACsec v3 zl2 Module	J9990A
	• min=0 \ max=8 SFP/SFP+ Transceivers	
	Aruba 8-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module	J9995A
	• No Transceivers	
	Aruba 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module	J9986A
	• No Transceivers	
	Aruba 24-port 10/100/1000BASE-T MACsec v3 zl2 Module	J9987A
	• No Transceivers	
6	Aruba 2-port 40GbE QSFP+ v3 zl2 Module	J9996A
	• min=0 \ max=2 QSFP+ Transceivers	

Configuration Information

Configuration Rules		
Rule #	**Description**	**SKU**
1	The following Transceivers install into this Module: (Use #0D1 if switch is CTO) - if applicable	
	Aruba 1G SFP LC SX 500m OM2 MMF Transceiver	J4858D
	Aruba 1G SFP LC LX 10km SMF Transceiver	J4859D
	Aruba 1G SFP LC LH 70km SMF Transceiver	J4860D
	Aruba 1G SFP RJ45 T 100m Cat5e Transceiver	J8177D
	Aruba 100M SFP LC FX 2km MMF Transceiver	J9054D
2	The following Transceivers install into this Chassis : (Use 0D1 if switch is CTO) - if applicable	
	Aruba 1G SFP LC SX 500m MMF TAA Transceiver	JL745A
	Aruba 1G SFP LC LX 10km SMF TAA Transceiver	JL746A
	Aruba 1G SFP RJ45 T 100m Cat5e TAA Transceiver	JL747A
3	The following Transceivers install into this Chassis : (Use 0D1 if switch is CTO) - if applicable	
	Aruba 10G SFP+ LC SR 300m MMF TAA Transceiver	JL748A
	Aruba 10G SFP+ LC LR 10km SMF TAA Transceiver	JL749A
5	The following Transceivers install into this Module: (Use #0D1 or #B01 if switch is CTO) - if applicable	
	Aruba 1G SFP LC SX 500m OM2 MMF Transceiver	J4858D
	Aruba 1G SFP LC LX 10km SMF Transceiver	J4859D
	Aruba 1G SFP LC LH 70km SMF Transceiver	J4860D
	Aruba 1G SFP RJ45 T 100m Cat5e Transceiver	J8177D
	Aruba 100M SFP LC FX 2km MMF Transceiver	J9054D
	Aruba 10G SFP+ LC SR 300m OM3 MMF Transceiver	J9150D
	Aruba 10G SFP+ LC LRM 220m OM2 MMF Transceiver	J9152D
	Aruba 10G SFP+ LC ER 40km SMF Transceiver	J9153D
	Aruba 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281D
	Aruba 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283D
	Aruba 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285D
6	The following Transceivers install into this Module: (Use #0D1 or #B01 if switch is CTO) - if applicable	
	HPE X142 40G QSFP+ MPO SR4 Transceiver	JH231A
	HPE X142 40G QSFP+ LC LR4 SM Transceiver	JH232A
	HPE X142 40G QSFP+ MPO eSR4 300M Transceiver	JH233A
	Aruba 40G QSFP+ LC Bidirectional 150m MMF 2-strand Transceiver	JL308A
	HPE X242 40G QSFP+ to QSFP+ 1m Direct Attach Copper Cable	JH234A
	HPE X242 40G QSFP+ to QSFP+ 3m Direct Attach Copper Cable	JH235A
	HPE X242 40G QSFP+ to QSFP+ 5m Direct Attach Copper Cable	JH236A

Configuration Information

Transceivers

Rule #	Description	SKU
	SFP Transceivers	
	Aruba 100M SFP LC FX 2km MMF Transceiver	J9054D
	Aruba 1G SFP LC SX 500m OM2 MMF Transceiver	J4858D
	Aruba 1G SFP LC LX 10km SMF Transceiver	J4859D
	Aruba 1G SFP LC LH 70km SMF Transceiver	J4860D
	Aruba 1G SFP RJ45 T 100m Cat5e Transceiver	J8177D
	Aruba 1G SFP LC SX 500m MMF TAA Transceiver	JL745A
	Aruba 1G SFP LC LX 10km SMF TAA Transceiver	JL746A
	Aruba 1G SFP RJ45 T 100m Cat5e TAA Transceiver	JL747A
	SFP+ Transceivers	
	Aruba 10G SFP+ LC SR 300m OM3 MMF Transceiver	J9150D
	Aruba 10G SFP+ LC LRM 220m OM2 MMF Transceiver	J9152D
	Aruba 10G SFP+ LC ER 40km SMF Transceiver	J9153D
	Aruba 10G SFP+ LC SR 300m MMF TAA Transceiver	JL748A
	Aruba 10G SFP+ LC LR 10km SMF TAA Transceiver	JL749A
	Aruba 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281D
	Aruba 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283D
	Aruba 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285D
	QSFP+ Transceivers	
	HPE X142 40G QSFP+ MPO SR4 Transceiver	JH231A
	HPE X142 40G QSFP+ LC LR4 SM Transceiver	JH232A
	HPE X142 40G QSFP+ MPO eSR4 300M Transceiver	JH233A
	Aruba 40G QSFP+ LC Bidirectional 150m MMF 2-strand Transceiver	JL308A
	HPE X242 40G QSFP+ to QSFP+ 1m Direct Attach Copper Cable	JH234A
	HPE X242 40G QSFP+ to QSFP+ 3m Direct Attach Copper Cable	JH235A
	HPE X242 40G QSFP+ to QSFP+ 5m Direct Attach Copper Cable	JH236A

Configuration Information

Internal Power Supplies

(J9821A, JL002A, JL095A, JL003A) System (std 0 // max 2) User Selection (min 1 / max 2)
(J9822A, JL001A) System (std 0 // max 4) User Selection (min 2 / max 4)

2, 4, 6, 7	Aruba 5400R 700W PoE+ zl2 Power Supply	J9828A
	• includes 1 x c13, 700w	
	Aruba 5400R 700W PoE+ zl2 Power Supply PDU NA, JP or TW	J9828A#B2B
	• HPE 2.5M C15 to C14 N.A. Power Cord(J9943A)	
	Aruba 5400R 700W PoE+ zl2 Power Supply PDU ROW	J9828A#B2C
	• HPE 2.5M C15 to C14 ROW Power Cord (J9944A)	
	Aruba 5400R 700W PoE+ zl2 Power Supply United States 220 volt	J9828A#B2E
	• HPE 2.5m C15 to NEMA 6-20P 250V Non-locking Power Cord (JL336A)	
	Aruba 5400R 700W PoE+ zl2 Power Supply	J9828A#AC3
	• No Localized Power Cord Selected	
2, 4, 6, 7	Aruba 5400R 1100W PoE+ zl2 Power Supply	J9829A
	• includes 1 x c15, 1100w	
	Aruba 5400R 1100W PoE+ zl2 Power Supply PDU NA, JP or TW	J9829A#B2B
	• HPE 2.5M C15 to C14 N.A. Power Cord(J9943A)	
	Aruba 5400R 1100W PoE+ zl2 Power Supply PDU ROW	J9829A#B2C
	• HPE 2.5M C15 to C14 ROW Power Cord (J9944A)	
	Aruba 5400R 1100W PoE+ zl2 Power Supply United States 220 volt	J9829A#B2E
	• HPE 2.5m C15 to NEMA 6-20P 250V Non-locking Power Cord (JL336A)	
	Aruba 5400R 1100W PoE+ zl2 Power Supply	J9829A#AC3
	• No Localized Power Cord Selected	
2, 4, 6, 7	Aruba 5400R 2750W PoE+ zl2 Power Supply	J9830B
	• includes 2 x c19, 2750w	
	Aruba 5400R 2750W PoE+ zl2 Power Supply PDU NA, JP or TW	J9830B#B2B
	• HPE 2.5m C19 to C20 250V PDU Power Cord (JL342A)	
	Aruba 5400R 2750W PoE+ zl2 Power Supply PDU ROW	J9830B#B2C
	• HPE 2.5m C19 to C20 250V PDU Power Cord (JL342A)	
	Aruba 5400R 2750W PoE+ zl2 Power Supply United States 220 volt	J9830B#B2E
	• HPE 2.5m C19 to NEMA 6-20P 250V 20Amp Non-locking Power Cord(JL351A)	
	Aruba 5400R 2750W PoE+ zl2 Power Supply	J9830B#AC3
	• No Localized Power Cord Selected	

Configuration Rules

Rule #	Description	SKU
2	Localization required on orders without #B2B, #B2C or #B2E options.	
4	This power supply is ONLY supported on the following switches.	
	Aruba 5406R zl2 Switch	J9821A
	Aruba 5406R 8-port 1/2.5/5/10GBASE-T PoE+ / 8-port SFP+ (No PSU) v3 zl2 Switch	JL002A
	Aruba 5406R 16-port SFP+ (No PSU) v3 zl2 Switch	JL095A
	Aruba 5406R 44GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch	JL003A
	Aruba 5412R zl2 Switch	J9822A
	Aruba 5412R 92GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch	JL001A
6	If #B2E is selected Then replace Localized option with #B2E for power supply and with #B2E for switch. (Offered only in NA, Mexico, Taiwan, and Japan)	
7	Power Supplies can be mixed for a switch enclosure	

Configuration Information

NOTE: For J9828A, J9829A, J9830A/B: Power Supplies can be mixed for a switch enclosure. However, the three different power supplies each require different power cords, and the wall plug that is needed for J9830A is different from the wall plug that is needed for J9828A and J9829A. Moreover, full redundancy and N+1 redundancy are only supported with like power supplies.
Drop down under power supply should offer the following options and results:
Switch/Router/Power Supply to PDU Power Cord - B2B in North America, Mexico, Taiwan, and Japan or B2C ROW. (Watson Default B2B or B2C for Rack Level CTO)
Switch/Router/Power Supply to Wall Power Cord - Localized Option (Watson Default for BTO and Box Level CTO)
High Volt Switch/Router/Power Supply to Wall Power Cord - B2E Option. (Offered only in North America, Mexico, Taiwan, and Japan)
No Localized Power Cord Selected - AC3 Option

Cables

Rule #	Description	SKU
	Console Cables	
	(std 0 // max 99) User Selection (min 0 // max 99) per switch	
	Aruba X2C2 RJ45 to DB9 Console Cable	JL448A
	Multi-Mode Cables	
	(std 0 // max 99) User Selection (min 0 // max 99) per switch	
	HPE LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
	HPE LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
	HPE LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
	HPE LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
	HPE LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
	HPE LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
	HPE LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A
	HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable	QK732A
	HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable	QK733A
	HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable	QK734A
	HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable	QK735A
	HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable	QK736A
	HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable	QK737A

Switch Enclosure Options

Rule #	Description	SKU
	Fan Trays	
	Aruba 5406R zl2 Switch Fan Tray	J9831A
	• Spare Only	
	Aruba 5412R zl2 Switch Fan Tray	J9832A
	• Spare Only	
	Mounting Kit	
1, 2	HPE X450 4U/7U Universal 4-post Rackmount Kit	J9852A
	Configuration Rules:	
1	If this Mounting Kit is ordered with #0D1 then it integrates to the HPE Universal Rack. (not the switch)	
2	If switches J9821A, JL002A, JL095A, JL003A, J9822A and JL001A are installed into a rack, Then this Rack Mounting kit is required.	

Related Options

Accessories

Remarks	Description	SKU
	Modules	
	Aruba 5400R zl2 Management Module	J9827A
	Aruba 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module	J9986A
	Aruba 24-port 10/100/1000BASE-T MACsec v3 zl2 Module	J9987A
	Aruba 24-port 1GbE SFP MACsec v3 zl2 Module	J9988A
	Aruba 12-port 10/100/1000BASE-T PoE+ / 12-port 1GbE SFP MACsec v3 zl2 Module	J9989A
	Aruba 20-port 10/100/1000BASE-T PoE+ / 4-port 1G/10GbE SFP+ MACsec v3 zl2 Module	J9990A
	Aruba 20-port 10/100/1000BASE-T PoE+ / 4-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module	J9991A
	Aruba 20-port 10/100/1000BASE-T PoE+ MACsec / 1-port 40GbE QSFP+ v3 zl2 Module	J9992A
	Aruba 8-port 1G/10GbE SFP+ MACsec v3 zl2 Module	J9993A
	Aruba 8-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module	J9995A
	Aruba 2-port 40GbE QSFP+ v3 zl2 Module	J9996A
	Transceivers	
	Aruba 100M SFP LC FX 2km MMF Transceiver	J9054D
	Aruba 1G SFP RJ45 T 100m Cat5e Transceiver	J8177D
	Aruba 1G SFP LC SX 500m OM2 MMF Transceiver	J4858D
	Aruba 1G SFP LC LX 10km SMF Transceiver	J4859D
	Aruba 1G SFP LC LH 70km SMF Transceiver	J4860D
	Aruba 10G SFP+ LC SR 300m OM3 MMF Transceiver	J9150D
	Aruba 10G SFP+ LC LR 10km SMF Transceiver	J9151E
	Aruba 10G SFP+ LC LRM 220m OM2 MMF Transceiver	J9152D
	Aruba 10G SFP+ LC ER 40km SMF Transceiver	J9153D
	Aruba 10G SFP+ to SFP+ 1m Direct Attach Copper Cable	J9281D
	Aruba 10G SFP+ to SFP+ 3m Direct Attach Copper Cable	J9283D
	Aruba 10G SFP+ to SFP+ 7m Direct Attach Copper Cable	J9285D
	Aruba 40G QSFP+ LC Bidirectional 150m MMF 2-strand Transceiver	JL308A
	HPE X142 40G QSFP+ MPO SR4 Transceiver	JH231A
	HPE X142 40G QSFP+ LC LR4 SM Transceiver	JH232A
	HPE X142 40G QSFP+ MPO eSR4 300M Transceiver	JH233A
	HPE X242 40G QSFP+ to QSFP+ 1m Direct Attach Copper Cable	JH234A
	HPE X242 40G QSFP+ to QSFP+ 3m Direct Attach Copper Cable	JH235A
	HPE X242 40G QSFP+ to QSFP+ 5m Direct Attach Copper Cable	JH236A
	Power Supply	
	Aruba 5400R 700W PoE+ zl2 Power Supply	J9828A
	Aruba 5400R 1100W PoE+ zl2 Power Supply	J9829A
	Aruba 5400R 2750W PoE+ zl2 Power Supply	J9830B

Related Options

Cables	
Aruba X2C2 RJ45 to DB9 Console Cable	JL448A
HPE LC to LC Multi-mode OM3 2-Fiber 0.5m 1-Pack Fiber Optic Cable	AJ833A
HPE LC to LC Multi-mode OM3 2-Fiber 1.0m 1-Pack Fiber Optic Cable	AJ834A
HPE LC to LC Multi-mode OM3 2-Fiber 2.0m 1-Pack Fiber Optic Cable	AJ835A
HPE LC to LC Multi-mode OM3 2-Fiber 5.0m 1-Pack Fiber Optic Cable	AJ836A
HPE LC to LC Multi-mode OM3 2-Fiber 15.0m 1-Pack Fiber Optic Cable	AJ837A
HPE LC to LC Multi-mode OM3 2-Fiber 30.0m 1-Pack Fiber Optic Cable	AJ838A
HPE LC to LC Multi-mode OM3 2-Fiber 50.0m 1-Pack Fiber Optic Cable	AJ839A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 1m Cable	QK732A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 2m Cable	QK733A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 5m Cable	QK734A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 15m Cable	QK735A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 30m Cable	QK736A
HPE Premier Flex LC/LC Multi-mode OM4 2 fiber 50m Cable	QK737A
Mounting Kit	
HPE X450 4U/7U Universal 4-post Rackmount Kit	J9852A
Aruba 5406R zl2 Switch (J9821A)	
Aruba 5406R zl2 Switch Fan Tray	J9831A
Aruba 5412R zl2 Switch (J9822A)	
Aruba 5412R zl2 Switch Fan Tray	J9832A
HPE 5406R-44G-PoE+/2SFP+ (No PSU) v2 zl2 Switch (J9823A)	
Aruba 5406R zl2 Switch Fan Tray	J9831A
HPE 5412R-92G-PoE+/2SFP+ (No PSU) v2 zl2 Switch (J9825A)	
Aruba 5412R zl2 Switch Fan Tray	J9832A
HPE 5406R-44G-PoE+/4SFP (No PSU) v2 zl2 Switch (J9824A)	
Aruba 5406R zl2 Switch Fan Tray	J9831A
HPE 5412R-92G-PoE+/4SFP (No PSU) v2 zl2 Switch (J9826A)	
Aruba 5412R zl2 Switch Fan Tray	J9832A
HPE 5406R-8XGT/8SFP+ (No PSU) v2 zl2 Switch (J9868A)	
Aruba 5406R zl2 Switch Fan Tray	J9831A
Aruba 5412R 92GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch (JL001A)	
Aruba 5412R zl2 Switch Fan Tray	J9832A
Aruba 5406R 8-port 1/2.5/5/10GBASE-T PoE+ / 8-port SFP+ (No PSU) v3 zl2 Switch (JL002A)	
Aruba 5406R zl2 Switch Fan Tray	J9831A
Aruba 5406R 44GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch (JL003A)	
Aruba 5406R zl2 Switch Fan Tray	J9831A
Aruba 5406R 16-port SFP+ (No PSU) v3 zl2 Switch (JL095A)	
Aruba 5406R zl2 Switch Fan Tray	J9831A

Technical Specifications

Aruba 5406R zl2 Switch (J9821A)

Included accessories	1 Aruba 5400R zl2 Management Module (J9827A) 1 Aruba 5406R zl2 Switch Fan Tray (J9831A)	
I/O ports and slots	6 open module slots Supports a maximum of 144 autosensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40GbE ports, or a combination	
Power supplies	2 power supply slots 1 minimum power supply required (ordered separately)	
Fan tray	includes: 1 x J9831A 1 fan tray slot	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height)
	Weight	24.5 lb (11.11 kg)
Memory and processor	**v3 Gigabit module**	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 Gigabit module	ARM11 @ 450 MHz; Packet buffer size: 18 MB internal
	v3 10G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 10G module	ARM11 @ 550 MHz; Packet buffer size: 18 MB internal
	v3 40G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	Management Module	Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance IPv6 Ready Certified	**1000 Mb Latency**	< 2.8 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 1.8 µs (FIFO 64-byte packets)
	40 Gbps Latency	< 1.5 µs (FIFO 64-byte packets)
	Throughput	up to 571.4 Mpps
	Routing/Switching capacity	960 Gbps
	Switch fabric speed	1015 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
	Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296

Technical Specifications

Electrical characteristics	**Frequency**	50/60 Hz
	80plus.org Certification	Gold
	Description	Does not come with power supply. Two power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
	Maximum heat dissipation	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
	Voltage	100 - 127 / 200 - 240 VAC, rated
	NOTE:	Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC part 15 Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC
	Conducted	IEC 61000-4-6; 3 Vrms
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Aruba AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); SNMP manager; Out-of-band management (serial RS-232c or micro usb)	
NOTE:	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.	

Technical Specifications

Aruba 5412R zl2 Switch (J9822A)

Included accessories	1 Aruba 5400R zl2 Management Module (J9827A) 1 Aruba 5406R zl2 Switch Fan Tray (J9831A)	
I/O ports and slots	12 open module slots Supports a maximum of 288 autosensing 10/100/1000 ports or 288 SFP ports or 96 SFP+ ports or 96 HPE Smart Rate Multi-Gigabit or 24 40GbE ports, or a combination	
Power supplies	4 power supply slots 2 minimum power supplies required (ordered separately)	
Fan tray	includes: 1 x J9832A 1 fan tray slot	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 12.1(h) in (44.45 x 45.09 x 30.73 cm) (7U height)
	Weight	38.1 lb (17.28 kg)
Memory and processor	**v3 Gigabit module**	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 Gigabit module	ARM11 @ 450 MHz; Packet buffer size: 18 MB internal
	v3 10G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 10G module	ARM11 @ 550 MHz; Packet buffer size: 18 MB internal
	v3 40G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	Management Module	Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance IPv6 Ready Certified	**1000 Mb Latency**	< 2.8 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 1.8 µs (FIFO 64-byte packets)
	40 Gbps Latency	< 1.5 µs (FIFO 64-byte packets)
	Throughput	up to 1142.8 Mpps
	Routing/Switching capacity	1920 Gbps
	Switch fabric speed	2030 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
	Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 49 dB, Pressure: 35.7 dB ISO 7779, ISO 9296

Technical Specifications

Electrical characteristics	**Frequency**	50/60 Hz
	80plus.org Certification	Gold
	Description	Does not come with power supply. Four power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
	Maximum heat dissipation	4900 BTU/hr (5169.5 kJ/hr), (max. non-PoE); 7400 BTU/hr (7,807 kJ/hr) (max. using PoE)
	Voltage	100 - 127 / 200 - 240 VAC, rated
	NOTE:	Heat dissipation does not include heat dissipated by the PoE-powered devices themselves. When more than four power cords are installed in a 5412R zl2 switch chassis, additional installation requirements are needed. Refer to the HPE 5400R zl2 Switches Quick Setup Guide and Safety/Regulatory Information manual for details.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC part 15 Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC
	Conducted	IEC 61000-4-6; 3 Vrms
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Aruba AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); SNMP manager; Out-of-band management (serial RS-232c or micro usb)	
NOTE:	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.	

Technical Specifications

HPE 5406R-44G-PoE+/2SFP+ (No PSU) v2 zl2 Switch (J9823A)

Included accessories	1 Aruba 5400R zl2 Management Module (J9827A) 1 Aruba 5406R zl2 Switch Fan Tray (J9831A)	
I/O ports and slots	44 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 2 open 10GbE SFP+ transceiver slots 4 open module slots Supports a maximum of 144 autosensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40GbE ports, or a combination	
Power supplies	2 power supply slots 1 minimum power supply required (ordered separately)	
Fan tray	includes: 1 x J9831A 1 fan tray slot	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height)
	Weight	28.11 lb (12.75 kg)
Memory and processor	**v3 Gigabit module**	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 Gigabit module	ARM11 @ 450 MHz; Packet buffer size: 18 MB internal
	v3 10G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 10G module	ARM11 @ 550 MHz; Packet buffer size: 18 MB internal
	v3 40G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	Management Module	Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance IPv6 Ready Certified	**1000 Mb Latency**	< 2.8 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 1.8 µs (FIFO 64-byte packets)
	40 Gbps Latency	< 1.5 µs (FIFO 64-byte packets)
	Throughput	up to 571.4 Mpps
	Routing/Switching capacity	960 Gbps
	Switch fabric speed	1015 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
	Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296

Technical Specifications

Electrical characteristics	**Frequency**	50/60 Hz
	80plus.org Certification	Gold
	Description	Does not come with power supply. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
	Maximum heat dissipation	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
	Voltage	110 - 127 / 200 - 240 VAC, rated
	Idle power	215 W
	NOTE:	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC part 15 Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC
	Conducted	IEC 61000-4-6; 3 Vrms
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Aruba AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); SNMP manager; Out-of-band management (serial RS-232c or micro usb)	
NOTE:	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.	

Technical Specifications

HPE 5412R-92G-PoE+/2SFP+ (No PSU) v2 zl2 Switch (J9825A)

Included accessories	1 Aruba 5400R zl2 Management Module (J9827A) 1 Aruba 5412R zl2 Switch Fan Tray (J9832A)	
I/O ports and slots	92 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 2 open 10GbE SFP+ transceiver slots 8 open module slots Supports a maximum of 288 autosensing 10/100/1000 ports or 288 SFP ports or 96 SFP+ ports or 96 HPE Smart Rate Multi-Gigabit or 24 40GbE ports, or a combination	
Power supplies	4 power supply slots 2 minimum power supplies required (ordered separately)	
Fan tray	includes: 1 x J9832A 1 fan tray slot	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 12.1(h) in (44.45 x 45.09 x 30.73 cm) (7U height)
	Weight	45.19 lb (20.5 kg)
Memory and processor	**v3 Gigabit module**	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 Gigabit module	ARM11 @ 450 MHz; Packet buffer size: 18 Mb internal
	v3 10G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 10G module	ARM11 @ 550 MHz; Packet buffer size: 18 MB internal
	v3 40G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	Management Module	Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance IPv6 Ready Certified	**1000 Mb Latency**	< 2.8 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 1.8 µs (FIFO 64-byte packets)
	40 Gbps Latency	< 1.5 µs (FIFO 64-byte packets)
	Throughput	up to 1142.8 Mpps
	Routing/Switching capacity	1920 Gbps
	Switch fabric speed	2030 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
	Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 49 dB, Pressure: 35.7 dB ISO 7779, ISO 9296

Technical Specifications

Electrical characteristics	**Frequency**	50/60 Hz
	80plus.org Certification	Gold
	Description	Does not come with power supply. Four power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
	Maximum heat dissipation	4900 BTU/hr (5169 kJ/hr), (max. non-PoE); 7400 BTU/hr (7,807 kJ/hr) (max. using PoE)
	Voltage	110 - 127 / 200 - 240 VAC, rated
	Idle power	312 W
	NOTE:	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves. When more than four power cords are installed in a 5412R zl2 switch chassis, additional installation requirements are needed. Refer to the HPE 5400R zl2 Switches Quick Setup Guide and Safety/Regulatory Information manual for details.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC part 15 Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC
	Conducted	IEC 61000-4-6; 3 Vrms
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Aruba AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); SNMP manager; Out-of-band management (serial RS-232c or micro usb)	
NOTE:	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.	

Technical Specifications

HPE 5406R-44G-PoE+/4SFP (No PSU) v2 zl2 Switch (J9824A)

Included accessories	1 Aruba 5400R zl2 Management Module (J9827A) 1 Aruba 5406R zl2 Switch Fan Tray (J9831A)	
I/O ports and slots	44 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 open SFP transceiver slots 4 open module slots Supports a maximum of 144 autosensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40GbE ports, or a combination	
Power supplies	2 power supply slots 1 minimum power supply required (ordered separately)	
Fan tray	includes: 1 x J9831A 1 fan tray slot	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height)
	Weight	26.19 lb (11.88 kg)
Memory and processor	**v3 Gigabit module**	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 Gigabit module	ARM11 @ 450 MHz; Packet buffer size: 18 Mb internal
	v3 10G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 10G module	ARM11 @ 550 MHz; Packet buffer size: 18 MB internal
	v3 40G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	Management Module	Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance IPv6 Ready Certified	**1000 Mb Latency**	< 2.8 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 1.8 µs (FIFO 64-byte packets)
	40 Gbps Latency	< 1.5 µs (FIFO 64-byte packets)
	Throughput	up to 571.4 Mpps
	Routing/Switching capacity	960 Gbps
	Switch fabric speed	1015 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
	Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296

Technical Specifications

Electrical characteristics	**Frequency**	50/60 Hz
	80plus.org Certification	Gold
	Description	Does not come with power supply. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
	Maximum heat dissipation	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
	Voltage	110 - 127 / 200 - 240 VAC, rated
	Idle power	215 W
	NOTE:	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC part 15 Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC
	Conducted	IEC 61000-4-6; 3 Vrms
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Aruba AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); SNMP manager; Out-of-band management (serial RS-232c or micro usb)	
NOTE:	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.	

Technical Specifications

HPE 5406R-8XGT/8SFP+ (No PSU) v2 zl2 Switch (J9868A)

Included accessories	1 Aruba 5400R zl2 Management Module (J9827A) 1 Aruba 5406R zl2 Switch Fan Tray (J9831A)	
I/O ports and slots	8 RJ-45 10GbE ports (IEEE 802.3an-2006 Type 10GBASE-T) 8 open 10GbE SFP+ transceiver slots 4 open module slots Supports a maximum of 144 autosensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40GbE ports, or a combination	
Power supplies	2 power supply slots 1 minimum power supply required (ordered separately)	
Fan tray	includes: 1 x J9831A 1 fan tray slot	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height)
	Weight	28.11 lb (12.75 kg)
Memory and processor	**v3 Gigabit module**	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 Gigabit module	ARM11 @ 450 MHz; Packet buffer size: 18 Mb internal
	v3 10G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	v2 10G module	ARM11 @ 550 MHz; Packet buffer size: 18 MB internal
	v3 40G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB Internal
	Management Module	Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); horizontal surface mounting only	
Performance IPv6 Ready Certified	**1000 Mb Latency**	< 2.8 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 1.8 µs (FIFO 64-byte packets)
	40 Gbps Latency	< 1.5 µs (FIFO 64-byte packets)
	Throughput	up to 571.4 Mpps
	Routing/Switching capacity	960 Gbps
	Switch fabric speed	1015 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
	Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296

Technical Specifications

Electrical characteristics	**Frequency**	50/60 Hz
	80plus.org Certification	Gold
	Description	Does not come with power supply. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
	Maximum heat dissipation	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
	Voltage	110 - 127 / 200 - 240 VAC, rated
	Idle power	215 W
	NOTE:	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC part 15 Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC
	Conducted	IEC 61000-4-6; 3 Vrms
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Aruba AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); SNMP manager; Out-of-band management (serial RS-232c or micro usb)	
NOTE:	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.	

Technical Specifications

Aruba 5412R 92GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch (JL001A)

Included accessories	1 Aruba 5400R zl2 Management Module (J9827A) 1 Aruba 5412R zl2 Switch Fan Tray (J9832A) 3 Aruba 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module (J9986A) 1 Aruba 20-port 10/100/1000BASE-T PoE+ / 4-port 1G/10GbE SFP+ MACsec v3 zl2 Module (J9990A)	
I/O ports and slots	92 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 open 10GbE SFP+ transceiver slots 8 open module slots Supports a maximum of 288 autosensing 10/100/1000 ports or 288 SFP ports or 96 SFP+ ports or 96 HPE Smart Rate Multi-Gigabit or 24 40GbE ports, or a combination	
Power supplies	4 power supply slots 2 minimum power supplies required (ordered separately)	
Fan tray	includes: 1 x J9832A 1 fan tray slot	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 12.1(h) in (44.45 x 45.09 x 30.73 cm) (7U height)
	Weight	45.19 lb (20.5 kg)
Memory and processor	**v3 Gigabit module**	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	v2 Gigabit module	ARM11 @ 450 MHz; Packet buffer size: 18 Mb internal
	v3 10G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	v2 10G module	ARM11 @ 550 MHz; Packet buffer size: 18 MB internal
	v3 40G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	Management Module	Freescale P2020 dual core @ 1.2 MHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); Horizontal surface mounting only	
Performance	**1000 Mb Latency**	< 2.8 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 1.8 µs (FIFO 64-byte packets)
	40 Gbps Latency	< 1.5 µs (FIFO 64-byte packets)
	Throughput	up to 1142.8 Mpps
	Routing/Switching capacity	1920 Gbps
	Switch fabric speed	2030 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
	Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)

Technical Specifications

Electrical characteristics	**Acoustic**	Power: 49 dB, Pressure: 35.7 dB ISO 7779, ISO 9296
	Frequency	50/60 Hz
	80plus.org Certification	Gold
	Description	Does not come with power supply. Four open power supply slots are available; three different power supplies are available. See power supply products for additional specifications
	Maximum heat dissipation	4900 BTU/hr (5169.5 kJ/hr), (max. non-PoE); 7400 BTU/hr (7807 kJ/hr) (max. using PoE)
	Voltage	110 - 127 / 200 - 240 VAC, rated
	Idle power	312 W
	NOTE:	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves. When more than four power cords are installed in a 5412R zl2 switch chassis, additional installation requirements are needed. Refer to the HPE 5400R zl2 Switches Quick Setup Guide and Safety/Regulatory Information manual for details.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC part 15 Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC
	Conducted	IEC 61000-4-6; 3 Vrms
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Aruba AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); SNMP manager; Out-of-band management (serial RS-232c or micro usb)	
NOTE:	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; for example, J9142B, J8177C).	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.	

Technical Specifications

Aruba 5406R 8-port 1/2.5/5/10GBASE-T PoE+ / 8-port SFP+ (No PSU) v3 zl2 Switch (JL002A)

Included accessories	1 Aruba 5400R zl2 Management Module (J9827A) 1 Aruba 5406R zl2 Switch Fan Tray (J9831A) 1 Aruba 8-port 1G/10GbE SFP+ MACsec v3 zl2 Module (J9993A) 1 Aruba 8-port 1/2.5/5/10GBASE-T PoE+ MACsec v3 zl2 Module (J9995A)	
I/O ports and slots	8 RJ-45 HPE Smart Rate Multi-Gigabit ports (100M, 1/2.5/5GBASE-T and 10GBASE-T) 8 open 10GbE SFP+ transceiver slots 4 open module slots Supports a maximum of 144 autosensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40GbE ports, or a combination	
Power supplies	2 power supply slots 1 minimum power supply required (ordered separately)	
Fan tray	includes: 1 x J9831A 1 fan tray slot	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm)
	Weight	(4U height)
Memory and processor	**v3 Gigabit module**	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	v2 Gigabit module	ARM 11 @ 450 MHz; Packet buffer size: 18 MB internal
	v3 10G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	v2 10G module	ARM11 @ 550 MHz; Packet buffer size: 18 MB internal
	v3 40G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	Management Module	Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); Horizontal surface mounting only	
Performance	**1000 Mb Latency**	< 2.8 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 1.8 µs (FIFO 64-byte packets)
	40 Gbps Latency	< 1.5 µs (FIFO 64-byte packets)
	Throughput	up to 571.4 Mpps
	Routing/Switching capacity	960 Gbps
	Switch fabric speed	1015 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
	Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296

Technical Specifications

Electrical characteristics	**Frequency**	50/60 Hz
	80plus.org Certification	Gold
	Description	Does not come with power supply. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
	Maximum heat dissipation	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
	Voltage	110 - 127 / 200 - 240 VAC, rated
	Idle power	215 W
	NOTE:	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC part 15 Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC
	Conducted	IEC 61000-4-6; 3 Vrms
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Aruba AirWave Network Management; IMC – Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); SNMP manager; Out-of-band management (serial RS-232c or micro usb)	
NOTE:	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; For example, J9142B, J8177C). HPE Smart Rate Multi-Gigabit Cabling; 1000BASE-T, 2.5 Gigabit, and 5 Gigabit Ethernet: Category 5e or better UTP or STP; 10GBASE-T: Category 6 or better (CAT6A recommended) UTP or STP	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.	

Technical Specifications

Aruba 5406R 44GT PoE+ and 4-port SFP+ (No PSU) v3 zl2 Switch (JL003A)

Included accessories	1 Aruba 5400R zl2 Management Module (J9827A) 1 Aruba 5406R zl2 Switch Fan Tray (J9831A) 1 Aruba 24-port 10/100/1000BASE-T PoE+ MACsec v3 zl2 Module (J9986A) 1 Aruba 20-port 10/100/1000BASE-T PoE+ / 4-port 1G/10GbE SFP+ MACsec v3 zl2 Module (J9990A)	
I/O ports and slots	44 RJ-45 autosensing 10/100/1000 PoE+ ports (IEEE 802.3 Type 10BASE-T, IEEE 802.3u Type 100BASE-TX, IEEE 802.3ab Type 1000BASE-T, IEEE 802.3at PoE+); Media Type: Auto-MDIX; Duplex: 10BASE-T/100BASE-TX: half or full; 1000BASE-T: full only 4 open 10GbE SFP+ transceiver slots 4 open module slots Supports a maximum of 144 autosensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40GbE ports, or a combination	
Power supplies	2 power supply slots 1 minimum power supply required (ordered separately)	
Fan tray	includes: 1 x J9831A 1 fan tray slot	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height)
	Weight	28.11 lb (12.75 kg)
Memory and processor	**v3 Gigabit module**	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	v2 Gigabit module	ARM11 @ 450 MHz; Packet buffer size: 18 MB internal
	v3 10G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	v2 10G module	ARM11 @ 550 MHz; Packet buffer size: 18 MB internal
	v3 40G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	Management Module	Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); Horizontal surface mounting only	
Performance	**1000 Mb Latency**	< 2.8 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 1.8 µs (FIFO 64-byte packets)
	40 Gbps Latency	< 1.5 µs (FIFO 64-byte packets)
	Throughput	up to 571.4 Mpps
	Routing/Switching capacity	960 Gbps
	Switch fabric speed	1015 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
	Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296

Technical Specifications

Electrical characteristics	**Frequency**	50/60 Hz
	80plus.org Certification	Gold
	Description	Does not come with power supply. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications
	Maximum heat dissipation	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
	Voltage	110 - 127 / 200 - 240 VAC, rated
	Idle power	215 W
	NOTE:	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC part 15 Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DCIEC 61000-4-6; 3 Vrms
	Conducted	IEC 61000-4-6; 3 Vrms
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Aruba AirWave Network Management; IMC - Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); SNMP manager; Out-of-band management (serial RS-232c or micro usb)	
NOTE:	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; For example, J9142B, J8177C).	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.	

Technical Specifications

Aruba 5406R 16-port SFP+ (No PSU) v3 zl2 Switch (JL095A)

Included accessories	1 Aruba 5400R zl2 Management Module (J9827A) 1 Aruba 5406R zl2 Switch Fan Tray (J9831A) 2 Aruba 8-port 1G/10GbE SFP+ MACsec v3 zl2 Module (J9993A)	
I/O ports and slots	16 open 10GbE SFP+ transceiver slots 4 open module slots Supports a maximum of 144 autosensing 10/100/1000 ports or 144 SFP ports or 48 SFP+ ports or 48 HPE Smart Rate Multi-Gigabit or 12 40GbE ports, or a combination	
Power supplies	2 power supply slots 1 minimum power supply required (ordered separately)	
Fan tray	includes: 1 x J9831A 1 fan tray slot	
Physical characteristics	**Dimensions**	17.5(w) x 17.75(d) x 6.9(h) in (44.45 x 45.09 x 17.53 cm) (4U height)
	Weight	28.11 lb (12.75 kg)
Memory and processor	**v3 Gigabit module**	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	v2 Gigabit module	ARM 11 @ 450 MHz; Packet buffer size: 18 MB internal
	v3 10G module	Dual ARM Coretex A9 @ 1; Packet buffer size: 13.5 MB internal
	v2 10G module	ARM11 @ 550 MHz; Packet buffer size: 18 MB internal
	v3 40G module	Dual ARM Coretex A9 @ 1 GHz; Packet buffer size: 13.5 MB internal
	Management Module	Freescale P2020 dual core @ 1.2 GHz, 16 MB flash, 1 GB SD Card, 4 GB DDR3 SODIMM
Mounting and enclosure	Mounts in an EIA standard 19-inch telco rack or equipment cabinet (hardware included); Horizontal surface mounting only	
Performance	**1000 Mb Latency**	< 2.8 µs (FIFO 64-byte packets)
	10 Gbps Latency	< 1.8 µs (FIFO 64-byte packets)
	40 Gbps Latency	< 1.5 µs (FIFO 64-byte packets)
	Throughput	up to 571.4 Mpps
	Routing/Switching capacity	960 Gbps
	Switch fabric speed	1015 Gbps
	Routing table size	10000 entries (IPv4), 5000 entries (IPv6)
	MAC address table size	64000 entries
Environment	**Operating temperature**	32°F to 113°F (0°C to 45°C); 0°C to 40°C with J8177C transceiver installed, 0°C to 35°C with FIPS Opacity Shield installed
	Operating relative humidity	15% to 95% @ 113°F (45°C), noncondensing
	Non-operating/Storage temperature	-40°F to 158°F (-40°C to 70°C)
	Non-operating/Storage relative humidity	15% to 95% @ 149°F (65°C), noncondensing
	Altitude	up to 10,000 ft (3 km)
	Acoustic	Power: 44 dB, Pressure: 31.7 dB ISO 7779, ISO 9296

Technical Specifications

Electrical characteristics	**Frequency**	50/60 Hz
	80plus.org Certification	Gold
	Description	Does not come with power supply. Two open power supply slots are available; three different power supplies are available. See power supply products for additional specifications.
	Maximum heat dissipation	2450 BTU/hr (2584.75 kJ/hr), (max. non-PoE); 3700 BTU/hr (3903 kJ/hr) (max. using PoE)
	Voltage	110 - 127 / 200 - 240 VAC, rated
	Idle power	215 W
	NOTE:	Idle power is the actual power consumption of the device with no ports connected. Heat dissipation does not include heat dissipated by the PoE-powered devices themselves.
Safety	CSA 22.2 No. 60950; UL 60950; IEC 60950; EN 60950	
Emissions	FCC part 15 Class A; EN 55022/CISPR 22 Class A	
Immunity	**EN**	EN 55024, CISPR 24
	ESD	IEC 61000-4-2; 4 kV CD, 8 kV AD; HPE ENV. 765.002
	Radiated	IEC 61000-4-3; 3 V/m
	EFT/Burst	IEC 61000-4-4; 1.0 kV (power line), 0.5 kV (signal line)
	Surge	IEC 61000-4-5; 1 kV/2 kV AC, 1kV signal, 0.5 kV DC
	Conducted	IEC 61000-4-6; 3 Vrms
	Power frequency magnetic field	IEC 61000-4-8; 1 A/m, 50 or 60 Hz
	Voltage dips and interruptions	IEC 61000-4-11; >95% reduction, 0.5 period; 30% reduction, 25 periods
	Harmonics	EN 61000-3-2, IEC 61000-3-2
	Flicker	EN 61000-3-3, IEC 61000-3-3
Management	Aruba AirWave Network Management; IMC - Intelligent Management Center; Command-line interface; Web browser; Configuration menu; Out-of-band management (RJ-45 Ethernet); SNMP manager; Out-of-band management (serial RS-232c or micro usb)	
NOTE:	Supported 1G SFP transceivers are revision "B" or later (product number ends with the letter "B" or later; For example, J9142B, J8177C).	
Services	Refer to the Hewlett Packard Enterprise website at **http://www.hpe.com/networking/services** for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.	

Technical Specifications

Standards and protocols

(applies to all products in series)

General Protocols

- IEEE 802.1ad Q-in-Q
- IEEE 802.1AX-2008 Link Aggregation
- IEEE 802.1D MAC Bridges
- IEEE 802.1p Priority
- IEEE 802.1Q VLANs
- IEEE 802.1s Multiple Spanning Trees
- IEEE 802.1v VLAN classification by Protocol and Port
- IEEE 802.1w Rapid Reconfiguration of Spanning Tree
- IEEE 802.3ad Link Aggregation Control Protocol (LACP)
- IEEE 802.3af Power over Ethernet
- IEEE 802.3az Energy Efficient Ethernet
- IEEE 802.3x Flow Control
- IEEE 802.3bz 2.5Gb/s and 5Gb/s interfaces
- RFC 768 UDP
- RFC 783 TFTP Protocol (revision 2)
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 854 TELNET
- RFC 868 Time Protocol
- RFC 951 BOOTP
- RFC 1058 RIPv1
- RFC 1350 TFTP Protocol (revision 2)
- RFC 1519 CIDR
- RFC 1542 BOOTP Extensions
- RFC 1918 Address Allocation for Private Internet
- RFC 2030 Simple Network Time Protocol (SNTP) v4
- RFC 2131 DHCP
- RFC 2453 RIPv2
- RFC 2548 (MS-RAS-Vendor only)
- RFC 3046 DHCP Relay Agent Information Option
- RFC 3575 IANA Considerations for RADIUS
- RFC 3576 Ext to RADIUS (CoA only)
- RFC 3768 VRRP
- RFC 4675 RADIUS VLAN & Priority
- RFC 5880 Bidirectional Forwarding Detection
- RFC 5905 Network Time Protocol Version 4: Protocol and Algorithms Specification
- UDLD (Uni-directional Link Detection)

BGP

- RFC 1997 BGP Communities Attribute
- RFC 2918 Route Refresh Capability
- RFC 4271 A Border Gateway Protocol 4 (BGP-4)
- RFC 4456 BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)
- RFC 5492 Capabilities Advertisement with BGP-4

Technical Specifications

Network Management

- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)
- RFC 3176 sFlow
- RFC 3411 SNMP Management Frameworks
- RFC 3412 Message Processing and Dispatching for the Simple Network Management Protocol (SNMP)
- RFC 3413 Simple Network Management Protocol (SNMP) Applications
- RFC 3414 User-based Security Model (USM) for version 3 of the Simple Network Management Protocol (SNMPv3)
- RFC 3415 View-based Access Control Model (VACM) for the Simple Network Management Protocol (SNMP)
- RFC 3418 Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)
- RFC 5424 Syslog Protocol
- ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDP-MED)
- SNMPv1/v2c/v3
- XRMON

Denial of service protection

- CPU DoS Protection

Device Management

- RFC 1591 DNS (client)
- RFC 2576 (Coexistence between SNMP V1, V2, V3)
- RFC 2579 (SMIv2 Text Conventions)
- RFC 2580 (SMIv2 Conformance)
- RFC 3416 (SNMP Protocol Operations v2)
- RFC 3417 (SNMP Transport Mappings)
- HTML and telnet management

QoS/CoS

- RFC 2474 DiffServ Precedence, including 8 queues/port
- RFC 2475 DiffServ Architecture
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2598 DiffServ Expedited Forwarding (EF)

IP Multicast

- RFC 3376 IGMPv3
- RFC 3973 PIM Dense Mode
- RFC 4601 PIM Sparse Mode

OSPF

- RFC 2328 OSPFv2
- RFC 3101 OSPF NSSA
- RFC 5340 OSPFv3 for IPv6

Technical Specifications

IPv6

- RFC 1981 IPv6 Path MTU Discovery
- RFC 2080 RIPng for IPv6
- RFC 2081 RIPng Protocol Applicability Statement
- RFC 2082 RIP-2 MD5
- RFC 2375 IPv6 Multicast Address Assignments
- RFC 2460 IPv6 Specification
- RFC 2464 Transmission of IPv6 over Ethernet Networks
- RFC 2710 Multicast Listener Discovery (MLD) for IPv6
- RFC 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations (Ping only)
- RFC 3019 MLDv1 MIB
- RFC 3315 DHCPv6 (client and relay)
- RFC 3484 Default Address Selection for IPv6
- RFC 3587 IPv6 Global Unicast Address Format
- RFC 3596 DNS Extension for IPv6
- RFC 3810 MLDv2 for IPv6
- RFC 4022 MIB for TCP
- RFC 4087 IP Tunnel MIB
- RFC 4113 MIB for UDP
- RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
- RFC 4251 SSHv6 Architecture
- RFC 4252 SSHv6 Authentication
- RFC 4253 SSHv6 Transport Layer
- RFC 4254 SSHv6 Connection
- RFC 4291 IP Version 6 Addressing Architecture
- RFC 4293 MIB for IP
- RFC 4294 IPv6 Node Requirements
- RFC 4419 Key Exchange for SSH
- RFC 4443 ICMPv6
- RFC 4541 IGMP & MLD Snooping Switch
- RFC 4861 IPv6 Neighbor Discovery
- RFC 4862 IPv6 Stateless Address Auto-configuration
- RFC 5095 Deprecation of Type 0 Routing Headers in IPv6
- RFC 5340 OSPFv3 for IPv6
- RFC 5453 Reserved IPv6 Interface Identifiers
- RFC 5519 Multicast Group Membership Discovery MIB (MLDv2 only)
- RFC 5722 Handling of Overlapping IPv6 Fragments
- RFC 6620 FCFS SAVI

Technical Specifications

MIBs

- IEEE 802.1ap (MSTP and STP MIB's only)
- IEEE 8021-Bridge-MIB (2008)
- IEEE 8021-Q-Bridge-MIB (2008)
- RFC 1155 Structure & ID of Mgmt Info for TCP/IP Internets
- RFC 1213 MIB II
- RFC 1493 Bridge MIB
- RFC 1724 RIPv2 MIB
- RFC 1850 OSPFv2 MIB
- RFC 2021 RMONv2 MIB
- RFC 2096 IP Forwarding Table MIB
- RFC 2578 Structure of Management Information Version 2 (SMIv2)
- RFC 2613 SMON MIB
- RFC 2618 RADIUS Client MIB
- RFC 2620 RADIUS Accounting MIB
- RFC 2665 Ethernet-Like-MIB
- RFC 2668 802.3 MAU MIB
- RFC 2674 802.1p and IEEE 802.1Q Bridge MIB
- RFC 2737 Entity MIB (Version 2)
- RFC 2787 VRRP MIB
- RFC 2863 The Interfaces Group MIB
- RFC 2925 Ping MIB
- RFC 2932 IP (Multicast Routing MIB)
- RFC 2933 IGMP MIB
- RFC 4292 IP Forwarding Table MIB
- RFC 4836 Managed Objects for 802.3 Medium Attachment Units (MAU)
- RFC 7331 BFD MIB

Security

- IEEE 802.1AE MAC Security Standard (MACSec)
- IEEE 802.1X Port Based Network Access Control
- RFC 1321 The MD5 Message-Digest Algorithm
- RFC 1492 TACACS+
- RFC 2698 A Two Rate Three Color Marker
- RFC 2818 HTTP Over TLS
- RFC 2865 RADIUS (client only)
- RFC 2866 RADIUS Accounting
- RFC 3579 RADIUS Support For Extensible Authentication Protocol (EAP)
- RFC 6614 Transport Layer Security (TLS) Encryption over Radius (RadSec)
- RFC 7030 Enrollment over Secure Transport
- Secure Sockets Layer (SSL)
- SSHv2 Secure Shell

Summary of Changes

Date	Version History	Action	Description of Change
06-Apr-2020	Version 28	Changed	Standard Features- Warranty and Configuration Information sections were updated.
06-Jan-2020	Version 27	Changed	Configuration Information section was updated.
01-Jul-2019	Version 26	Changed	Standard Features and Technical Specification sections were updated. Obsolete SKUs were removed.
04-Mar-2019	Version 25	Changed	SKU J9151D was replaced with J9151E CTO section was removed. Obsolete SKUs were removed.
03-Dec-2018	Version 24	Changed	Key Features, Product overview and Enhanced Features were updated
01-Oct-2018	Version 23	Changed	Recommended and Extended markings removed from the document.
04-Sep-2018	Version 22	Changed	QuickSpecs updated with the current Recommended-Extended Options
02-Jul-2018	Version 21	Changed	Software feature update
08-Jan-2018	Version 20	Changed	Software feature update Configuration section updated
07-Aug-2017	Version 19	Added	SKU added: JL308A
03-Jul-2017	Version 18	Added	SKU added: JL448A
01-May-2017	Version 17	Changed	Minor edit made on Technical Specifications
06-Feb-2017	Version 16	Added	SKU added: J9830B
07-Nov-2016	Version 15	Changed	Product overview, Key Features, Features and Benefits, Technical Specifications updated.
30-Sep-2016	Version 14	Changed	Configuration section updated
01-Aug-2016	Version 13	Changed	Adding #AC3 Option on Configuration Section. Minor changes on Features and Benefits
06-Jun-2016	Version 12	Changed	Overview, Features and Benefits, Technical Specifications and Accessories updated
22-Apr-2016	Version 11	Changed	SKU descriptions updated on all the document
08-Jan-2016	Version 10	Changed	URLs updated
01-Dec-2015	Version 9	Changed	QuickSpecs name changed to Aruba 5400R zl2 Switch Series Product overview, Features and benefits, Technical Specifications and Accessories updated.
27-Apr-2015	Version 8	Changed	Accessories added: J9986A, J9987A, J9988A, J9989A, J9990A, J9991A, J9992A, J9993A, J9995A, J9996A, JH231A, JH232A, JH233A, JH234A, JH235A, JH236A Models added: JL001A, JL002A, JL003A, JL095A Overview and Technical Specifications were updated
20-Mar-2015	Version 7	Changed	Configuration menu for 5400zl split in to 2 menus: 5400 zl, and 5400R zl2
17-Feb-2015	Version 6	Changed	SKUs descriptions and Configuration menu updated
01-Dec-2014	Version 5	Changed	Changes were made on the entire document
05-Sep-2014	Version 4	Changed	Updated Configuration Menu
14-Jul-2014	Version 3	Changed	Updated Overview section and Technical Specifications
17-Jun-2014	Version 2	Changed	Updated I/O ports and slots in several models and also added the WLAN section to Accessories.
10-Jun-2014	Version 1	New	New QuickSpecs

Summary of Changes

Sign up for updates

To learn more, visit: **http://www.hpe.com/networking**

c04293383 - 14945 - Worldwide - V28 - 06-April-2020