



HPE Aruba Networking CX 8400 Switch Series

Key features

- High performance 19.2 Tbps switching (1.2 Tbps/slot) capacity
- Carrier-class high availability with HPE Aruba Networking Virtual Switching Extension (VSX), redundant management, power, and fabric
- HPE Aruba Networking CX Operating System enables automation and programmability using built-in REST APIs and Python scripts
- Intelligent monitoring, visibility, and remediation with HPE Aruba Networking Analytics Engine
- Dynamic VXLAN with BGP-EVPN for deep segmentation in data center and campus networks
- One touch deployment with the HPE Aruba Networking CX Mobile App
- HPE Aruba Networking Switch Multi-Edit support for automated configuration and verification
- Advanced Layer 2/3 feature set includes BGP, EVPN, OSPF, VRF, and IPv6
- Compact 8U chassis with high density, line rate 10GbE/25GbE/40GbE/100GbE connectivity

Product overview

The past several decades in networking have been defined by static, closed networking solutions designed for the client-server era. The HPE Aruba Networking CX 8400 campus core and aggregation switch is a game-changing solution offering a flexible and innovative approach to dealing with the new application, security and scalability demands of the mobile-cloud and IoT era. The HPE Aruba Networking CX 8400 also serves as a data center switch in either a core/aggregation or a leaf/spine topology.

The 8400 provides carrier class high availability with industry-leading line rate 10GbE/25GbE/40GbE/100GbE connectivity in a compact 8 slot chassis. It provides up to 19.2 Tbps of switching capacity based on a fully resilient design that includes redundant fabric, management, power and fans to create a resilient, highly available network that is ideal for the most demanding campus core and data center networks.

Product differentiators

AOS-CX—a modern software system

The HPE Aruba Networking CX 8400 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 HPE Aruba Networking CX Operating System 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 Analytics Engine (NAE)
- Dynamic segmentation
- Switch Stacking
- 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

In addition to the native features available in HPE Aruba Networking CX Operating System, 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 HPE Aruba Networking CX Operating System 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
- 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
- Continual state synchronization that provides superior fault tolerance, fault monitoring and high availability
- 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 Analytics Engine — advanced monitoring and diagnostics

For enhanced visibility and troubleshooting, HPE Aruba Networking 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 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 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 Switch Multi-Edit — 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. HPE Aruba Networking Switch Multi-Edit 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 with HPE Aruba Networking NAE integration

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

HPE Aruba Networking CX Mobile App — unparalleled deployment convenience

An easy to use mobile app simplifies connecting and managing HPE Aruba Networking CX switches for any size project. Switch information can also be imported into HPE Aruba Networking Switch Multi-Edit for simplified configuration management and to continuously validate the conformance of configurations anywhere in the network.

HPE Aruba Networking Virtual Switching Extension (VSX)

The ability of HPE Aruba Networking CX Operating System to maintain synchronous state across dual control planes allows a simplified carrier-class high availability solution called HPE Aruba Networking Virtual Switching Extension (VSX). Designed using the best features of existing high availability technologies such as Multi-chassis Link Aggregation (MC LAG), HPE Aruba Networking VSX enables a distributed architecture that is highly available during upgrades or control plane events. Features include:

- Continuous configuration synchronization via HPE Aruba Networking CX Operating System
- 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

Performance

High-speed fully distributed architecture

Provides up to 19.2 Tbps switching capacity with up to 7.142 billion packets per second (BPPS) for throughput; all switching and routing is performed in the line modules; meets the demands of bandwidth-intensive applications today and in the future

Scalable system design

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

Connectivity

High-density port connectivity

Supports up to 8 line modules, including a 32-port 10GbE with MACsec in hardware (not software), an 8-port 40GbE, a 6-port 40/100GbE module and a 32 port 25GbE module

Jumbo frames

Allows high-performance backups and disaster-recovery systems; provides a maximum frame size of 9K bytes

Unsupported Transceiver Mode (UTM)

- Allows possible use of 1G and 10G transceivers and DAC cables considered unsupported
- No warranty nor support for the transceiver/cable when used

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, unknown 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

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

HPE Aruba Networking CX Operating System software resiliency with VSX

Redundant and load-sharing fabrics, management, fan assemblies, and power supplies

Increases total performance and power availability while providing hitless, stateful failover

- All hot-swappable modules: Allows replacement of modules without any impact on other modules
- Passive design system: All active chassis components are field replaceable for increased reliability

Ethernet Ring Protection Switching (ERPS)

Supports rapid protection and recovery in a ring topology

Separate data and control paths

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

Bidirectional Forward Detection (BFD)

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

Virtual Router Redundancy Protocol (VRRP)

Allows groups of two routers to dynamically back each other up to create highly available routed environments

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 256 LAGs (Link Aggregation Groups), each with eight links per LAG; and provides support for static or dynamic groups and a user-selectable hashing algorithm

Multiple internal power supplies

Provides high reliability, requiring only two power supplies to support a fully populated HPE Aruba Networking CX 8400 and adding two more gives the solution N+N power redundancy

Management

In addition to the HPE Aruba Networking CX Mobile App, HPE Aruba Networking Switch Multi-Edit and HPE Aruba Networking Analytics Engine, the 8400 series offers the following:

Built-in programmable and easy to use REST API interface

IPSLA

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

Management interface control

Enables or disables each of the following interfaces depending on security preferences: console port, or reset button

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; local and remote syslog capabilities allow logging of all access

SNMP v2c/v3

Provides SNMP read and trap support of industry standard Management Information Base (MIB), and private extensions. It supports 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 both 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

Supportability

Job scheduler framework

Analytics

AIOPS NAE Agent & Engine Improvements — Unicast Routing and Client Services

Layer 2 switching

VLAN

Supports up to 4,094 port-based or IEEE 802.1Q-based VLANs

Q-in-Q VLAN tunnels

Expands the VLAN space by tagging the tagged packets. It allows services in a private VLAN to be transparently transmitted over a public network

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 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). It supports STP TCN Trap, STP New Root

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

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

Support directed broadcast on configured network subnets

Dynamic Host Configuration Protocol (DHCP)

Simplifies the management of large IP networks and supports client; DHCP Relay enables DHCP operation across subnets 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 supports mDNS Gateway

Network Virtualization

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, including NSX environments, with centralized gateway and symmetric Integrated Routing and Bridging (IRB) based distributed gateways VXLAN tunnels

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

Layer 3 routing

Policy Based Routing (PBR)

Enables using a classifier to select traffic that can be forwarded based on policy set by the network administrator

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

Border Gateway Protocol (BGP-4 and BGP-6)

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 enables CX for Azure Stack integration

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

Multiprotocol BGP (MP-BGP) with IPv6 address family

Enables sharing of IPv6 routes using BGP and connections to BGP peers using IPv6

IPv6 multicast routing

Provides capability to enable routing of IPv6 multicast traffic. Supports multicast listener discovery (MLD), MLD Snooping, and PIM-SM IPv6 Routing

6in4 tunnels

Supports the tunneling of IPv6 traffic in an IPv4 network

OSPFv3 for IPv6

Delivers faster convergence; uses link-state routing Interior Gateway Protocol (IGP), which supports ECMP, NSSA, and IPsec authentication for increased security and graceful restart for faster failure recovery

Loopback IP redistribution in OSPF

Allows redistribution of IPv4 and IPv6 addresses of loopback interface in OSPFv2/v3

Equal-Cost Multipath (ECMP)

Enables multiple equal-cost links in a routing environment to increase link redundancy and scale bandwidth

Generic routing encapsulation

Enables tunneling from site to site over a Layer 3 path DHCP Smart Relay

Security

TAA compliance

The HPE Aruba Networking CX 8400, a TAA compliant product, with the HPE Aruba Networking CX Operating System uses FIPS 140-2 validated cryptography for protection of sensitive information

Access control list (ACL) features

Supports powerful ACLs, including VLAN ACL, 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 support protecting control plane services such as SSH, SNMP, NTP or web servers

Remote Authentication Dial-In User Service (RADIUS)

Eases security access administration by using a password authentication server

Enrollment over Secure Transport (EST)

Enables secure certificate enrollment, allowing for easier enterprise management of PKI

Terminal Access Controller Access-Control System (TACACS+)

Delivers an authentication tool using TCP with encryption of the full authentication request, providing additional security

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

Korea government security features

- Ensure configuration integrity
- Limit concurrent users for web access

Multicast

IGMP snooping

Allows multiple VLANs to receive the same IPv4 multicast traffic, lessening network bandwidth demand by reducing multiple streams to each VLAN

PIM Multicast Boundary (v4)

VSX Graceful shutdown for IGMP/MLD Multicast NSF

Anycast RP

Two or more RPs configured with same /32 Host IP address on loopback interfaces. All the downstream routers will be configured to point to Anycast RP address for multicast routes. Device will automatically select the closest RP for each source and receiver. If equal costs routes exist, the process of registering the sources will be shared equally by all the RPs in the network

MSDP mesh groups

MSDP used for Anycast RP is an intradomain feature that provides redundancy and load-sharing capabilities. When MSDP mesh groups are used, SA messages are not flooded to other mesh group peers. When MSDP peer in group receives SA message from another MSDP peer in the group, it assumes that this SA message was sent to all the other MSDP peers in the group. It also eliminates RPF checks on arriving SA messages. With MSDP mesh group configured, SA messages are always accepted from mesh group peer

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) for IGMP

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. They help to eliminate the CPU overhead of having to generate an IGMP/MLD Group-Specific Query message

Support for Microsoft Network Load Balancer (NLB)

For server applications

Protocol Independent Multicast (PIM)

Defines modes of IPv4 multicasting to allow one-to-many and many-to-many transmission of information; supports PIM, Sparse Mode (SM), Source-Specific Multicast (SSM), and PIM Dense Mode (DM)

Internet Group Management Protocol (IGMP)

Utilizes Any-Source Multicast (ASM) to manage IPv4 multicast networks; supports IGMPv1, v2, and v3

Additional information

Green initiative support

Provides support for RoHS and WEEE regulations

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

Limited lifetime warranty

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

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

- HPE Aruba Networking CX Operating System Switch Software Documentation Portal arubanetworks.com/techdocs/AOS-CX/help_portal/Content/home.htm
- HPE Aruba Networking Switch Feature Navigator feature-navigator.arubanetworks.com/
- For support and services information, visit arubanetworks.com/support-services/arubacare/

Technical specifications

Line modules and slots

- Supports a maximum of 256 10GbE (SFP/SFP+) or 25G (SFP/SFP+/SFP28) ports, or 64 40GbE (QSFP+) ports, or 48 ports 40/100GbE (QSFP28) combination
- Eight slots for line modules

Module VoQ

- 4 GB for JL687A
- 1.5 GB for JL363A and JL365A
- 3 GB for JL366A

Additional ports and slots

- 2 Management Module slots
- 3 Fabric Module slots
- 4 Power Supply slots

Power supplies

- 4 power supply slots
- 2 minimum power supply required for a fully loaded chassis (or with 8 Line Modules)

Fan tray

- Included with JL376A

Physical characteristics

- Dimensions: 17.4(w) x 26(d) x 13.8(h) in. (44.1 x 66.0 x 35.1 cm) (8U height)
- Weight
 - Empty configuration weight: 76 lbs (34 kg)
 - JL376A weight: 164 lbs (74 kg)
 - Full configuration weight: 241 lbs (109 kg)

Mounting and enclosure

- Mounts in an EIA standard 19-inch rack or other equipment cabinet (hardware included); horizontal surface mounting only

Performance

- Switching Capacity: 19.2 Tbps
- IPv4 Host Table: 756,000
- IPv6 Host Table: 524,000
- IPv4 Unicast Routes: 1,011,712 (BGP RIB is limited to 256,000)
- IPv6 Unicast Routes: 524,288
- MAC Table Size: 768,000
- IGMP Groups: 32,767
- MLD Groups: 32,767
- IPv4 Multicast Routes: 32,767
- IPv6 Multicast Routes: 32,767

Environment

- Operating: 32°F to 104°F (0°C to 40°C) with 5% to 95%, non-condensing
- Non-Operating: -40°F to 158°F (-40°C to 70°C) with 5% to 95%, non-condensing
- Max Operating Altitude: Up to 10,000 ft (3.048 Km)
- Max Non-Operating Altitude: Up to 30,000 ft (9.144 Km)
- Acoustics
 - Sound Power (LWAd) 7.3 Bel
 - Sound Pressure (LpAm) (Bystander) 55.6 dB

Electrical characteristics

- Frequency: 47-63 Hz
- AC voltage: 90 – 140/180 – 264 VAC
- DC voltage
- Current: 16 A
- Power output: 2750 W

Safety

- EN 60950-1:2006 +A11:2009 +A1:2010 +A12:2011 +A2:2013
- EN62368-1:2014
- IEC 60950-1:2005 Ed.2; Am 1:2009+A2:2013
- IEC62368-1, Ed. 2
- IEC60825:2007 (Applies to products with lasers)
- UL60950-1, CSA 22.2 No 60950-1
- UL62368-1 Ed. 2

Emissions

- VCCI Class A; EN 55022 Class A; CISPR 22 Class A; IEC/EN 61000-3-2;
- IEC/EN 61000-3-3; ICES-003 Class A; AS/NZS CISPR 22 Class A; FCC
- (CFR 47, Part 15) Class A; GB9254
- EN55032:2012 Class A
- CISPR32:2012 Class A

Immunity

- Generic: Directive 2014/35/EU
- EN: EN 55024:2010+ A1:2001 + A2:2003; ETSI EN 300 386 V1.3.3
- 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

Management

- SNMP
- RJ45 for Serial Console
- USB-Type A for file management only
- RJ45 Ethernet for OOBM

Standards and protocols

The following standards and protocols are supported.

- IEEE 802.1AB-2009
- IEEE 802.1AE (JL363A only)
- 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 802.3zGbE
- IEEE 802.3ae 10GbE
- IEEE 802.3ba 40GbE Architecture
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARPIEEE 802.3ba 40GbE Architecture
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 768 User Datagram Protocol
- RFC 813 Window and Acknowledgment 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 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 5187 OSPFv3 Graceful Restart

- RFC 5701 IPv6 Address Specific BGP Extended Community Attribute
- RFC 6987 OSPF Stub Router Advertisement
- RFC 7047 The Open Switch 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

HPE Aruba Networking bundles, modules, and accessories

HPE Aruba Networking CX 8400 bundles

- JL375A HPE Aruba Networking 8400 Bundle includes: HPE Aruba Networking 8400 8-slot chassis, 3 x Fan Trays, 18 x Fans, Cable Manager, X462 2-post Rack Rail Kit
- JL376A HPE Aruba Networking 8400 Bundle includes: HPE Aruba Networking 8400 8-slot chassis bundle (JL375A), 1 x Management Module, 3 x Power Supplies, 2 x 8400X Fabric Modules, 1 x 32-port 10G Module, 1 x 8-port 40G Module

Modules

- HPE Aruba Networking 8400X 32-port 10GbE SFP/SFP+ with MACsec Advanced Module (JL363A)
- HPE Aruba Networking 8400X 8-port 40GbE QSFP+ Advanced Module (JL365A)
- HPE Aruba Networking 8400X 6-port 40GbE/100GbE QSFP28 Advanced Module (JL366A)
- HPE Aruba Networking 8400X-32Y 32p 1/10/25G SFP/SFP+/SFP28 Module (JL687A)¹
- HPE Aruba Networking 8400X 7.2 Tbps Fabric Module (JL367A)
- HPE Aruba Networking 8400 Management Module (JL368A)

Accessories

- HPE Aruba Networking X731 Fan Tray (JL369A)
- HPE Aruba Networking 8400 Fan for X731 Fan Tray (JL370A)
- HPE Aruba Networking 8400 1 Fan Tray and 6 Fans Bundle (JL371A)

Power supply

- HPE Aruba Networking X382 54VDC 2700W AC Power Supply (JL372A)

Mounting kit

- HPE Aruba Networking X464 4-post Rack Rail Kit (JL373A)
- HPE Aruba Networking X462 2-post Rack Rail Kit (JL374A)

Console Cable

- HPE Aruba Networking X2C2 RJ45 to DB9 Console Cable (JL448A)
- HPE Aruba Networking USB-A-RJ45 PIN3TX-6RX 2.5m Cable (R8787A)
- HPE Aruba Networking USB-A-RJ45 PC-to-Switch PIN6TX-3RX 2.5m Cable (R9G48B)
- HPE Aruba Networking USB-A reversible to USB-C PC-to-Switch 3m Cable (R93527A)
- HPE Aruba Networking USB-C to USB-C PC-to-Switch 3m Cable (R9J33A)

Transceivers²

- HPE Aruba Networking 1G SFP LC SX 500m MMF XCVR (J4858D)
- HPE Aruba Networking 1G SFP LC LX 10km SMF XCVR (J4859D)
- HPE Aruba Networking 1G SFP LC LH 70km SMF XCVR (J4860D)
- HPE Aruba Networking 1G SFP RJ45 100m XCVR (J8177E)
- HPE Aruba Networking 10G SFP+ LC SR 300m MMF XCVR (J9150D)
- HPE Aruba Networking 10G SFP+ LC LRM 220m MMF XCVR (J9152D)³
- HPE Aruba Networking 10G SFP+ LC LR 10km SMF XCVR (J9151E)
- HPE Aruba Networking 10G SFP+ LC ER 40km SMF XCVR (J9153D)

¹ JL687A 32p 25G module supports 1G and 10G or 25G transceivers in port groups of 4. See HPE Aruba Networking Transceiver manuals for details.

² Consult the HPE Aruba Networking OS-Switch and AOS-CX Transceiver Guide in the HPE Aruba Networking support Portal for the minimum required software releases to support these transceivers.

³ J9152D and 10G LRM technology and J9285D 7m DAC only supported on 32p SFP module (JL363A)

- HPE Aruba Networking 10GBASE-T SFP+ RJ45 30m Transceiver (JL563C)⁴
- HPE Aruba Networking 10G SFP+ to SFP+ 1m DAC Cable (J9281D)
- HPE Aruba Networking 10G SFP+ to SFP+ 3m DAC Cable (J9283D)
- HPE Aruba Networking 10G SFP+ to SFP+ 7m DAC Cable (J9285D)
- HPE Aruba Networking 25G SFP28 LC SR 100m MMF Transceiver (JL484A)
- HPE Aruba Networking 25G SFP28 LC eSR 400m MMF Transceiver (JL485A)
- HPE Aruba Networking 25G SFP28 LC LR 10km SMF Transceiver (JL486A)
- HPE Aruba Networking 25G eSR SFP28 LC 400m TAA Transceiver (S5U19A)
- HPE Aruba Networking 25G SFP28 to SFP28 0.65m Direct Attach Copper Cable (JL487A)
- HPE Aruba Networking 25G SFP28 to SFP28 3m Direct Attach Copper Cable (JL488A)
- HPE Aruba Networking 25G SFP28 to SFP28 5m Direct Attach Copper Cable (JL489A)
- HPE Aruba Networking 40G QSFP+ LC BiDi 150m MMF XCVR (JL308A)
- HPE Aruba Networking 40G QSFP+ LC ER4 40km SMF XCVR (Q9G82A)
- HPE X142 40G QSFP+ MPO SR4 Transceiver (JH231A)
- HPE X142 40G QSFP+ LC LR4 SM Transceiver (JH232A)
- HPE X142 40G QSFP+ MPO eSR4 300M XCVR (JH233A)
- HPE X242 40G QSFP+ to QSFP+ 1m DAC Cable (JH234A)
- HPE X242 40G QSFP+ to QSFP+ 3m DAC Cable (JH235A)
- HPE X242 40G QSFP+ to QSFP+ 5m DAC Cable (JH236A)
- HPE Aruba Networking 100G QSFP28 MPO SR4 MMF XCVR (JL309A)
- HPE Aruba Networking 100G QSFP28 LC LR4 SMF XCVR (JL310A)
- HPE Aruba Networking 100G QSFP28 LC ER4L SMF 40km XCVR (JL743A)
- HPE Aruba Networking 100G DR QSFP28 LC 500m SMF Transceiver (S3N88A)
- HPE Aruba Networking 100G LR QSFP28 LC 10km SMF Transceiver (S3N89A)
- HPE Aruba Networking 100G QSFP28-QSFP28 3m DAC Cable (JL307A)
- HPE Aruba Networking 100G QSFP28 to QSFP28 7m AOC (ROZ27A)
- HPE Aruba Networking 100G QSFP28 to QSFP28 15m AOC (ROZ28A)
- HPE Aruba Networking 100G QSFP28 to QSFP28 30m AOC (ROZ29A)

HPE Aruba Networking CX Advanced Feature Packs

- HPE Aruba Networking CX Soft 8/9xxx Sw Adv 1y ESTU (SOT87AAE)
- HPE Aruba Networking CX Soft 8/9xxx Sw Adv 3y ESTU (SOT88AAE)
- HPE Aruba Networking CX Soft 8/9xxx Sw Adv 5y ESTU (SOT89AAE)
- HPE Aruba Networking CX Soft 8/9xxx Sw Adv 7y ESTU (SOT90AAE)
- HPE Aruba Networking CX Soft 8/9xxx Sw Adv 10y ESTU (SOT86AAE)

HPE Aruba Networking Central CX Switch Subscription SKUs

- HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Foundational 1 year Subscription E-STU (R3K03AAE)
- HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Foundational 3 year Subscription E-STU (R3K04AAE)
- HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Foundational 5 year Subscription E-STU (R3K05AAE)
- HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Foundational 7 year Subscription E-STU (R3K06AAE)
- HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Foundational 10 year Subscription E-STU (R3K07AAE)
- HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Advanced 1 year Subscription E-STU (JZ540AAE)

⁴ Maximum of 12 10GBASE-T transceivers for JL563C 32p SFP+ module; Only supported in ports 1-12. Maximum of 32 10GBASE-T transceivers for JL687A 32p 25G module.

- HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Advanced 3 year Subscription E-STU (JZ541AAE)
- HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Advanced 5 year Subscription E-STU (JZ542AAE)
- HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Advanced 7 year Subscription E-STU (JZ543AAE)
- HPE Aruba Networking Central 8xxx/9xxx/10xxx Switch Advanced 10 year Subscription E-STU (JZ544AAE)
- HPE Aruba Networking Central On-Premises 8xxx Switch Foundational 1 year Subscription E-STU (R6U88AAE)
- HPE Aruba Networking Central On-Premises 8xxx Switch Foundational 3 year Subscription E-STU (R6U89AAE)
- HPE Aruba Networking Central On-Premises 8xxx Switch Foundational 5 year Subscription E-STU (R6U90AAE)
- HPE Aruba Networking Central On-Premises 8xxx Switch Foundational 7 year Subscription E-STU (R6U91AAE)
- HPE Aruba Networking Central On-Premises 8xxx Switch Foundational 10 year Subscription E-STU (R6U92AAE)

For details and complete listing of HPE Aruba Networking Central licensing options, please see the [HPE Aruba Networking Central Data Sheet](#).

HPE Aruba Networking Fabric Composer

- HPE Aruba Networking Fabric Composer Device Management Service Tier 4 Switch 1 year Subscription E-STU (R7G99AAE)
- HPE Aruba Networking Fabric Composer Device Management Service Tier 4 Switch 3 year Subscription E-STU (R7H00AAE)
- HPE Aruba Networking Fabric Composer Device Management Service Tier 4 Switch 5 year Subscription E-STU (R7H01AAE)

Support

- JL375A: 4 Hour On-site 3 Year (HT6J8E)
- JL376A: 4 Hour On-site 3 Year (HT6J8E)

For HPE Aruba Networking Central hardware only support, 24x7 TAC support, and many other support options, go to [Support Services Central SKU lookup tool](#).

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