HPE Aruba Networking CX 4100i Switch Series

Key features

- Ruggedized IP30 series brings enterprise-class Ethernet Layer 2 connectivity with support for ACLs, robust QoS and static routing to non-carpeted areas
- Operational in extended temperatures from -40ºC to +70ºC using HPE Aruba Networking 's industrial transceivers
- Versatile form factors deliver both 30W and 60W PoE to optimize IoT power
- Built-in high-speed 1/10GbE uplinks for demanding applications
- Robust protection for sub-station applications and high tolerances for railway rolling stock, signaling and telecommunications
- Secure and simple access for IoT and users with HPE Aruba Networking Dynamic Segmentation
- Management flexibility with support for HPE Aruba Networking Central, easy- to-use Web GUI, CLI, and HPE Aruba Networking Switch Multi-Edit Software
- Software defined ready with REST APIs
- No switch software licensing required

Product overview

The HPE Aruba Networking CX 4100i Switch Series is a modern family of ruggedized Ethernet switches ideal for connecting IoT, access points, and user devices in harsh environments. Created for high performance, reliable, and secure access, the HPE Aruba Networking CX 4100i switches provide versatile deployment options for enterprise networks extending beyond carpeted areas to challenging outdoor and industrial spaces.

Based on the programmable HPE Aruba Networking CX Operating System used across the HPE Aruba Networking CX portfolio for a more efficient operator experience, this IP30 ruggedized series operates in extended temperatures, provides protection for sub-station applications with IEC 61850-3 and IEEE 1613 compliance, and has high tolerances for railway applications.

This Layer 2 access switch has convenient built-in high speed uplinks, supports combination of 30W and 60W PoE with up to a 360W power budget, and relies on passive cooling for the fan less 12 port DIN rail mount model and fan less 24 port 1U rack mount model. With enhanced access security, traffic prioritization, and IPv6 support, the HPE Aruba Networking CX 4100i also simplifies ownership and brings peace of mind with no switch software licensing requirements.

As part of HPE Aruba Networking's Edge Services Platform (ESP), HPE Aruba Networking CX switches play a foundational role in the Unified Infrastructure. Automation, embedded analytics, high availability, and secure segmentation are designed into CX switches with HPE Aruba Networking Central delivering a unified, single view of the network that maximizes operational efficiency across enterprise networks. HPE Aruba Networking Dynamic Segmentation extends HPE Aruba Networking's foundational wireless role-based policy capability to HPE Aruba Networking wired switches. What this means is that the same security, user experience and simplified IT management can be enjoyed throughout the network. Regardless of how users and IoT devices connect, consistent policies are enforced across wired and wireless networks, keeping traffic secure and separate.

Product differentiators

HPE Aruba Networking CX Operating System—a modern software system
The HPE Aruba Networking CX 4100i Switch Series is based on HPE Aruba Networking CX Operating System, a modern, database-driven operating system that is built on a modular Linux® architecture. This operating system provides the following unique capabilities:

- Easy access to all network configuration state information
- REST APIs for fine-grained programmability of network tasks
- A micro-services architecture that enables full integration with other workflow systems and services
- All software processes communicate with the database rather than each other, ensuring near real-time state and resiliency

HPE Aruba Networking ASICs—programmable innovation
Based on over 30 years of continuous investment, HPE Aruba Networking's ASICs create the basis for innovative and agile software feature advancements, unparalleled performance, and deep visibility. These programmable ASICs are purpose-built to allow for a tighter integration of switch hardware and software within campus and data center architectures to optimize performance and capacity. The HPE Aruba Networking CX 4100i is based on the HPE Aruba Networking ASIC architecture.

HPE Aruba Networking Central—unified single pane of glass 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.

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

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

HPE Aruba Networking Dynamic Segmentation—simple, secure, and scalable segmentation
The HPE Aruba Networking Dynamic Segmentation solution enables seamless mobility, consistent policy enforcement, and automated configurations for wired and wireless clients across networks. This innovation begins with colorless ports and role-based micro-segmentation technologies. Colorless ports allow wired clients to connect to any switch port, with the configuration automated using Radius-Based Access Control. This eliminates the need for manual on-boarding of clients, including IoT devices, onto the network.

Role-based micro-segmentation delivers benefits of reduced subnet and VLAN sprawl, simplified policy definition, and scales policy enforcement by introducing the concept of client User Roles. These roles are independent of network constructs such as VLANs and allows clients to be grouped into a User Role based on their identity. This allows the colorless ports technology to automatically on-board clients onto User Based Tunnels. By steering traffic to HPE Aruba Networking's application aware Policy Enforcement Firewall, User Based Tunneling provides the ability to micro segment and perform deep packet inspections for enhanced security.

Mobility and IoT performance
The HPE Aruba Networking CX 4100i Switch Series uses internally developed HPE Aruba Networking ASICs that provide very low latency, increased packet buffering, and adaptive power consumption. Each switch includes the following:

- Up to 64 Gbps (12 port switch) or up to 128 Gbps (24 port switch) in non-blocking bandwidth and up to 95 Mpps for forwarding
- Selectable queue configurations that allow for increased performance by defining a number of queues and associated memory buffering to best meet the requirements of network applications

Ruggedized, enterprise-class connectivity
To address enterprise requirements, the CX 4100i family includes two fanless IP30 PoE switch models, both with a combination of 30W and 60W PoE ports, and built-in 1GbE/10GbE uplinks. Using HPE Aruba Networking's industrial transceivers (see accessories), the switches can operate in extended temperature ranges from -40ºC to +70ºC*. Additional highlights:

- 24 port 1U rack model
  - 24 ports 10/100/1000 Base-T
  - 4 ports 100/1G/10G SFP+ slots
  - 4 ports of IEEE 802.3bt Class 6 PoE (60W/port) and 20 ports of 802.3at Class 4 PoE (30W/port)
  - Internal power supply supporting up to 240W PoE power at -40ºC to +70ºC
- 12 port DIN rail mount model
  - 12 ports 10/100/1000 Base-T
  - 2 ports 100/1G/10G SFP+ slots
  - 4 ports of IEEE 802.3bt Class 6 PoE (60W/port) and 8 ports of 802.3at Class 4 PoE (30W/port)
  - Up to 2 power source connections for power redundancy
  - Choice of AC and DC external PSUs to optimize PoE power budgets ranging from 50-360W. Maximum PoE power varies based on environmental temperature. See External Power Supply Specification table in this data sheet for details
  - 19" rack mountable with HPE Aruba Networking DIN Rail 3RU 19inch Rack Mount Kit (JL822A)
- 12 port and 24 port switches support IP30 for protection from tools and wires greater than 2.5 millimeters (switches not protected from liquids)
- IEC 61850-3 and IEEE 1613 compliant to provide adequate protection against a variety of environmental in sub-station applications
- EN 50155/IEC 60571 compliant to provide high tolerances for constant vibrations, shocks, and electronic immunity on railway applications
- EN 50121-3-2 Railway—Apparatus for Rolling stock and EN50121-4 Railway—Apparatus for Signaling and Telecommunications
- Dry contact Alarm IO allow simple two-wire interface that can be easily adapted to third-party sensors and devices
- 6kV surge immunity supported (see Surge specifications for 12 port DIN Rail mount model)
- Support for Energy Efficient Ethernet IEEE 802.3az reduces power consumption during periods of low network traffic
- Support for pre-standard PoE detects and provides power to pre-standard PoE devices
- High availability with always-on PoE that supplies PoE power even during scheduled reboots and firmware upgrades
- Quick PoE supplies PoE power to powered devices as soon as the switch is plugged into power so device can initialize at same time as switch OS boots up
- Auto-MDIX provides automatic adjustments for straight-through or crossover cables on all 10/100/1000 ports
- Unsupported Transceiver Mode (UTM) allows to insert and enable all unsupported 1G and 10G transceivers and cables*. Note that there is no warranty nor support for the transceiver/cable when this UTM feature is used and temperature is derated to 50ºC
- Jumbo frames allow for high-performance backups and disaster- recovery systems; provides a maximum frame size of 9220 bytes
- Packet storm protection against broadcast, multicast and unknown unicast storms with user—defined thresholds

Resiliency and availability
To support a highly-available Layer 2 access deployment, the CX 4100i supports the following features:

- Unidirectional Link Detection (UDLD) to monitor link connectivity and shut down ports at both ends if unidirectional traffic is detected, preventing loops in STP-based networks
- IEEE 802.3ad LACP supports up to 8 LAGs, each with up to 8 links per LAG; and provides support for static or dynamic groups and a user-selectable hashing algorithm
- IEEE 802.1s Multiple Spanning Tree provides high link availability in VLAN environments where multiple spanning trees are required; and legacy support for IEEE 802.1d and IEEE 802.1w
- High availability with always-on PoE that supplies PoE power even during scheduled reboots and firmware upgrades
- Ethernet Ring Protection Switching (ERPS) support for rapid protection and recovery in a ring topology

* Temperature derated to 50ºC if non-industrial temperature or UT-mode transceivers are used

Quality of service (QoS) features

To support congestion actions and traffic prioritization, the CX 4100i includes the following:

- Strict priority (SP) queuing
- Traffic prioritization (IEEE 802.1p) for real—time classification
- Class of Service (CoS) sets the IEEE 802.1p priority tag based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, source port, and DiffServ
- Rate limiting sets per-port ingress enforced maximums and per-port, per-queue minimums
- Large buffers for graceful congestion management

Simplified configuration and management

The CX 4100i series supports a choice of management interfaces including easy to use Web GUI, industry standard CLI, and HPE Aruba Networking Switch Multi-Edit Software. Supported by cloud-based HPE Aruba Networking Central for unified network operations of wired, WLAN, SD-WAN, and public cloud infrastructure. Features include:

- Built-in programmable and easy-to-use REST API interface
- Industry-standard CLI with a hierarchical structure for reduced training time and expense. Delivers increased productivity in multivendor environments
- sFlow® (RFC 3176) is ASIC-based wire speed network monitoring and accounting with no impact on network performance; network operators can gather a variety of network statistics and information for capacity planning and real-time network monitoring purposes
- Management security restricts access to critical configuration commands, provides multiple privilege levels with password protection and local and remote syslog capabilities allow logging of all access
- SNMPv1/v2c/v3 support provides Read capability of industry standard Management Information Base (MIB), and private extensions
- SNMP support includes: Write Set Speed and Duplex, Write Port Security, Write POE Priority, Write Config Mgmt, SNMP-Read single OID for average CPU and memory, SNMP MIB View
- SNMP Trap include: Transceiver Traps (insertion/removal), SNMP Trap, SNMP MIB-SNMB Authentication, SNMPv2 MIB, Port Sec MIB- Port Sec, Config MIB-Running Config Change, Config MIB, AAA Server MIB, AAA Server State
- Remote monitoring (RMON) with standard SNMP to monitor essential network functions. 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 support 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 so the devices can provide diverse applications based on the consistent time
- 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
- Dual flash images provide independent primary and secondary operating system files for backup while upgrading
- Multiple configuration files can be stored to a flash image
- Unidirectional link detection (UDLD) monitors the link between two switches and blocks the ports on both ends of the link if the link goes down at any point between the two devices

Layer 2 switching

The following Layer 2 services are supported:

- VLAN support and tagging support for IEEE 802.1Q (4094 VLAN IDs) and 512 VLANs simultaneously
- Jumbo packet support improves the performance of large data transfers; supports frame size of up to 9220 bytes
- Rapid Per-VLAN Spanning Tree (RPVST+) allows each VLAN to build a separate spanning tree to improve link bandwidth usage; is compatible with PVST+
- 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)
- MVRP allows automatic learning and dynamic assignment of VLANs
- 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
- Internet Group Management Protocol (IGMP) Controls and manages the flooding of multicast packets in a Layer 2 network

Layer 3 switching
The following Layer 3 routing services are supported:

- Static IP routing provides manually configured routes
- Dual stack static IPv4 and IPv6 routing provides simple manually configured IPv4 and 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

Multicast
- IGMP Snooping allows multiple VLANs to receive the same IPv4 multicast traffic, lessening network bandwidth demand by reducing multiple streams to each VLAN Multicast Listener Discovery (MLD) enables discovery of IPv6 multicast listeners; support MLD v1 and v2
- Internet Group Management Protocol (IGMP) utilizes Any-Source Multicast (ASM) to manage IPv4 multicast networks; supports IGMPv1, v2, and v3
- IP multicast snooping (data-driven IGMP) prevents flooding of IP multicast traffic

IPv6 capabilities
- IPv6 host enables switches to be managed in an IPv6 network
- Dual stack (IPv4 and IPv6) transitions from IPv4 to IPv6, supporting connectivity for both protocols
- MLD snooping forwards IPv6 multicast traffic to the appropriate interface
- IPv6 ACL/QoS supports ACL and QoS for IPv6 network traffic
- IPv6 static routing
- Security provides RA guard and ND snooping

Security
Each HPE Aruba Networking CX 4100i Switch comes with an integrated trusted platform module (TPM) for platform integrity. This ensures the boot process started from a trusted combination of HPE Aruba Networking-CX switches. Other security features include:

- Access control list (ACL) support for both IPv4 and IPv6; allows for filtering traffic to prevent unauthorized users from accessing the network, or for controlling network traffic to save resources; rules can either deny or permit traffic to be forwarded; rules can be based on a Layer 2 header or a Layer 3 protocol header
- ACLs also provide filtering based on the IP field, source/destination IP address/subnet, and source/destination TCP/UDP port number on a per-VLAN or per-port basis
- Remote Authentication Dial-In User Service (RADIUS)
- 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 for both on- and off- box authentication for administrative access. RADIUS or TACACS+ can be used to provide encrypted user authentication. Additionally, TACACS+ can also provide admin authorization services
- Control Plane Policing sets rate limit on control protocols to protect CPU overload from DOS attacks
- Supports multiple user authentication methods. Uses an IEEE 802.1X supplicant on the client in conjunction with a RADIUS server to authenticate in accordance with industry standards
- Supports MAC-based client authentication
- Concurrent IEEE 802.1X, Web, and MAC authentication schemes per switch port accepts up to 32 sessions of IEEE 802.1X, Web, and MAC authentications
- Secure management access delivers secure encryption of all access methods (CLI, GUI, or MIB) through SSHv2, SSL, and/or SNMPv3
- Switch CPU protection provides automatic protection against malicious network traffic trying to shut down the switch
- ICMP throttling defeats ICMP denial-of-service attacks by enabling any switch port to automatically throttle ICMP traffic
- Identity-driven ACL enables implementation of a highly granular and flexible access security policy and VLAN assignment specific to each authenticated network user
- STP BPDU port protection blocks Bridge Protocol Data Units (BPDUs) on ports that do not require BPDUs, preventing forged BPDU attacks
- Dynamic IP lockdown works to block traffic from unauthorized hosts, preventing IP source address spoofing
- STP root guard protects the root bridge from malicious attacks or configuration mistakes
- Port security allows access only to specified MAC addresses, which can be learned or specified by the administrator
- MAC address lockout prevents specific configured MAC addresses from connecting to the network
- Source-port filtering allows only specified ports to communicate with each other
- Secure shell encrypts all transmitted data for secure remote CLI access over IP networks

- Secure Sockets Layer (SSL) encrypts all HTTP traffic, allowing secure access to the browser-based management GUI in the switch
- Secure FTP allows secure file transfer to and from the switch; protects against unwanted file downloads or unauthorized copying of a switch configuration file
- Critical Authentication Role ensures that important infrastructure devices such as IP phones are allowed network access even in the absence of a RADIUS server
- MAC Pinning allows non-chatty legacy devices to stay authenticated by pinning client MAC addresses to the port until the client logoffs or gets disconnected
- Security banner displays a customized security policy when users log in to the switch
- DHCP Snooping provides network security by filtering untrusted DHCP messages.
- Dynamic IPv4 Lockdown works with DHCP protection
- to block traffic from unauthorized hosts, preventing IP source address spoofing
- DHCP smart relay allows the DHCP relay agent to use secondary IP addresses when the DHCP server does not reply the DHCP-OFFER message

Address Resolution Protocol (ARP) protection blocks packets from unauthorized hosts, preventing eavesdropping or theft of network data.

Convergence

- LLDP-MED (Media Endpoint Discovery) defines a standard extension of LLDP that stores values for parameters such as QoS and VLAN to automatically configure network devices such as IP phones
- PoE allocations supports multiple methods (allocation by usage or class, with LLDP and LLDP-MED) to allocate PoE power for more efficient power management and energy savings. Supports CDPv2 to configure legacy IP phones

Additional information

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 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 Pro Care, please visit: arubanetworks.com/supportservices/

Warranty, services, and support

- 5-year Warranty, see arubanetworks.com/support-services/product-warranties/ for warranty and support information included with your product purchase
- For software releases and documentation, refer to asp.arubanetworks.com/downloads
- For more detailed information on HPE Aruba Networking CX Operating System software release and features, please visit the CX Switch Software Documentation Portal
- Explore and compare switch features for each platform and software release on the HPE Aruba Networking Switch Feature Navigator
- For support and services information, visit HPE Aruba Networking Support Services

Technical specifications

	HPE Aruba Networking 4100i 12-port 1GbE (8-port Class 4 PoE and 4-port Class 6 PoE) 2-port SFP+ DIN Mount Switch (JL817A)	HPE Aruba Networking 4100i 24-port 1GbE (20-port Class 4 PoE and 4-port Class 6 PoE) 4-port SFP+ Switch (JL818A)
Description	4x ports 100M/1G BaseT Class 6 PoE ports supporting up to 60W per port 8x ports 100M/1G BaseT Class 4 PoE ports supporting up to 30W per port 2x 1/10G SFP ports Supports PoE Standards IEEE 802.3af, 802.3at and 802.3bt (up to 60W) 1x USB-C Console Port 1x RJ Console 1x USB Type A Host port 1x Alarm socket 2x DC power socket	4x ports 100M/1G BaseT Class 6 PoE ports supporting up to 60W per port 20x ports 100M/1G BaseT Class 4 PoE ports supporting up to 30W per port 4x 1/10G SFP ports Supports PoE Standards IEEE 802.3af, 802.3at and 802.3bt (up to 60W) 1x USB-C Console Port 1x RJ Console 1x USB Type A Host port 1x Alarm socket
Power supplies	Field replaceable Industrial DIN Rail Power Supplies Supported PSUs: JL819A, JL820A and JL821A Supported 2 PSU with redundancy, non-sharing See external PSU specification table for available PoE power	Fixed internal power supply (300W) 240W of PoE Power (no de-rating)
Fans	Fanless	Fanless
Physical characteristics		
Dimensions	(H) 160 mm x (W) 113 mm x (D) 162.9 mm (173.5 mm w/DIN Rail Bracket) [6.3" x 4.4" x 6.4" (6.8" w/DIN Rail Bracket)]	(H) 44 mm x (W) 444.5 mm x (D) 304.4 mm 1.73" x 17.5" x 12.0"
Configuration weight	3.84 kg (8.46 lb)	6.50 kg (14.33 lb)
Additional specifications		
CPU	Dual Core Arm® Cortex A9 @ 1016 MHz	Dual Core Arm Cortex A9 @ 1016 MHz
Memory and flash	4 GB DDR3 32 GB eMMC	4 GB DDR3 32 GB eMMC
Packet buffer	12.38 MB	12.38 MB
Performance		
Model switching capacity	up to 64 Gbps	up to 128 Gbps
Model throughput capacity	up to 46 Mpps	up to 95 Mpps
Average latency (LIFO-64-bytes packets)	1 Gbps: 2.390 µ Sec, 10 Gbps: 2.038 µ Sec	1 Gbps: 1.585 µ Sec, 10 Gbps: 1.243 µ Sec
Switched virtual interfaces (dual stack)	16	16

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IPv4 host table (ARP)	756	756
IPv6 host table (ND)	576	576
IPv4 unicast routes	576	576
IPv6 unicast routes	576	576
MAC table size	8192	8192
IGMP groups	512	512
MLD groups	512	512
IPv4/IPv6/MAC ACL entries (ingress)	256/128/256	256/128/256
Environment		
Operating temperature	-40°C to 60°C, 0m/s (-40°F to 140°F, 0 LFM) -40°C to 70°C, 0.2m/s (-40°F to 158°F, 40 LFM) -34°C to 75°C, 1m/s (-29.2°F to 167°F, 200 LFM)	-40°C to 60°C, 0m/s (-40°F to 140°F, 0 LFM) -40°C to 70°C, 0.2m/s (-40°F to 158°F, 40 LFM) -34°C to 75°C, 1m/s (-29.2°F to 167°F, 200 LFM)
Non-operating storage relative humidity	5% to 95%, non-condensing	5% to 95%, non-condensing
Max operating altitude	up to 4.2 km (13800 ft) Max	up to 4.2 km (13800 ft) Max
Max non-operating altitude	4.6 km (15000 ft) Max	4.6 km (15000 ft) Max
Electrical characteristics		
Frequency	N/A	50Hz/60Hz
AC voltage	Refer to the PSU specification table	100V-240V
DC input voltage	54V (switch input voltage, provided by JL819A, JL820A, JL821A)	N/A
Current	JL820A—max 8A (360W PoE) JL819A, JL821A—max 4.4A (180W PoE)	max 3.9A/1.9A (240W PoE)
Maximum heat dissipation BTU/hr	With JL819A PSU: 89 BTU/hr at 230V—Room temperature (25°C) With JL820A PSU: 95 BTU/hr at 230V—Room temperature (25°C) With JL821A PSU: 94 BTU/hr at 48V—Room temperature (25°C)	117 BTU/hr at 230V - Room temperature (25° C)

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Power consumption (JL819A, JL820A-230VAC) (JL821A-48VDC)	With JL819A PSU: Idle: 22W 100% Traffic Rate: 26W 100% Traffic Rate (w/heater*): 55W With JL820A PSU: Idle: 24W 100% Traffic Rate: 28W 100% Traffic Rate (w/heater*): 57W	Idle: 23W 100% Traffic Rate: 34W 100% Traffic Rate (w/heater*): 62W
Power Consumption (JL819A, JL820A-230VAC) (JL821A-48VDC)	With JL821A PSU: Idle: 22W 100% Traffic Rate: 27W 100% Traffic Rate (w/heater*): 56W	Idle: 23W 100% Traffic Rate: 34W 100% Traffic Rate (w/heater*): 62W
Safety		
	Europe: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 EN 62368-1, Ed.2:2014 North America: UL 62368-1, 2nd Edition CAN/CSA C22.2 No. 62368-1-14 Worldwide: IEC 60950-1:2005 Ed.2 + Am 1:2009 + A2:2013 IEC 62368-1:2014 EN/IEC 60825-1:2014 Class 1 UL/IEC 61010-2-201 GB 4943.1:2011 CNS 14336-1 K 60950-1	Europe: EN 60950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 EN 62368-1, Ed.2:2014 North America: UL 62368-1, 2nd Edition CAN/CSA C22.2 No. 62368-1-14 Worldwide: IEC 60950-1:2005 Ed.2 + Am 1:2009 + A2:2013 IEC 62368-1:2014 EN/IEC 60825-1:2014 Class 1 UL/IEC 61010-2-201 GB 4943.1:2011 CNS 14336-1 K 60950-1
Lasers		
	EN 60825-1:2007/IEC 60825-1:2007 Class 1 Class 1 Laser Products/Laser Klasse 1 (Applicable for accessories—Optical Transceivers only	EN 60825-1:2007/IEC 60825-1:2007 Class 1 Class 1 Laser Products/Laser Klasse 1 (Applicable for accessories—Optical Transceivers only)

* Heater will only turn on in extreme low temperature conditions

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EMC		
	Europe: EN 55011:2010/CISPR 11, Class A EN 55032:2015/CISPR 32, Class A EN 55035:2017/CISPR 35 EN 61000-3-2:2014, Class A EN 61000-3—3:2013 US: FCC CFR 47 Part 15: 2018 Class A Canada: ICES-003 Class A Japan: VCCI Class A Taiwan (BSMI) CNS 13438 Class A Korea KN 35:2015 Korea KN 32 Class A Aus/NZ AS/NZS CISPR 32 Class A Worldwide: VCCI Class A CISPR 11 Class A CISPR 22 Class A CISPR 32 Class A	Europe: EN 55011:2010/CISPR 11, Class A EN 55032:2015/CISPR 32, Class A EN 55035:2017/CISPR 35 EN 61000-3-2:2014, Class A EN 61000-3-3:2013 US: FCC CFR 47 Part 15: 2018 Class A Canada: ICES-003 Class A Japan: VCCI Class A Taiwan (BSMI) CNS 13438 Class A Korea KN 35:2015 Korea KN 32 Class A Aus/NZ AS/NZS CISPR 32 Class A Worldwide: VCCI Class A CISPR 11 Class A CISPR 22 Class A CISPR 32 Class A

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Industry specific compliance		
Industrial	EN 61000-6-2 Industrial Immunity EN 61000-6-4 Industrial Emissions EN 61000-6-1 Light Industrial Immunity	EN 61000-6-2 Industrial Immunity EN61000-6-4 Industrial Emissions EN 61000-6-1 Light Industrial Immunity
Power substation	IEEE 1613 Electric Power Stations Communications Networking EN/IEC 61850-3 Electric Substations Communications Networking	IEEE 1613 Electric Power Stations Communications Networking EN/IEC 61850-3 Electric Substations Communications Networking
Railway application	EN 50121-3-2 Railway—Apparatus for Rolling Stock EN 50121-4 Railway—Signaling and Telecommunications Apparatus EN 50155/IEC 60571—Railway applications, Rolling stock, Electronic equipment	EN 50121-3-2 Railway—Apparatus for Rolling Stock EN 50121-4 Railway—Signaling and Telecommunications Apparatus EN 50155/IEC 60571—Railway applications, Rolling stock, Electronic equipment
Traffic control system	NEMA TS 2-2016	NEMA TS 2-2016
Protection standard	EN 60529 IP30	EN 60529 IP30
Immunity		
Generic	EN 55035, CISPR 35, KN35	EN 55035, CISPR 35, KN35
EN	EN 55035, CISPR 35	EN 55035, CISPR 35
ESD	EN 61000-4-2 (air—15kV, contact—8kV)	EN 61000-4-2 (air—15kV, contact—8kV)
Radiated	EN 61000-4-3 (10V/m UTP, 20V/m STP)	EN 61000-4-3 (10V/m UTP, 20V/m STP)
EFT/Burst	EN 61000-4-4 4kV (1kV UTP, 4kV STP) using: • JL819A, JL820A with SPD2-300-2P0-R surge protector • JL821A with SPD2-150-2P0-R surge protector needed • Without surge protector and STP: • JL819A or JL820A PSU: 2kV • JL821A PSU: 1kV	EN 61000-4-4 4kV (1kV UTP, 4kV STP)

Technical specifications

	HPE Aruba Networking 4100i 12-port 1GbE (8-port Class 4 PoE and 4-port Class 6 PoE) 2-port SFP+ DIN Mount Switch (JL817A)	HPE Aruba Networking 4100i 24-port 1GbE (20-port Class 4 PoE and 4-port Class 6 PoE) 4-port SFP+ Switch (JL818A)
Surge	EN 61000-4-5 2kV/4kV (UTP) using: • JL819A, JL820A with SPD2-300-2P0-R surge protector • JL821A with SPD2-150-2P0-R surge protector Without surge protector: • JL819A or JL820A PSU: 1kV/2kV • JL821A PSU: N/A	EN 61000-4-5 2kV/4kV (UTP)
Conducted	EN 61000-4-6 (3Vrms UTP, 10Vrms STP)	EN 61000-4-6 (3Vrms UTP, 10Vrms STP)
Power frequency magnetic field	EN 61000-4-8 (100A/m 1min, 1000A/m 1 sec)	EN 61000-4-8 (100A/m 1min, 1000A/m 1 sec)
Damped oscillatory magnetic field	EN 61000-4-10 (100A/m)	EN 61000-4-10 (100A/m)
Conducted CM disturbances	EN 61000-4-16 (30V, Cont./300V, 1 sec)	EN 61000-4-16 (30V, Cont./300V, 1 sec)
Ripple immunity DC power	EN 61000-4-17 (10%)	EN 61000-4-17 (10%)
Damped oscillatory wave	EN 61000-4-18 (2.5kV, 1MHz)	EN 61000-4-18 (2.5kV, 1MHz)
Voltage dips and interruptions	EN 61000-4-29; EN 61000-4-11 (Level 3)	EN 61000-4-29; EN 61000-4-11 (Level 3)
Harmonics	EN 61000-3-2, IEC 61000-3-2	EN 61000-3-2, IEC 61000-3-2
Flicker	EN 61000-3-3, IEC 61000-3-3	EN 61000-3-3, IEC 61000-3-3
Dynamics		
Vibration	IEC 60068-2-6 & 64 (operation & non-operation)	IEC 60068-2-6 & 64 (operation & non-operation)
Shock	IEC 60068-2-27 (Operational Shock, 30G, 18ms, Half-Sine) IEC 60068-2-27 (Non-operational Shock, 50G, 11ms, Trapezoidal) IEC 60068-2-31 (Non-operational Free Fall, 100mm) IEC 60068-2-31 (Non-operational Topple)	IEC 60068-2-27 (Operational Shock, 30G, 18ms, Half-Sine) IEC 60068-2-27 (Non-operational Shock, 50G, 11ms, Trapezoidal) IEC 60068-2-31 (Non-operational Free Fall, 100mm)
Railway application	Compliance to EN 50155 (mounting) & IEC 61373	Compliance to EN 50155 (mounting) & IEC 61373

Technical specifications

	HPE Aruba Networking 4100i 12-port 1GbE (8-port Class 4 PoE and 4-port Class 6 PoE) 2-port SFP+ DIN Mount Switch (JL817A)	HPE Aruba Networking 4100i 24-port 1GbE (20-port Class 4 PoE and 4-port Class 6 PoE) 4-port SFP+ Switch (JL818A)
Mounting and enclosure		
	Mounts to JL822A (3U DIN-to-Rack Bracket, purchased separately) which allows the switch to be mounted in an EIA/TIA standard 19" telco rack. Switch can be directly installed on a DIN rail mounted to a suitable surface to withstand the weight of the switch and power supplies.	Mounts to an EIA/TIA standard 19" telco rack. Mounting brackets included with product. Can be wall-mounted, flush against wall with ports facing down only—see installation guide for details.
	DIN rail mounting (included) Can be mounted in 90-degree manner to present the cables exiting the side of the switch—see installation guide for details.	Mounts to an EIA/TIA standard 19" telco rack. Mounting brackets included with product. Can be wall-mounted, flush against wall with ports facing down only—see installation guide for details.
Wire		
Power input	AWG 14 up to 2m	C15 Connector
Alarm connector	AWG 18-16	AWG 18-16
PoE budget		
	User configurable PoE budget—If 2 external power supply units are used concurrently, please set according to PSU with lower PoE capacity JL819A— Below ambient 50°C: 180W At ambient 60°C: 140W At ambient 70°C: 80W JL820A— Below ambient 50°C: 360W At ambient 60°C: 320W At ambient 70°C: 200W JL821A— With PSU input = 48V-55V DC Below ambient 50°C: 180W At ambient 60°C and 70°C: 150W With PSU input = 24V DC Below ambient 70°C: 150W With PSU input = 12V DC Below ambient 60°C: 60W At ambient 70°C: 50W Does not support PSU Power Sharing. Refer to Installation & Getting Started Guide for the PoE budget setup	240W no derating

External power supply specifications

Specifications (for use with JL817A HPE Aruba Networking CX 4100i switch)	HPE Aruba Networking 4000i PoE 54VDC 240W 100-240VAC DIN power supply (JL819A)	HPE Aruba Networking 4000i PoE 54VDC 480W 100-240VAC DIN power supply (JL820A)	HPE Aruba Networking 4000i PoE 54VDC 240W 12-48VDC DIN power supply (JL821A)
Description	Universal AC input voltage 1x Input socket 1x Output socket	Universal AC input voltage 1x Input socket 1x Output socket	DC input voltage 1x micro-USB interface for control and monitoring 1x LCD Display 1x Input socket 1x Output socket
Physical characteristics			
Dimensions	(H) 121 mm x (W) 85 mm x (D) 124.1 mm (4.76" x 3.35" x 4.88")	(H) 121 mm x (W) 144 mm x (D) 118.6 mm (4.76" x 5.67" x 4.67")	(H) 115 mm x (W) 40 mm x (D) 110 mm (4.52" x 1.57" x 4.33")
Configuration weight	0.96 kg (2.12 lb)	1.37 kg (3.02 lb)	0.4 kg (0.88 lb)
Environment			
Operating temperature	-40°C to 49°C no derating Vertical: 50° C de-rate power by 2.5%/°C Horizontal: 40°C de-rate power by 2.5%/°C	-40°C to 49°C no derating >50°C de-rate power by 2.5%/°C >70°C de-rate power by 5%/°C	-40°C to 70°C with derating
Operating relative humidity	5% to 95%, non-condensing	5% to 95%, non-condensing	5% to 95%, non-condensing
Non-operating	-40°C to 85°C (-40°F to 185°F)	-40°C to 85°C (-40°F to 185°F)	-40°C to 80°C (-40°F to 176°F)
Non-operating storage relative humidity	5% to 95%, non-condensing	5% to 95%, non-condensing	5% to 95%, non-condensing
Max operating altitude	up to 4.2 km (13800 ft) Max	up to 4.2 km (13800 ft) Max	up to 4 km (13123 ft) Max
Max non-operating altitude	4.6 km (15000 ft) Max	4.6 km (15000 ft) Max	4.6 km (15000 ft) Max
Electrical characteristics			
Frequency	50Hz/60Hz	50Hz/60Hz	N/A
AC voltage	100V—240V	100V—240V	N/A
DC input voltage	N/A	N/A	12V—48V nominal UL Certified to: 11V-55V
Current	6A/3A	3.5A/1.3A	12A
Dynamics			
Vibration	IEC 60068-2-6	IEC 60068-2-6	IEC 60068-2-6
Shock	IEC 60068-2-27 & 29	IEC 60068-2-27 & 29	IEC 60068-2-27

External power supply specifications

Specifications (for use with JL817A HPE Aruba Networking CX 4100i switch)	HPE Aruba Networking 4000i PoE 54VDC 240W 100-240VAC DIN power supply (JL819A)	HPE Aruba Networking 4000i PoE 54VDC 480W 100-240VAC DIN power supply (JL820A)	HPE Aruba Networking 4000i PoE 54VDC 240W 12-48VDC DIN power supply (JL821A)
Mounting and enclosure			
	Mounts to JL822A (3U DIN-to—Rack Bracket, purchase separately) attached to an EIA-standard 19" telco rack or equipment cabinet which has DIN rail installed. DIN rail mounting. Vertical mounting only.	Mounts to JL822A (3U DIN-to—Rack Bracket, purchase separately) attached to an EIA-standard 19" telco rack or equipment cabinet which has DIN rail installed. DIN rail mounting. Vertical mounting only.	Mounts to JL822A (3U DIN-to—Rack Bracket, purchase separately) attached to an EIA-standard 19" telco rack or equipment cabinet which has DIN rail installed. DIN rail mounting. Vertical mounting only.
Wire			
Power input	AWG 16-12	AWG 16-10	AWG 12
Power output	AWG 14 up to 2m	AWG 14 up to 2m	AWG 14 up to 2m
PoE budget			
Input operating range	AC 100—240V	AC 100—240V	Nominal to 12—48 VDC UL certified to 11—55 VDC
PoE power budget below 50°C ambient (-40°C to 50°C)	180W	360W	180W with input = 48V-55V DC 150W with input = 24V DC 60W with input = 12V DC
PoE power budget with 60°C ambient	140W	320W	150W with input = 48V-55V DC 150W with input = 24V DC 60W with input = 12V DC
PoE power budget with 70°C ambient	80W	200W	150W with input = 48V-55V DC 150W with input = 24V DC 50W with input = 12V DC
De-rating condition for PSU	De-rating for vertical mounting orientation >50°C de-rate power by 2.5%/°C De-rating for horizontal mounting orientation >40°C de-rate power by 2.5%/°C	De-rating for vertical mounting orientation >50°C de-rate power by 2.5%/°C, >70°C de-rate power by 5%/°C	—

Accessory specifications

Specifications	
Description	HPE Aruba Networking DIN Rail 3RU 19" Rack Mount Kit (JL822A)
Physical characteristics	
Dimensions	(H) 133 mm x (W) 441 mm x (D) 189.5 mm (5.2" x 17.4" x 7.5")
Configuration weight	1.29 kg (2.84 lb)

Standards and protocols

- RFC 1591 DNS (client)
- SSHv1/SSHv2 Secure Shell
- IEEE 802.1D MAC Bridges
- IEEE 802.1p Priority
- IEEE 802.1Q VLANs
- IEEE 802.1s Multiple Spanning Trees
- IEEE 802.1w Rapid Reconfiguration of Spanning Tree
- IEEE 802.3 Type 10BASE-T
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3ad Link Aggregation Control Protocol (LACP)
- IEEE 802.3af Power over Ethernet
- IEEE 802.3at Power over Ethernet
- IEEE 802.3bt Power over Ethernet
- IEEE 802.3az Energy Efficient Ethernet
- IEEE 802.3x Flow Control
- RFC 768 UDP
- RFC 783 TFTP Protocol (revision 2)
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 1350 TFTP Protocol (revision 2)
- RFC 2131 DHCP client
- RFC 4330 Simple Network Time Protocol (SNTP) v4
- RFC 951 BOOTP (VLAN 1 Only)
- RFC 1542 BOOTP Extensions (VLAN 1 only)
- IGMPv2/IGMPv3
- IGMP/MLD Snooping
- RFC 1981 IPv6 Path MTU Discovery
- RFC 2460 IPv6 Specification
- RFC 2925 Remote Operations MIB (Ping only)
- RFC 3315 DHCPv6 (client only)
- RFC 3513 IPv6 Addressing Architecture
- RFC 3596 DNS Extension for IPv6
- RFC 3176 sFlow
- RFC 4022 MIB for TCP
- RFC 4113 MIB for UDP (Partially)
- RFC 4251 SSHv6 Architecture
- RFC 4252 SSHv6 Authentication
- RFC 4253 SSHv6 Transport Layer
- RFC 4254 SSHv6 Connection
- RFC 4293 MIB for IP
- RFC 4419 Key Exchange for SSH
- RFC 4443 ICMPv6
- RFC 4861 IPv6 Neighbor Discovery
- RFC 4862 IPv6 Stateless Address Auto-configuration
- RFC 1213 MIB
- RFC 1493 Bridge MIB
- RFC 2674 802.1p and IEEE 802.1Q Bridge MIB

(Partial support. MIB objects supported:

  – ieee8021BridgeBasePort, ieee8021BridgeBasePort,

  – ieee8021BridgePortMrpJoinTime,

  – ieee8021BridgePortMrpLeaveTime,

  – ieee8021BridgePortMrpLeaveAllTime)

- RFC 2737 Entity MIB
- RFC 2863 The Interfaces Group MIB
- IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
- RFC 1098 A Simple Network Management Protocol (SNMP)
- ANSI/TIA-1057 LLDP Media Endpoint Discovery (LLDPMED)
- SNMPv1/v2c/v3
- RFC 2819 Four groups of RMON: 1 (statistics), 2 (history), 3 (alarm) and 9 (events)
- RFC 1098 A Simple Network Management Protocol (SNMP)
- RFC 2474 DiffServ precedence, with 2/4/8 queues per port
- RFC 2475 DiffServ Architecture
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2598 DiffServ Expedited Forwarding (EF)
- IEEE 802.1X Port Based Network Access Control
- RFC 1492 TACACS+
- RFC 2138 RADIUS Authentication
- RFC 2866 RADIUS Accounting
- Secure Sockets Layer (SSL)

HPE Aruba Networking CX 4100i switches and accessories

Switch models

- HPE Aruba Networking CX 4100i 12-port 1GbE (8-port Class 4 PoE and 4-port Class 6 PoE) 2-port SFP+ DIN Mount Switch (JL817A)
- HPE Aruba Networking CX 4100i 24-port 1GbE (20-port Class 4 PoE and 4-port Class 6 PoE) 4-port SFP+ Switch (JL818A)

Power Supplies (for 12 port DIN rail model)

- HPE Aruba Networking CX 4000i POE 54VDC 240W 100-240VAC DIN Power Supply (JL819A)
- HPE Aruba Networking CX 4000i POE 54VDC 480W 100-240VAC DIN Power Supply (JL820A)
- HPE Aruba Networking CX 4000i PoE 54VDC 240W 12-48VDC DIN Power Supply (JL821A)

Industrial Transceivers (required for -40°C to 70°C extended temperature range)

- HPE Aruba Networking 1G I-Tmp SFP LC SX 500m MMF XCVR (JL780A)
- HPE Aruba Networking 1G I-Tmp SFP LC LX 10km SMF XCVR (JL781A)
- HPE Aruba Networking 10G I-Tmp SFP+ LC SR 300m MMF XCVR (JL782A)
- HPE Aruba Networking 10G I-Tmp SFP+ LC LR 10km SMF XCVR (JL783A)

Transceivers (supported for 0°C to 50°C temperature range)

- HPE Aruba Networking 100M SFP LC FX 2km MMF XCVR (J9054D)
- HPE Aruba Networking 1G SFP LC SX 500m MMF Transceiver (J4858D)
- HPE Aruba Networking 1G SFP LC LX 10km SMF Transceiver (J4859D)
- HPE Aruba Networking 10G SFP+ LC SR 300m MMF Transceiver (J9150D)
- HPE Aruba Networking 10G SFP+ LC LR 10km SMF Transceiver (J9151E)

Accessories

- HPE Aruba Networking DIN Rail 3RU 19inch Rack Mount Kit (JL822A)
- HPE Aruba Networking X414 1U Universal 4-post RM Kit (J9583B)
- HPE Aruba Networking USB-A to RJ45 PC-to-Switch Cable (R9G48B)
- HPE Aruba Networking USB-A to RJ45 PIN3TX-6RX Cable (R8Z87A)
- HPE Aruba Networking USB-A to USB-C PC-to-Switch Cable (R9J32A)
- HPE Aruba Networking USB-C to USB-C PC-to-Switch Cable (R9J33A)

Software

- HPE Aruba Networking Switch Multi-Edit Software Single Node: 1-year (JL639AAE)
- HPE Aruba Networking Switch Multi-Edit Software Single Node: 3-years (JL640AAE)

HPE Aruba Networking Central Foundational License
For details and complete listing of HPE Aruba Networking Central licensing options, please see the HPE Aruba Networking Central SaaS Subscription Ordering Guide.

Support
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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