HPE Aruba Networking CX 9300 Switch Series

High performance enterprise data center switch

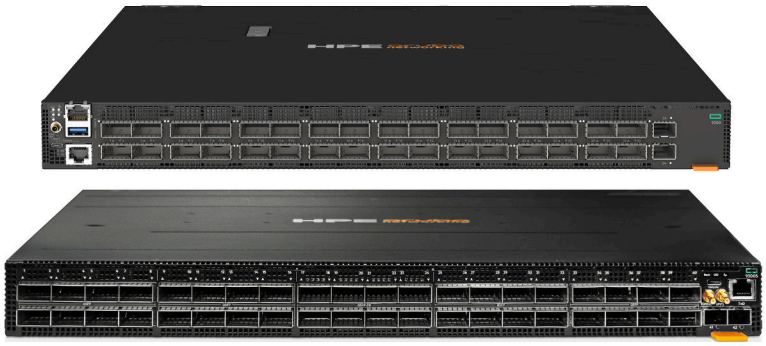

Figure 1. HPE Aruba Networking CX 9300 Switch Series

CX 9300-32D key features

- High performance 25.6 Tbps with 5Bpps
- High Density 32 x 400GbE connectivity in 1RU form factor
- High availability with industry-leading VSX redundancy, and redundant power supplies and fans
- Designed for Spine, Core/Aggregation, Top of Rack or Leaf, or End of Row in the data center
- AOS-CX automation and programmability using built-in REST APIs and Python scripts

[1] 25GbE or 50GbE split-out feature to be enabled in a future software release

Product overview

HPE Aruba Networking CX 9300-32D

The HPE Aruba Networking CX 9300-32D switch is a next-generation 25.6 Tbps, 1U fixed configuration switch supporting 32-ports of 100GbE, 200GbE or 400GbE[1], including support for 10G and 25G when using breakouts. The switch is an ideal solution for flexible, cost-effective, high-density 400GbE networking for server, storage, and intra-fabric connectivity. This solution helps protect enterprises investment as they transition server farms from 10GbE and 10GbE/25GbE to 100GbE/400GbE EVPN-VXLAN leaf and/or spine configurations at reduced power and a smaller footprint.

The CX 9300-32D switch supports large data center PODS of up to 16,834 x 25GbE servers or up to 8,192 x 100GbE servers when using 4x100G SN transceivers. This is an 24x jump in scale and density over current HPE Aruba Networking CX 8325-32C which scales to 700 x 25GbE servers.

The CX 9300-32D switch can be used as a 100GbE Leaf or 100GbE/400GbE Spine switch (128 x 100GbE or 64 x 200GbE ports using breakouts).

When deployed as a Spine, the CX 9300-32D switch flexibility connects to a range of leaf switches including HPE Aruba Networking CX 8325 Switch Series, HPE Aruba Networking CX 8360 Switch Series, HPE Aruba Networking 9300S, or HPE Aruba Networking CX 10000 Switch Series.

With HPE Aruba Networking's most recent AOS-CX release, the CX 10000, CX 9300, CX 9300S, and CX 8325 switches provide an ideal solution for data center, cloud and storage use cases that support top-of-rack server/storage connectivity and scale-out leaf-spine fabric topologies. These innovative AOS-CX enhancements provide storage-optimization to ensure low-latency and "lossless" network QoS and connectivity characteristics that storage requires.

CX 9300-32D key features

- Advanced Layer 2/3 feature set includes BGP, OSPF, VRF-Lite, and IPv6
- Dynamic VXLAN with BGP-EVPN for deep segmentation in data center and campus networks
- Intelligent monitoring, visibility, and remediation with HPE Aruba Networking Network Analytics Engine (NAE)
- HPE Storage Networking Optimized
- HPE Aruba Networking Switch Multi-Edit Software support for automated configuration and verification

Figure 2. HPE Aruba Networking CX 9300S Switch Series

CX 9300S-32C8D* key features

- High performance 16 Tbps switching and 6.4 Tbps MACsec, 4.8 Tbps IPSec/VXLANsec
- End-to-End L2/3 encryption flexibility across shared IP infrastructure - DCI and Co-locations
- 100G/200G access for AI/ML deployments
- Large scale 100G access fabrics
- Designed for Top of Rack Leaf, End of Row, Core/Aggregation, Spine in the data center
- AOS-CX automation and programmability using built-in REST APIs and Python scripts
- Advanced Layer 2/3 feature set includes BGP, OSPF, VRF-Lite, and IPv6
- Dynamic VXLAN with BGP-EVPN for deep segmentation in data center and campus networks
- Intelligent monitoring, visibility, and remediation with HPE Aruba Networking Network Analytics Engine (NAE)
- HPE Storage Networking Optimized
- HPE Aruba Networking Switch Multi-Edit Software support for automated configuration and verification

HPE Aruba Networking CX 9300S-32C8D

The HPE Aruba Networking CX 9300S-32C8D switch is a next generation 16 Tbps, 1U fixed configuration switch supporting 32-ports of 100GbE and 8-ports of 400GbE. The switch is an ideal solution for flexible, cost-effective, high-density 10/25/100/200GbE connectivity server, storage, and 400GbE intra-fabric connectivity. This solution helps enterprises protect their investments as they transition server farms from 10GbE to 25GbE to 100GbE/200GbE EVPN-VXLAN leaf-spine configurations at reduced power and a smaller footprint. The switch can also support 200GbE server facing ports for AI/ML deployments. The CX 9300S-32C8D hardware is also PTP capable*.

HPE Aruba Networking CX 9300S-32C8D can support 6.4 Tbps of MACsec and 4.8 Tbps of IPSec/VXLANSEC* for secure inter-rack and DCI deployments. The switch can be used in spine and leaf for an end to end 28-rack MACsec deployment with 100G leaf-spine links. The traditional approach to data encryption has essentially been through IPSec platforms. With the CX 9300S-32C8D users can extend encryption to cover IPSec and VXLANSEC in addition to existing MACsec** capabilities. These encryption capabilities are embedded to deliver end-to-end security and eliminates the dates for multiple security services to support encryption.

The CX 9300S-32C8D can also be deployed in campus core/collapsed core deployments where a compact form factor, high performance, high density with MACsec is needed.

The CX 9300-32D and CX 9300S-32C8D/10000/8325 switches provide an ideal solution for data center, cloud and storage use cases that support top-of-rack server/storage connectivity and scale-out leaf-spine fabric topologies. These innovative AOS-CX enhancements provide storage-optimization to ensure low-latency and “lossless” network QoS and connectivity characteristics that storage requires.

Product differentiators

AOS-CX—a modern software system

The HPE Aruba Networking CX 9300 Switch Series is based on AOS-CX, a modern, database-driven operating system that automates and simplifies many critical and complex network tasks.

A built-in time series database enables customers and developers to utilize software scripts for historical troubleshooting, as well as analysis of past trends. This helps predict and avoid future problems due to scale, security, and performance bottlenecks. Every CX switch includes AOS-CX at no cost and with an active, perpetual set of native features which has everything needed to deploy, connect, and troubleshoot an enterprise network, including:

- HPE Aruba Networking Network Analytics Engine (NAE)
- Dynamic Segmentation
- Virtual Switching Extension
- High Availability and Resiliency
- Quality of Service (QoS)
- Layer 2 Switching
- Layer 3 Services and Routing
- IP Multicast
- Network Security
- Support for HPE Aruba Networking Switch Multi-Edit Software

* HW capable. Currently not supported in current AOS-CX software

** HW capable on all ports. AOS-CX currently supports MACsec only on ports 1-8 and 33-40.

In addition to the native features available in AOS-CX, we offer an optional, term-based HPE Aruba Networking CX Advanced Feature Pack that unlocks container infrastructure that can host HPE certified applications for flexible and reliable IT services.

For more information, read the HPE Aruba Networking CX Feature Pack Ordering Guide.

Because AOS-CX is built on a modular Linux® architecture with a stateful database, our operating system provides the following unique capabilities:

- Easy access to all network state information allows unique visibility and analytics
- REST APIs and Python scripting for fine-grained programmability of network tasks
- A micro-services architecture that enables full integration with other workflow systems and services
- Continual state synchronization that provides superior fault tolerance and high availability
- Supports HPE Aruba Networking Fabric Composer—a software-defined orchestration solution that simplifies and accelerates leaf-spine network provisioning and day-to-day operations across rack-scale compute and storage infrastructure.
- All software processes communicate with the database rather than each other, ensuring near real-time state and resiliency and allowing individual software modules to be independently upgraded for higher availability

HPE Aruba Networking Central, Cloud-based network management

Flexible cloud-based or on-premises management for unified network operations of wired, WLAN, SD-WAN, and public cloud infrastructure. Designed to simplify day zero through day two operations with streamlined workflows. Switch management capabilities include configuration, onboarding, monitoring, troubleshooting, and reporting.

An HPE Aruba Networking Central Foundational license subscription enables comprehensive switch management capabilities that include configuration, onboarding, monitoring, troubleshooting, and reporting. An HPE Aruba Networking Central Advanced license expands these capabilities with premium security and AIOps, including the HPE Aruba Networking Central NetConductor Fabric Wizard and Policy Manager to enable Dynamic Segmentation and distributed enforcement at a global scale.

Additionally, a Central Advanced subscription enables the CX Advanced Feature Pack so there is no need to separately purchase a CX Advanced Feature Pack. This streamlines operational efficiency, reducing the need for your IT team to keep track of multiple subscriptions, active terms, and renewal dates.

For more information on HPE Aruba Networking Central subscriptions, see the HPE Aruba Networking Central SaaS Subscription Ordering Guide.

HPE Aruba Networking Network Analytics Engine

For enhanced visibility and troubleshooting, HPE Aruba Networking Network Analytics Engine (NAE) automatically interrogates and analyzes events that can impact a network's health. Advanced telemetry and automation provide the ability to easily identify and troubleshoot network, system, application and security related issues easily, through the use of Python agents, CLI-based agents and REST APIs.

The Time Series Database (TSDB) stores configuration and operational state data, making it available to quickly resolve network issues. The data may also be used to analyze trends, identify anomalies and predict future capacity requirements.

HPE Aruba Networking Switch Multi-Edit Software—automated switch configuration and management

The entire HPE Aruba Networking CX portfolio empowers IT teams to orchestrate multiple switch configuration changes for smooth end-to-end service rollouts. Switch Multi-Edit Software introduces automation that allows for rapid network-wide changes and ensures policy conformance post network updates. Intelligent capabilities include search, edit, validation (including conformance checking), deployment and audit features. Capabilities include:

- Centralized configuration with validation for consistency and compliance.
- Time savings via simultaneous viewing and editing of multiple configurations.
- Customized validation tests for corporate compliance and network design.
- Automated large-scale configuration deployment without programming.
- Network health and topology visibility via HPE Aruba Networking NAE integration.

Note: A separate software license is required to use HPE Aruba Networking Switch Multi-Edit Software.

HPE Ethernet Storage Fabric Optimized

HPE Aruba Networking CX 9300 Switch Series provides an ideal solution for data center, cloud and storage use cases that support top-of-rack server and storage connectivity and scale-out leaf-spine fabrics.

AOS-CX adds storage-optimization enhancements to ensure the low-latency, lossless network QoS and connectivity characteristics that storage requires.

HPE Aruba Networking Virtual Switching Extension
The ability of AOS-CX to maintain synchronous state across dual control planes allows a unique high availability solution called HPE Aruba Networking Virtual Switching Extension (VSX).

VSX is delivered through redundancy gained by deploying two chassis with an inter-switch link, with each chassis maintaining its independent control.

Designed using the best features of existing HA technologies such as Multi-chassis Link Aggregation (MC-LAG) and Virtual Switching Framework (VSF), VSX enables a distributed architecture that is highly available during upgrades or control plane events. Features include:

- Continuous configuration synchronization via AOS-CX
- Flexible active-active network designs at Layers 2 and 3
- Operational simplicity and usability for easy configuration
- High availability by design during upgrades including support for VSX Live Upgrade with LACP traffic draining.

Product capabilities

Performance
High-speed fully distributed architecture
- CX 9300-32D provides 25.6 Tbps for bidirectional switching and 5Bpps for forwarding. All switching and routing are wire-speed to meet the demands of bandwidth-intensive applications today and in the future
- CX 9300S-32C8D can support 16 Tbps switching capacity to fully support 32x100G and 8x400G

Scalable system design
- Provides investment protection to support future technologies and higher speed connectivity

Connectivity
CX 9300-32D High density port options
Choice of compact high-density port 1U switches with airflow direction flexibility include model with:

- 32-ports of 100GbE, 200GbE or 400GbE. 400 Gbps Ports can be configured as 4x100GbE, 2x200GbE, or 1x400GbE.

CX 9300S-32C8D High density port options
Choice of compact high-density port 1U switches with airflow direction flexibility include model with:

- 32-port 100G and 8x400G with 2-port of 1/10G for Telemetry*.
- Flexibility to support 10GbE/25GbE/100GbE/200GbE on the access ports

Jumbo frames
- Allows high-performance backups and disaster-recovery systems; supports a maximum frame size of 9,216 bytes

Unsupported Transceiver Mode (UTM)
- Allows enabling unsupported transceiver and cable for up to 400G
- Using unsupported transceiver/cable can void warranty, gets no support, and comes with no guarantee of operating

Loopback
- Supports internal loopback testing for maintenance purposes and increased availability; loopback detection protects against incorrect cabling or network configurations and can be enabled on a per-port or per-VLAN basis for added flexibility

Packet storm protection
- Protects against unknown broadcast, multicast, or unicast storms with user-defined thresholds

Quality of Service (QoS)
Strict priority (SP) queuing and Deficit Weighted Round Robin (DWRR)
- Enable congestion avoidance

Data Center Bridging (DCB)
- Supports lossless Ethernet networking standards to eliminate packet loss due to queue overflow
- Priority Flow Control (PFC) 7 priorities per port
- Enhanced Transmission Service (ETS)
- DCB Exchange Protocol (Pre-standard LLDP DCBX IEEE 1.01 version)

Flow-Control Guard
- Prevents accumulation of excessive congestion with periodic flushing. Avoids packets buffering for an extended time period

ECN with slope
- Marks packets as ECN-CE (Congestion Experienced. Helps TCP to reduce receive window size during congestion

Advanced lossless pool configuration
Dynamic pool configuration
- Enables lossless pool configuration without switch reboot

* Not currently supported in HPE Aruba Networking CX

Global buffering statistics

Storage Solution Support

- iSCSI, Lossless iSCSI, RDMA over Converged Ethernet version 2 (RoCE v1 and v2) and Non-Volatile Memory Express (NVMe over Fabrics)

Resiliency and high availability

Redundant and load-sharing fans and power supplies

- Increases total performance and power availability

Hot swappable power supply and fan modules

- Allows replacement of accessory modules without any operational impact on other modules or the switch operations

Separate data and control paths

- Separates control from services and keeps service processing isolated; increases security and performance

Virtual Switching Extension (VSX)

- VSX enables a distributed and redundant architecture by deploying two switches with each switch maintaining independent control yet staying synchronized during upgrades or failover. Also supports upgrades during live operation

Virtual Router Redundancy Protocol (VRRP)

- VRRP allows a group of switches to dynamically back each other up to create highly available routed environments
- It also supports route-leaking to/from default VRF

Bidirectional Forward Detection (BFD)

- Enable sub-second failure detection for rapid routing protocol re-balancing

Ethernet Ring Protection Switching (ERPS)

- Supports rapid protection and recovery in a ring topology

Unidirectional Link Detection (UDLD)

- Monitors link connectivity and shuts down ports at both ends if unidirectional traffic is detected, preventing loops in STP-based networks

IEEE 802.3ad LACP

- Supports up to 128 LAGs, with up to 16 members per LAG (32 for a VSX pair), with a user-selectable L1-4 hashing algorithm

Encryption

- IEEE 802.1AE MACsec provides switch-to-switch security on a link between two ports using standard encryption and authentication
- IPSec and VXLANsec capable hardware

Management

In addition to the HPE Aruba Networking CX Mobile App, NetEdit and HPE Aruba Networking Network Analytics Engine, the CX 9300 Switch Series offers the following:

Built-in programmable and easy to use REST API interface

Industry-standard CLI with a hierarchical structure

- Reduces training time and expenses, and increases productivity in multivendor installations

Management security

- Restricts access to critical configuration commands; offers multiple privilege levels with password protection; ACLs provide SNMP access; local and remote Syslog capabilities allow logging of all access.

IPSLA

- Monitors the network for degradation of various services, including voice.
- Monitoring is enabled via the NAE for history and for immediate automated gathering of additional information when anomalies are detected

SNMP v2c/v3

- Provides SNMP read and trap support of industry standard Management Information Base (MIB), and private extensions
- It supports STP TCN Trap, STP New Root and SNMP-Write-Set-Description on Interface.

sFlow® (RFC 3176)

- Provides scalable ASIC-based wire speed network monitoring and accounting with no impact on network performance; this allows network operators to gather a variety of sophisticated network statistics and information for capacity planning and real-time network monitoring purposes

Remote monitoring (RMON)

- Uses standard SNMP to monitor essential network functions and supports events, alarms, history, and statistics groups as well as a private alarm extension group

TFTP and SFTP support

- Offers different mechanisms for configuration updates; trivial FTP (TFTP) allows bidirectional transfers over a TCP/ IP network
- Secure File Transfer Protocol (SFTP) runs over an SSH tunnel to provide additional security

Debug and sampler utility
- Supports ping and traceroute for IPv4 and IPv6

Network Time Protocol (NTP)
- Synchronizes timekeeping among distributed time servers and clients; keeps timekeeping consistent among all clock-dependent devices within the network
- Can serve as the NTP server in a customer network

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

LACP-fallback
- Enables Zero Touch Provisioning over Link Aggregation Groups.

Dual flash images
- Provides independent primary and secondary operating system files for backup while upgrading

Multiple configuration files
- Stores files easily to the flash image

Layer 2 switching

VLAN
- Supports up to 4,040 port-based or IEEE 802.1Q-based VLANs

VLAN Translation
- Remaps VLANs during transit across a core network

Bridge Protocol Data Unit (BPDU) tunneling
- Transmits STP BPDUs transparently, allowing correct tree calculations across service providers, WANs, or MANs

Port mirroring
- Duplicates port traffic (ingress and egress) to a local or remote monitoring port; supports 4 mirroring groups, with an unlimited number of ports per group

STP
- Supports standard IEEE 802.1D STP, IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) for faster convergence, and IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)

Rapid Per-VLAN Spanning Tree plus (RPVST+)
- Allows each VLAN to build a separate Spanning Tree to improve link bandwidth usage in network environments with multiple VLANs

Internet Group Management Protocol (IGMP)
- Controls and manages the flooding of multicast packets in a Layer 2 network

Static VXLAN
- Allows operators to manually connect two or more VXLAN tunnel endpoints (VTEP)

Dynamic VXLAN with BGP-EVPN
- Deep segmentation for Spine/Leaf data center networks or Layer 3 campus designs with centralized gateway and symmetric Integrated Routing and Bridging (IRB) based distributed gateways VXLAN tunnels
- EVPN and VXLAN features include inbound and outbound route map support, matching L3VNI matching, local-preference setting, IP next-hop, as-path prepend, IP/IPv6 address prefix-list matching
- VXLAN DC multi-fabric DCI support

Multicast
- PIM Multicast Boundary (v4)
- VSX Graceful shutdown for IGMP/MLD
- Multicast NSF

IPv4 Multicast in VXLAN/EVPN Overlay
- Enable PIM-SM/IGMP snooping in the VXLAN Overlay

IPv6 VXLAN/EVPN Overlay Support
- Enables IPv6 traffic over the VXLAN overlay

VXLAN distributed anycast gateway
- Addressing mechanism that enables the use of the same gateway IP addresses across all the leaf switches part of a VXLAN network
- It supports VSX active forwarding for VXLAN underlay

VXLAN ARP/ND suppression
- Allows minimization of ARP and ND traffic flooding within individual VXLAN segments, thus optimizing the VXLAN network

Layer 3 services

Address Resolution Protocol (ARP)
- Determines the MAC address of another IP host in the same subnet; supports static ARPs
- Gratuitous ARP allows detection of duplicate IP addresses
- Proxy ARP allows normal ARP operation between subnets or when subnets are separated by a Layer 2 network

IP Directed Broadcast
- Supports directed broadcast on configured network subnets

Dynamic Host Configuration Protocol (DHCP)
- DHCP services are offered within a client network to simplify network management
- DHCP Relay enables DHCP operation across subnets

DHCP server
- Supports DHCP Smart Relay services (for IPv4 and IPv6) in customer networks
- DHCP relay coexistence with server
- Allows DHCP relay coexistence with DHCP server for both IPv4 and IPv6

Domain Name System (DNS)
- Provides a distributed database that translates domain names and IP addresses, which simplifies network design; supports client and server
- It also supports mDNS Gateway

Generic Routing Encapsulation (GRE)
- Enables tunneling traffic from site to site over a Layer 3 path

Layer 3 routing

Static IPv4 routing
- Provides simple manually configured IPv4 routing

Open shortest path first (OSPF)
- Delivers faster convergence; uses link-state routing Interior Gateway Protocol (IGP), which supports ECMP, NSSA, and MD5 authentication for increased security and graceful restart for faster failure recovery
- Enhanced features include configurable OSPF distance for type-5 LSA and configurable default-metric for OSPF default-information guide

Loopback IP redistribution in OSPF
- Allows redistribution of IPv4 and IPv6 addresses of loopback interface in OSFPv2/v3

Border Gateway Protocol 4 (BGP-4)
- Delivers an implementation of the Exterior Gateway Protocol (EGP) utilizing path vectors; uses TCP for enhanced reliability for the route discovery process; reduces bandwidth consumption by advertising only incremental updates; supports extensive policies for increased flexibility; scales to very large networks

Dynamic BGP peering
- Simplifies BGP configuration for ZTP scenarios and

Routing Information Protocol version 2 (RIPv2)
- Easy to configure routing protocol for small networks relying on User Datagram Protocol (UDP)

Routing Information Protocol Next Generation (RIPng)
- Extension of RIPv2 for support of IPv6 networking

Multiprotocol BGP (MP-BGP) with IPv6 Address Family
- Enables sharing of IPv6 routes using BGP and connections to BGP peers using IPv6

Policy Based Routing (PBR)
- Enables using a classifier to select traffic that can be forwarded based on policy set by the network administrator

6in4 tunnels
- Supports the tunneling of IPv6 traffic in an IPv4 network

IP performance optimization
- Provides a set of tools to improve the performance of IPv4 networks; includes directed broadcasts, customization of TCP parameters, support of ICMP error packets, and extensive display capabilities

Static IPv6 routing
- Provides simple manually configured IPv6 routing

Dual IP stack
- Maintains separate stacks for IPv4 and IPv6 to ease the transition from an IPv4-only network to an IPv6-only network design

OSPFv3
- Provides OSPF support for IPv6

Equal-Cost Multipath (ECMP)
- Enables multiple equal-cost links in a routing environment to increase link redundancy and scale bandwidth

Generic Routing Encapsulation (GRE)
- Enables tunneling traffic from site to site over a Layer 3 path

Security

TAA compliance
- TAA compliant product, uses FIPS 140-2 validated cryptography for protection of sensitive information

Access control list (ACL) Features
- Supports powerful ACLs for both IPv4 and IPv6. Supports creation of object groups representing sets of devices like IP addresses. For instance, IT management devices could be grouped in this way
- ACLs can also protect control plane services such as SSH, SNMP, NTP or web servers

Enrollment over Secure Transport (EST)
- Enables secure certificate enrollment, allowing for easier enterprise management of PKI

Remote Authentication Dial-In User Service (RADIUS)
- Eases security access administration by using a password authentication server

Terminal Access Controller Access-Control System (TACACS+)
- Delivers an authentication tool using TCP with encryption of the full authentication request, providing additional security

RadSec
- Enable RADIUS authentication and accounting data to be passed safely and reliably across insecure networks such as the internet

Management access security
- AOS-CX provides for both on-box as well as off- box authentication for administrative access. RADIUS or TACACS+ can be used to provide encrypted user authentication
- Additionally, TACACS+ can also provide user authorization services

Secure shell (SSHv2)
- Uses external servers to securely log in to a remote device; with authentication and encryption, it protects against IP spoofing and plain-text password interception; increases the security of Secure FTP (SFTP) transfers

Multicast

Internet Group Management Protocol (IGMP)
- Enables establishing multicast group memberships in IPv4 networks; supports IGMPv1, v2, and v3

Multicast Listener Discovery (MLD)
- Enable discovery of IPv6 multicast listeners; supports MLDv, v2

Multicast Service Delivery Protocol (MSDP) for Anycast RP
- MSDP used for Anycast RP is an intradomain feature that provides redundancy and load-sharing capabilities

MSDP Mesh Groups
- Allows to avoid SA messages flood to other mesh group peers

PIM-Dense Mode
- Floods multicast traffic to every corner of the network (push-model). Method is for delivering data to receivers without receivers requesting the data. Can be efficient in certain deployments in which there are active receivers on every subnet in the network. Branches without downstream receivers are pruned from the forwarding trees.

Fast-Leave (FL) and Forced Fast-Leave (FFL)
- FL and FFL for IGMP/MLD speed up the process of blocking unnecessary Multicast traffic to a switch port that is connected to end nodes for IGMP. They help to eliminate the CPU overhead of having to generate an IGMP/MLD Group- Specific Query message.

Protocol Independent Multicast (PIM)
- Protocol Independent Multicast for IPv4 and IPv6 supports one-to-many and many-to-many media casting use cases such as IPTV over IPv4 and IPv6 networks. Support for PIM Sparse Mode (PIM-SM, IPv4, IPv6), Source-Specific Multicast (SSM), and Dense Mode (DM).

Additional information
- Green initiative support
- Provides support for RoHS (EN50581:2012) regulations

Korea government security features
- Ensure configuration integrity
- Limit concurrent users for web access
- Platforms: All CX platforms

Analytics
- AIOPS—NAE Agent & Engine Improvements—Unicast Routing
- AIOPS—NAE Agent & Engine Improvements—Client Services

Customer first, customer last support

When your network is important to your business, then your business needs the backing of HPE Aruba Networking Support Services. Partner with HPE Aruba Networking product experts to increase your team productivity, keep pace with technology advances, software releases, and obtain break-fix support.

Foundational Care for HPE Aruba Networking support services include priority access to HPE Aruba Networking Technical Assistance Center (TAC) engineers 24x7x365, flexible hardware and on-site support options, and total coverage for HPE Aruba Networking products. HPE Aruba Networking switches with assigned HPE Aruba Networking Central subscriptions benefit with option for additional hardware support only.

HPE Aruba Networking Pro Care adds fast access to senior HPE Aruba Networking TAC engineers, who are assigned as a single point of contact for case management, reducing the time spent addressing and resolving issues.

For complete details on Foundational Care and HPE Aruba Networking Pro Care, please visit: arubanetworks.com/supportservices/

Warranty, services, and support

Warranty

- See arubanetworks.com/support- services/ product-warranties/ for warranty and support information included with your product purchase

Please reference the below web pages for more detailed information HPE Aruba Networking AOS-CX software releases and features.

AOS-CX Switch Software Documentation Portal arubanetworks.com/techdocs/AOS-CX/help_ portal/Content/home/

HPE Aruba Networking Switch Feature Navigator feature-navigator.arubanetworks.com/

For support and services information, visit HPE Aruba Networking Support Services

Technical specifications

	R9A29A HPE Aruba Networking 9300 32D 32p 100/200/400G QSFP-DD 2p 10G SFP+ Front-to-Back 6xR8Z99A Front-to-Back Fans 2xR8Z97A Front-to-Back 1500W 100-240VAC Power Supply	**R9A30A HPE Aruba Networking 9300 32D 32p 100/200/400G QSFP-DD 2p 10G SFP+ Back-to-Front 6xR9A00A Back-to-Front Fans 2xR8Z98A Back-to-Front 1500W 100-240VAC Power Supply**
Description	The HPE Aruba Networking CX 9300 32D is a next-generation 25.6 Tbps, 1U fixed configuration switch supporting 32-ports of 100GbE, 200GbE or 400GbE. The switch is an ideal solution for flexible, cost-effective, high-density networking for server, storage, and intra-fabric connectivity. This solution helps protect enterprises investment as they transition server farms from 10GbE and 25GbE to 100GbE/400GbE EVPN-VXLAN spine configurations at reduced power and a smaller footprint.	
Power supplies	2 redundant power supplies, field-replaceable, hot-swappable	
Fans	6 redundant fans, field-replaceable, hot-swappable	
Physical characteristics		
Dimensions	17.26" x 23.23" x 1.71" (43.84 cm x 59 cm x 4.35 cm)	
Full configuration weight	26.12 lb (11.85 kg)	
Additional specifications		
CPU	x86	
Memory, drive and flash	128 GB m.2 SSD, 4 GB mSATA, 16 MB SPI Flash, 16 GB x2 SODIMM	
Packet buffer	132 MB	
Performance[2]		
Switching capacity	25.6 Tbps	
IPv4 host table	163,840	

	R9A29A HPE Aruba Networking 9300 32D 32p 100/200/400G QSFP-DD 2p 10G SFP+ Front-to-Back 6xR8Z99A Front-to-Back Fans 2xR8Z97A Front-to-Back 1500W 100-240VAC Power Supply	R9A30A HPE Aruba Networking 9300 32D 32p 100/200/400G QSFP-DD 2p 10G SFP+ Back-to-Front 6xR9A00A Back-to-Front Fans 2xR8Z98A Back-to-Front 1500W 100-240VAC Power Supply
Performance[2]		
IPv6 host table	81,920	
IPv4 unicast routes	65,536 (1,269,760 Unidimensional for Spine)	
IPv6 unicast routes	32,768 (624,640 Unidimensional for Spine)	
MAC table size	81,920 (32,768 Unidimensional for Spine)	
IGMP groups	8,192	
MLD groups	8,192	
IPv4 multicast routes	8,192	
IPv6 multicast routes	4,096	
Environmental		
Operating temperature	32°F to 113°F (0°C to 45°C) at sea level. Derate—1°C for every 1,000 ft to 10,000 ft. (3.0 km)	32°F to 95°F (0°C to 35°C) at sea level. Derate—1°C for every 1,000 ft to 10,000 ft. (3.0 km)
Operating relative humidity	15% to 95% @ 113°F (45°C) non-condensing	15% to 95% @ 95°F (35°C) non-condensing
Nonoperating/storage temperature	-40°C to 70°C (-40°F to 158°F) up to 4.6km (15,000 ft)	
Nonoperating/storage relative humidity	15% to 90% @ 158°F (70°C) non-condensing	
Max operating altitude	Up to 10,000 ft (3 km)	
Max non-operating altitude	Up to 15,000 ft (4.6 km)	
Primary Airflow	Front-to-Back	Back-to-Front
Acoustic[3]	L_{Wad} = 8.1 Bel L_{pAm} (Bystander) = 61 dB	L_{Wad} = 8.3 Bel L_{pAm} (Bystander) = 62 dB
Electrical characteristics		
Frequency	50–60Hz	
Voltage	100-127/220-240 VAC 200—240V required to support 8—32 port production configuration	
Current	12A/8A	
Power consumption (230VAC)	100% Traffic Rate: 675W; Idle: 210W	100% Traffic Rate: 688W; Idle: 221W

[2] Some of these scaling numbers assume shared tables and unidimensional traffic.

[3] Values presented are the Declared A-Weighted Sound Power Level (LWAd) and the mean Bystander A-Weighted Sound Pressure Level (LpAm)

	R9A29A HPE Aruba Networking 9300 32D 32p 100/200/400G QSFP-DD 2p 10G SFP+ Front-to-Back 6xR8Z99A Front-to-Back Fans 2xR8Z97A Front-to-Back 1500W 100-240VAC Power Supply	**R9A30A HPE Aruba Networking 9300 32D 32p 100/200/400G QSFP-DD 2p 10G SFP+ Back-to-Front 6xR9A00A Back-to-Front Fans 2xR8Z98A Back-to-Front 1500W 100-240VAC Power Supply**

Safety

Safety-EU EN 62368-1:2014 +A11:2017
EN 62368-1:2018+A11:2020
Safety-Worldwide IEC 62368-1:2014 (Second Edition)
IEC 62368-1:2018 (Third Edition)
Safety-North America UL 62368-1 3rd, Ed. CAN/CSA-C22.2 N. 62368-1.19 3rd. Ed.

EMC

Immunity
EN55024:2015 / CISPR 24:2015 ESD: EN 61000-4-2
Radiated: EN 61000-4-3
EFT/Burst: EN 61000-4-4
Surge: EN 61000-4-5
Conducted: EN 61000-4-6
Power frequency magnetic field: IEC 61000-4-8 Voltage dips and interruptions: EN 61000-4-11 Harmonics: EN 61000-3-2, IEC 61000-3-2
Flicker: EN 61000-3-3, IEC 61000-3-3

Emissions
EN 55032:2015 / CISPR 32:2015, Class A VCCI-32:2016 Class A
CNS 13483 AS/NZS
ICES-003 Issue 5
FCC CFR 47 Part 15:2010, Class A
RoHS-6 Compliant (EN 50581:2012)

Lasers

EN60825-1:2014/IEC 60825-1: 2014 Class 1
Class 1 Laser Products/Laser Klasse 1

Management

SNMP
REST
RJ-45 serial
Micro USB console port
RJ-45 OOBM Port

Mounting and enclosure

Mounts in an EIA standard 19-inch rack or other equipment cabinet; horizontal surface mounting only;
2-post Rack Mount Kit included with switch, optional 4-post rack mount kit must be ordered separately—JL483C.

	S0F81A HPE Aruba Networking 9300S-32C8D 32p QSFP28 100G 8p QSFP-DD 400G Front-to-Back TAA Bundle 6xS0F93A Front-to-Back Fan 2xS0F91A Front-to-Back 1600W 12VDC C15 AC Power Supply	S0F82A HPE Aruba Networking 9300S-32C8D 32p QSFP28 100G 8p QSFP-DD 400G Front-to-Back Bundle 6xS0F93A Front-to-Back Fan 2xS0F91A Front-to-Back 1600W 12VDC C15 AC Power Supply	S0F83A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front TAA Bundle 6xS0F94A Back-to-Front Fan 2xS0F92A Back-to-Front 1600W 12VDC C15 AC Power Supply	S0F84A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front Bundle 6xS0F94A Back-to-Front Fan 2xS0F92A Back-to-Front 1600W 12VDC C15 AC Power Supply
Description	The HPE Aruba Networking CX 9300S-32C8D is a next-generation 16 Tbps, 1U fixed configuration switch supporting 32-ports of 10/25/100/200GbE, 8-port 400GbE. The switch is an ideal solution for flexible, cost-effective, high-density networking for server, storage, and intra-fabric connectivity. This solution helps protect enterprises investment as they transition server farms from 10GbE and 25GbE to 100GbE/400GbE EVPN-VXLAN spine configurations at reduced power and a smaller footprint.			
Power supplies	2 redundant power supplies, field-replaceable, hot-swappable			
Fans	6 redundant fans, field-replaceable, hot-swappable			
Physical characteristics				
Dimensions	17.4" x 24" x 1.73" (44.3 cm x 61 cm x 4.4 cm)			
Full configuration weight	30.0 lb (13.6 kg)			
Additional specifications				
CPU	x86			
Memory, drive and flash	128 GB m.2 SSD, 16 MB SPI Flash, 32 GB x2 SODIMM			
Packet buffer	82 MB			
Performance[2]				
Switching capacity	16 Tbps			
IPv4 host table	96K (262K for Spine)			
IPv6 host table	48K (131K for Spine)			
IPv4 unicast routes	725K for Spine			
IPv6 unicast routes	360K for Spine			
MAC table size	48K			
IGMP groups	8,196			
MLD groups	4,192			
IPv4 multicast routes	8,196			

[2] Some of these scaling numbers assume shared tables and unidimensional traffic.

	S0F81A HPE Aruba Networking 9300S-32C8D 32p QSFP28 100G 8p QSFP-DD 400G Front-to-Back TAA Bundle 6xS0F93A Front-to-Back Fan 2xS0F91A Front-to-Back 1600W 12VDC C15 AC Power Supply	**S0F82A HPE Aruba Networking 9300S-32C8D 32p QSFP28 100G 8p QSFP-DD 400G Front-to-Back Bundle 6xS0F93A Front-to-Back Fan 2xS0F91A Front-to-Back 1600W 12VDC C15 AC Power Supply**	**S0F83A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front TAA Bundle 6xS0F94A Back-to-Front Fan 2xS0F92A Back-to-Front 1600W 12VDC C15 AC Power Supply**	**S0F84A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front Bundle 6xS0F94A Back-to-Front Fan 2xS0F92A Back-to-Front 1600W 12VDC C15 AC Power Supply**
Performance[2]				
IPv6 multicast routes	8,196			
Environmental				
Operating temperature	32°F to 113°F (0°C to 45°C) at sea level. Derate— 1°C for every 1,000 ft to 10,000 ft. (3.0 km)		32°F to 104F (0°C to 40°C) at sea level. Derate— 1°C for every 1,000 ft to 10,000 ft. (3.0 km)	
Operating relative humidity	5% to 95% @ 113°F (45°C) non-condensing		5% to 95% @ 104°F (40°C) non-condensing	
Nonoperating/ storage temperature	-40°C to 70°C (-40°F to 158°F) up to 4.6km (15,000 ft)			
Nonoperating/ storage relative humidity	5% to 95% @ 149°F (65°C) non-condensing			
Max operating altitude	Up to 10,000 ft (3 km)			
Max nonoperating altitude	Up to 15,000 ft (4.6 km)			
Primary Airflow	Front-to-Back		Back-to-Front	
Acoustic[3]	L_{WAd} = 6.6B L_{pAm} (bystander) = 48.3 dB		L_{WAd} = 6.4B L_{pAm} (bystander) = 46.0 dB	
Electrical characteristics				
Frequency	50–60Hz			
Voltage	100-127 VAC 50/60Hz 12A 200-240 VAC 50/60Hz 10A 200—240V required to support >5W transceiver power in any port			
Current	12A/10A			
Power consumption (240VAC)	Idle: 185W; Max: 920W; Typical: 395W#			

[2] Some of these scaling numbers assume shared tables and unidimensional traffic.

[3] Values presented are the Declared A-Weighted Sound Power Level (LWAd) and the mean Bystander A-Weighted Sound Pressure Level (LpAm)

Max power at 40°C, SR Optics and 100% traffic. Typical power consumption at 25°C, DAC cables and 50% traffic load

	S0F81A HPE Aruba Networking 9300S-32C8D 32p QSFP28 100G 8p QSFP-DD 400G Front-to-Back TAA Bundle 6xS0F93A Front-to-Back Fan 2xS0F91A Front-to-Back 1600W 12VDC C15 AC Power Supply	S0F82A HPE Aruba Networking 9300S-32C8D 32p QSFP28 100G 8p QSFP-DD 400G Front-to-Back Bundle 6xS0F93A Front-to-Back Fan 2xS0F91A Front-to-Back 1600W 12VDC C15 AC Power Supply	S0F83A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front TAA Bundle 6xS0F94A Back-to-Front Fan 2xS0F92A Back-to-Front 1600W 12VDC C15 AC Power Supply	S0F84A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front Bundle 6xS0F94A Back-to-Front Fan 2xS0F92A Back-to-Front 1600W 12VDC C15 AC Power Supply
Safety				
	Safety-EU EN 62368-1:2014 +A11:2017 EN 62368-1:2018+A11:2020 Safety-Worldwide IEC 62368-1:2014 (Second Edition) IEC 62368-1:2018 (Third Edition) Safety-North America UL 62368-1 3rd, Ed. CAN/CSA-C22.2 N. 62368-1.19 3rd. Ed.			
EMC				
	Immunity EN 55035:2017+A11:2020 KS C 9835, KS C 9610-4-4 Radiated: EN 61000-4-3 EFT/Burst: EN 61000-4-4 Surge: EN 61000-4-5 Conducted: EN 61000-4-6 Power frequency magnetic field: IEC 61000-4-8 Voltage Dips and interruptions: EN 61000-4-11 Harmonics: EN 61000-3-2, IEC 61000-3-2 Flicker: EN 61000-3-3, IEC 61000-3-3 Emissions EN 55032:2015+A11:2020/CISPR32 :2015+A1:2020, Class A ICES-003 Issue 7:2020, Class A FCC 47 CFR part 15 subpart B, Class A KS C 9832 QCVN 118:2018/BTTTT VCCI-CISPR32:2016 CNS 15936:2016			
Lasers				
	EN60825-1:2014/IEC 60825-1: 2014 Class 1 Class 1 Laser Products/Laser Klasse 1			
Management				
	SNMP REST RJ-45 and USB-C serial console connectors RJ-45 OOBM Port			
Mounting and enclosure				
	Mounts in an EIA standard 19-inch rack or other equipment cabinet; horizontal surface mounting only; 2-post Rack Mount Kit included with switch, optional 4-post rack mount kit must be ordered separately—J9583B.			

	S0F87A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front 6xFan 2xDC TAA Bundle	S0F88A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front 6xFan 2xDC Bundle
Description	The HPE Aruba Networking CX 9300S-32C8D is a next-generation 16 Tbps, 1U fixed configuration switch supporting 32-ports of 10/25/100/200GbE, 8-port 400GbE. The switch is an ideal solution for flexible, cost-effective, high-density networking for server, storage, and intra-fabric connectivity. This solution helps protect enterprises investment as they transition server farms from 10GbE and 25GbE to 100GbE/400GbE EVPN-VXLAN spine configurations at reduced power and a smaller footprint.	
Power supplies	2 redundant power supplies, field-replaceable, hot-swappable	
Fans	6 redundant fans, field-replaceable, hot-swappable	
Physical characteristics		
Dimensions	17.4" x 24" x 1.73" (44.3 cm x 61 cm x 4.4 cm)	
Full configuration weight	30.2 lb (13.7 kg)	
Additional specifications		
CPU	x86	
Memory, drive and flash	128 GB m.2 SSD, 16 MB SPI Flash, 32 GB x2 SODIMM	
Packet buffer	82 MB	
Performance[2]		
Switching capacity	16 Tbps	
IPv4 host table	96K (262K for Spine)	
IPv6 host table	48K (131K for Spine)	
IPv4 unicast routes	725K for Spine	
IPv6 unicast routes	360K for Spine	
MAC table size	48K	
IGMP groups	8,196	
MLD groups	4,192	
IPv4 multicast routes	8,196	
IPv6 multicast routes	8,196	

[2] Some of these scaling numbers assume shared tables and unidimensional traffic.

	S0F87A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front 6xFan 2xDC TAA Bundle	S0F88A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front 6xFan 2xDC Bundle
Environmental		
Operating temperature	32°F to 104F (0°C to 40°C) at sea level. Derate— 1°C for every 1,000 ft to 10,000 ft. (3.0 km)	
Operating relative humidity	5% to 95% @ 104°F (40°C) non-condensing	
Nonoperating/storage temperature	-40°C to 70°C (-40°F to 158°F) up to 4.6km (15,000 ft)	
Nonoperating/storage relative humidity	5% to 95% @ 149°F (65°C) non-condensing	
Max operating altitude	Up to 10,000 ft (3 km)	
Max non-operating altitude	Up to 15,000 ft (4.6 km)	
Primary Airflow	Back-to-Front	
Acoustic[3]	L_{WAd} = 6.9 dB L_{pAm} (bystander) = 50.3 dB	
Electrical characteristics		
Frequency	50–60Hz	
Voltage	–40VDC to –75VDC 40A	
Current	40A	
Power consumption (DC)	Idle: 210W; Max: 950W; Typical: 420W#	
Safety		
	Safety-EU EN 62368-1:2014 +A11:2017 EN 62368-1:2018+A11:2020 Safety-Worldwide IEC 62368-1:2014 (Second Edition) IEC 62368-1:2018 (Third Edition) Safety-North America UL 62368-1 3rd, Ed. CAN/CSA-C22.2 N. 62368-1.19 3rd. Ed.	

[3] Values presented are the Declared A-Weighted Sound Power Level (LWAd) and the mean Bystander A-Weighted Sound Pressure Level (LpAm)

Max power at 40°C, SR Optics and 100% traffic. Typically power consumption at 25°C, DAC cables and 50% traffic load

	S0F87A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front 6xFan 2xDC TAA Bundle	S0F88A HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front 6xFan 2xDC Bundle
EMC		
	Immunity EN 55035:2017+A11:2020 KS C 9835, KS C 9610-4-4 Radiated: EN 61000-4-3 EFT/Burst: EN 61000-4-4 Surge: EN 61000-4-5 Conducted: EN 61000-4-6 Power frequency magnetic field: IEC 61000-4-8 Voltage Dips and interruptions: EN 61000-4-11 Harmonics: EN 61000-3-2, IEC 61000-3-2 Flicker: EN 61000-3-3, IEC 61000-3-3 Emissions EN 55032:2015+A11:2020/CISPR32 :2015+A1:2020, Class A ICES-003 Issue 7:2020, Class A FCC 47 CFR part 15 subpart B, Class A KS C 9832 QCVN 118:2018/BTTTT VCCI-CISPR32:2016 CNS 15936:2016	
Lasers		
	EN60825-1:2014/IEC 60825-1: 2014 Class 1 Class 1 Laser Products/Laser Klasse 1	
Management		
	SNMP REST RJ-45 and USB-C serial console connectors RJ-45 OOBM Port	
Mounting and enclosure		
	Mounts in an EIA standard 19-inch rack or other equipment cabinet; horizontal surface mounting only; 2-post Rack Mount Kit included with switch, optional 4-post rack mount kit must be ordered separately—J9583B.	

Standards and protocols

The following standards and protocols are supported:

- IEEE 802.1AB-2009
- IEEE 802.1ak-2007
- IEEE 802.1t-2001
- IEEE 802.1AX-2008 Link Aggregation
- IEEE 802.1p Traffic Class Expediting and Dynamic Multicast Filtering
- IEEE 802.1Q VLANs
- IEEE 802.1s Multiple Spanning Trees
- IEEE 802.1w Rapid Reconfiguration of Spanning Tree
- IEEE 802.3ad Link Aggregation Control Protocol (LACP)
- IEEE 802.3x Flow Control
- IEEE 802.3z Gigabit Ethernet
- IEEE 802.3by 25 Gigabit Ethernet
- IEEE 802.3ba 40 Gigabit Ethernet
- IEEE 802.3cd 50 Gigabit Ethernet
- IEEE 802.3ba and 802.3cd 100 Gigabit Ethernet
- IEEE 802.3bs 200 and 400 Gigabit Ethernet
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 768 User Datagram Protocol
- RFC 813 Window and Acknowledgement Strategy in TCP
- RFC 815 IP datagram reassembly algorithms
- RFC 879 TCP maximum segment size and related topics
- RFC 896 Congestion control in IP/TCP internetworks
- RFC 917 Internet subnets
- RFC 919 Broadcasting Internet Datagrams
- RFC 922 Broadcasting Internet Datagrams in the Presence of Subnets (IP_BROAD)
- RFC 925 Multi-LAN address resolution
- RFC 1215 Convention for defining traps for use with the SNMP
- RFC 1256 ICMP Router Discovery Messages
- RFC 1393 Traceroute Using an IP Option
- RFC 1591 Domain Name System Structure and Delegation
- RFC 1657 Definitions of Managed Objects for BGP-4 using SMIv2
- RFC 1772 Application of the Border Gateway Protocol in the Internet
- RFC 1981 Path MTU Discovery for IP version 6
- RFC 1997 BGP Communities Attribute
- RFC 1998 An Application of the BGP Community Attribute in Multi-home Routing
- RFC 2385 Protection of BGP Sessions via the TCP MD5 Signature Option
- RFC 2401 Security Architecture for the Internet Protocol
- RFC 2402 IP Authentication Header
- RFC 2406 IP Encapsulating Security Payload (ESP)
- RFC 2460 Internet Protocol, Version 6 (IPv6) Specification
- RFC 2545 Use of BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
- RFC 2710 Multicast Listener Discovery (MLD) for IPv6
- RFC 2787 Definitions of Managed Objects for the Virtual Router Redundancy Protocol
- RFC 2918 Route Refresh Capability for BGP-4
- RFC 2934 Protocol Independent Multicast MIB for IPv4
- RFC 3137 OSPF Stub Router Advertisement
- RFC 3176 InMon Corporation's sFlow: A Method for Monitoring Traffic in Switched and Routed Networks
- RFC 3484: Default Address Selection for Internet Protocol version 6 (IPv6)
- RFC 3509 Alternative Implementations of OSPF Area Border Routers
- RFC 3623 Graceful OSPF Restart
- RFC 3810 Multicast Listener Discovery Version 2 (MLDv2) for IPv6
- RFC 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
- RFC 4251 The Secure Shell (SSH) Protocol
- RFC 4271 A Border Gateway Protocol 4 (BGP-4)
- RFC 4273 Definitions of Managed Objects for BGP-4
- RFC 4291 IP Version 6 Addressing Architecture
- RFC 4292 IP Forwarding Table MIB

- RFC 4293 Management Information Base for the Internet Protocol (IP)
- RFC 4360 BGP Extended Communities Attribute
- RFC 4486 Subcodes for BGP Cease Notification Message
- RFC 4552 Authentication/Confidentiality for OSPFv3
- RFC 4724 Graceful Restart Mechanism for BGP
- RFC 4760 Multiprotocol Extensions for BGP-4
- RFC 4940 IANA Considerations for OSPF
- RFC 5095: Deprecation of Type 0 Routing Headers in IPv6
- RFC 5187 OSPFv3 Graceful Restart
- RFC 5701 IPv6 Address Specific BGP Extended Community Attribute
- RFC 6987 OSPF Stub Router Advertisement
- RFC 7047 The Open vSwitch Database Management Protocol
- RFC 7059 A Comparison of IPv6-over-IPv4 Tunnel Mechanisms
- RFC 7313 Enhanced Route Refresh Capability for BGP-4
- RFC 8201 Path MTU Discovery for IP version 6

Product SKUs and description

SKU	Description
R9A29A	HPE Aruba Networking 9300 32D 32-port 100/200/400G QSFP-DD 2-port 10G SFP+ Front-to-Back 6 Fans 2 AC PSU Bundle
R9A30A	HPE Aruba Networking 9300 32D 32-port 100/200/400G QSFP-DD 2-port 10G SFP+ Back-to-Front 6 Fans 2 AC PSU Bundle
R8Z96A	HPE Aruba Networking 9300 32D 32-port 100/200/400G QSFP-DD 2-port 10G Switch
R8Z99A	HPE Aruba Networking 9300 Front-to-Back Fan
R9A00A	HPE Aruba Networking 9300 Back-to-Front Fan
R8Z97A	HPE Aruba Networking 9300 1500W 100-240VAC Front-to-Back AC Power Supply
R8Z98A	HPE Aruba Networking 9300 1500W 100-240VAC Back-to-Front AC Power Supply
S0F82A	HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Front-to-Back 6xFan 2xAC Bundle
S0F84A	HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front 6xFan 2xAC Bundle
S0F88A	HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front 6xFan 2xDC Bundle
S0F81A	HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Front-to-Back 6xFan 2xAC TAA Bundle
S0F83A	HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front 6xFan 2xAC TAA Bundle
S0F87A	HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Back-to-Front 6xFan 2xDC TAA Bundle
S0F95A	HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G TAA Switch
S0F96A	HPE Aruba Networking 9300S 32p QSFP28 100G 8p QSFP-DD 400G Switch
S0F89A	HPE Aruba Networking 12VDC 1600W 40-75VDC Front-to-Back Input Screw Terminal Power Supply Unit
S0F90A	HPE Aruba Networking 12VDC 1600W 40-75VDC Back-to-Front Input Screw Terminal Power Supply Unit

Product SKUs and description

SKU	Description
S0F91A	HPE Aruba Networking 12VDC 1600W Front-to-Back C15 AC Power Supply Unit
S0F92A	HPE Aruba Networking 12VDC 1600W Back-to-Front C15 AC Power Supply Unit
S0F93A	HPE Aruba Networking X761 Front-to-Back Fan
S0F94A	HPE Aruba Networking X762 Back-to-Front Fan

HPE Aruba Networking CX advanced feature packs

SKU	Description
S0T87AAE	HPE Aruba Networking CX Soft 8/9xxx Sw Adv 1y E-STU
S0T88AAE	HPE Aruba Networking CX Soft 8/9xxx Sw Adv 3y E-STU
S0T89AAE	HPE Aruba Networking CX Soft 8/9xxx Sw Adv 5y E-STU
S0T90AAE	HPE Aruba Networking CX Soft 8/9xxx Sw Adv 7y E-STU
S0T86AAE	HPE Aruba Networking CX Soft 8/9xxx Sw Adv 10y E-STU

HPE Aruba Networking Central CX switch subscription SKUs

SKU	Description
R3K03AAE	HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Foundational 1-Year Subscription E-STU
R3K04AAE	HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Foundational 3-Year Subscription E-STU
R3K05AAE	HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Foundational 5-Year Subscription E-STU
R3K06AAE	HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Foundational 7-Year Subscription E-STU
R3K07AAE	HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Foundational 10-Year Subscription E-STU
JZ540AAE	HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Advanced 1-Year Subscription E-STU
JZ541AAE	HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Advanced 3-Year Subscription E-STU
JZ542AAE	HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Advanced 5-Year Subscription E-STU
JZ543AAE	HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Advanced 7-Year Subscription E-STU
JZ544AAE	HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Advanced 10-Year Subscription E-STU
R6U88AAE	HPE Aruba Networking Central On-Premises 8xxx Switch Foundational 1-Year Subscription E-STU
R6U89AAE	HPE Aruba Networking Central On-Premises 8xxx Switch Foundational 3-Year Subscription E-STU
R6U90AAE	HPE Aruba Networking Central On-Premises 8xxx Switch Foundational 5-Year Subscription E-STU
R6U91AAE	HPE Aruba Networking Central On-Premises 8xxx Switch Foundational 7-Year Subscription E-STU
R6U92AAE	HPE Aruba Networking Central On-Premises 8xxx Switch Foundational 10-Year Subscription E-STU

HPE Aruba Networking Fabric Composer ordering information

SKU	Description
R7G99AAE	HPE Aruba Networking Fabric Composer Device Management Service Tier 4 Switch 1-Year Subscription E-STU
R7H00AAE	HPE Aruba Networking Fabric Composer Device Management Service Tier 4 Switch 3-Year Subscription E-STU
R7H01AAE	HPE Aruba Networking Fabric Composer Device Management Service Tier 4 Switch 5-Year Subscription E-STU

Transceivers, cables, switches and NICS[4]

SKU	Description
JH231A[5]	HPE X142 40G QSFP+ MPO SR4 Transceiver
JH232A	HPE X142 40G QSFP+ LC LR4 SM Transceiver

[4] QSFP-DD MSA supports QSFP-DD (400G), QSFP56 (200G), QSFP28 (100G), QSFP+ (40G) products. A QSA28 adapter supports use of 25G, and 10G XCVRs. The QSFP28 Adapter and DACs will be enabled in future software releases for the 9300 32D model. See the HPE Aruba Networking AOS-S and AOS-CX Transceiver guide for details.

[5] JH231A & JL233A (40G-SR4/eSR4) can also be used to support four (4) breakouts to J9150D (10G-SR) over MMF OM4 fiber split cable.

Transceivers, cables, switches and NICS[4]

SKU	Description
JH233A[5]	HPE X142 40G QSFP+ MPO ESR4 300M XCVR
JL308A	HPE Aruba Networking 40G QSFP+ LC BiDi 150m MMF XCVR
Q9G82A	HPE Aruba Networking 40G QSFP+ LC ER4 40km SMF XCVR
R0Z22A	HPE Aruba Networking 40G QSFP+ to QSFP+ 7m AOC
R0Z23A	HPE Aruba Networking 40G QSFP+ to QSFP+ 15m AOC
R0Z24A	HPE Aruba Networking 40G QSFP+ to QSFP+ 30m AOC
JL309A[7]	HPE Aruba Networking 100G QSFP28 MPO SR4 MMF XCVR
JL310A	HPE Aruba Networking 100G QSFP28 LC LR4 SMF XCVR
JL743A	HPE Aruba Networking 100G QSFP28 LC ER4L 40km SMF XCVR
JL856A	HPE Aruba Networking 100G QSFP28 to QSFP28 2m AOC
S4B44A	HPE ANW 100G SR1.2 QSFP28 LC 100m XCVR
R0Z27A	HPE Aruba Networking 100G QSFP28 to QSFP28 7m AOC
R0Z28A	HPE Aruba Networking 100G QSFP28 to QSFP28 15m AOC
R0Z29A	HPE Aruba Networking 100G QSFP28 to QSFP28 30m AOC
R0Z30A	HPE Aruba Networking 100G QSFP28 LC CWDM4 2km SMF XCVR
R9B63A[8]	HPE Aruba Networking 100G QSFP28 LC FR1 SMF 2km Transceiver
R9B41A	HPE Aruba Networking 400G QSFP-DD MPO-16 SR8 100m MMF Transceiver
R9B42A[8]	HPE Aruba Networking 400G QSFP-DD MPO-12 eDR4 2km SMF Transceiver
R9B45A	HPE Aruba Networking 400G QSFP-DD to QSFP-DD 3m Active Optical Cable
R9B43A	HPE Aruba Networking 400G QSFP-DD to QSFP-DD 7m Active Optical Cable
R9B47A	HPE Aruba Networking 400G QSFP-DD to QSFP-DD 15m Active Optical Cable
R9B46A	HPE Aruba Networking 400G QSFP-DD to QSFP-DD 30m Active Optical Cable
R9B44A	HPE Aruba Networking 400G QSFP-DD to QSFP-DD 50m Active Optical Cable
R9B60A	HPE Aruba Networking 200G QSFP-DD to 2x QSFP28 100G 3m Active Optical Cable
R9B58A	HPE Aruba Networking 200G QSFP-DD to 2x QSFP28 100G 7m Active Optical Cable
R9B62A	HPE Aruba Networking 200G QSFP-DD to 2x QSFP28 100G 15m Active Optical Cable
R9B61A	HPE Aruba Networking 200G QSFP-DD to 2x QSFP28 100G 30m Active Optical Cable

[5] JH231A & JL233A (40G-SR4/eSR4) can also be used to support four (4) breakouts to J9150D (10G-SR) over MMF OM4 fiber split cable.

[7] JL309A (100G-SR) can also be used to support four (4) breakouts to JL484A (25G-SR) over MMF OM4 fiber split cable.

[8] R9B42A - eDR4 consolidates DR4 (500m) and eDR (2 km). R9B63A - 100G FR1 works with eDR4 as an optical breakout transceiver.

Transceivers, cables, switches and NICS[4]

SKU	Description
S4B43A	HPE ANW 200G SR4 MPO12 100m MMF XCVR
S4B39A[9]	HPE ANW 200G QDD-8SFP28 2m DAC
S4B40A[9]	HPE ANW 200G QDD-8SFP28 3m DAC
R9B59A	HPE Aruba Networking 200G QSFP-DD to 2x QSFP28 100G 50m Active Optical Cable
R9B55A	HPE Aruba Networking 400G QSFP-DD to 2x QSFP56 200G 3m Active Optical Cable
R9B53A	HPE Aruba Networking 400G QSFP-DD to 2x QSFP56 200G 7m Active Optical Cable
R9B57A	HPE Aruba Networking 400G QSFP-DD to 2x QSFP56 200G 15m Active Optical Cable
R9B56A	HPE Aruba Networking 400G QSFP-DD to 2x QSFP56 200G 30m Active Optical Cable
R9B54A	HPE Aruba Networking 400G QSFP-DD to 2x QSFP56 200G 50m Active Optical Cable
R9B50A	HPE Aruba Networking 400G QSFP-DD to 4x QSFP56 100G 3m Active Optical Cable
R9B48A	HPE Aruba Networking 400G QSFP-DD to 4x QSFP56 100G 7m Active Optical Cable
R9B52A	HPE Aruba Networking 400G QSFP-DD to 4x QSFP56 100G 15m Active Optical Cable
R9B51A	HPE Aruba Networking 400G QSFP-DD to 4x QSFP56 100G 30m Active Optical Cable
R9B49A	HPE Aruba Networking 400G QSFP-DD to 4x QSFP56 100G 50m Active Optical Cable
S4B38A	HPE ANW 400G ZR QSFP-DD 80km SMF XCVR
S4B35A[9]	HPE ANW 400G PLR8 QDD 2xMPO12 10km XCVR
S4B41A[9]	HPE ANW 400G QDD-8SFP56 1m DAC
S4B42A[9]	HPE ANW 400G QDD-8SFP56 2m DAC
S3N90A[9]	HPE Aruba Networking 4x100G DR QSFP-DD SN 500m SMF Transceiver
S3N91A[9]	HPE Aruba Networking 4x100G FR QSFP-DD SN 2km SMF Transceiver
S3N92A[9]	HPE Aruba Networking 4x100G LR QSFP-DD SN 10km SMF Transceiver
S3N93A[9]	HPE Aruba Networking 400G DR4 QSFP-DD MPO12 500m SMF Transceiver
S3N94A[9]	HPE Aruba Networking 400G PLR4 QSFP-DD MPO12 10km SMF Transceiver
S3N95A[9]	HPE Aruba Networking 400G FR4 QSFP-DD LC 2km SMF Transceiver
S3N96A[9]	HPE Aruba Networking 400G LR4 QSFP-DD LC 10km SMF Transceiver
K2Q46A[9]	HPE MPO to 4 x LC 5m Cable
K2Q47A[9]	HPE MPO to 4 x LC 15m Cable

[9] Supported only on CX 9300-32D

Console cables

SKU	Description
R9G48B[10]	HPE Aruba Networking USBA-RJ45 PC-to-Switch PIN6TX-3RX 2.5m Cable
R9J32A	HPE Aruba Networking USB-A (reversible) to USB-C PC-to-Switch 3m Cable
R9J33A	HPE Aruba Networking USB-C to USB-C PC-to-Switch 3m Cable
S1H23A[10]	HPE Aruba Networking CX Switch Bluetooth Adapter

[10] CX 9300-32D only supports R9G48B and S1H23A

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