

Overview

HPE Altoline 9960 Switch Series



Models

HPE Altoline 9960 C1 8-slot 10RU Chassis

JC910A

Key features

- High-performance and high-capacity 100G open modular platform in a 10U 21" rack-mountable form factor
- 256 x 100G switch ports with four fabric cards and up to eight line cards, each with 32 x 100G QSFP28 ports
- Line cards, fabric cards, and power supplies are front accessible
- ONIE boot loader for choice of network OS and easy installation
- High availability with hot-swappable redundant power supplies (3+3) and redundant fan modules (15+1)

Product overview

The HPE Altoline 9960 Switch Series, an open modular platform, meets the high-performance and high-capacity 100G networking requirements of cloud data centers. It provides near-line rate switching (99% throughput at 15 ppm clock, packet size larger or equal to than 128) across 256 ports of 100 GbE. The 9960 platform, deployed to form the data center spine network, lowers equipment cost and power consumption, simplifies cabling, and supports independent NOS software.

HPE Altoline 9960 hardware provides the high availability features required for data center operation, including redundant, hot-swappable AC PSUs, multiple fan zones with redundant fans, and chassis management firmware.

The chassis is loaded with the Open Network Install Environment (ONIE), which supports installing and uninstalling of compatible third-party switch Network Operating System (NOS) offerings.

Features and benefits

Overview

Data center optimized

- **Flexible high port density**
The HPE Altoline 9960 chassis enables 256 QSFP28 switch ports, each supporting 1x100G, 2x50G, 1x40G, 4x25G or 4x10G, to new heights with high-density in 10RU design.
- **Redundant fans and power supplies**
3+3 redundant and hot-swappable power supplies and 16 hot-swappable redundant fan trays enhance reliability and availability

Manageability

- **Out-of-band interface**
Isolates management traffic from user-data plane traffic for complete isolation and total reachability, no matter what happens in the data plane
- **ONIE boot loader**
Switch is loaded with the ONIE boot loader for NOS installation and uninstallation
- **Intel x86 CPU**
Provides high-performance support of widely available, industry-standard software and utilities

Performance

- **High-performance fully distributed CLOS architecture**
Delivers up to 51.2 Tbps (bi-directional) switching capacity and 25.6 Tbps throughput with near-line rate performance
- **High-density 100GbE interface connectivity, and available 10G, 25G, and 50G interface connectivity options**
32-port 100G line cards offer 10G, 25G, and 50G connectivity options
- **Low latency**
The Altoline 9960 delivers low latency of 700 ns (intra-line card; within a 16-port group) and 2100 ns (inter-line card; between two 16-port groups within a line card, or two different line cards)
- **Jumbo frames**
9 K bytes jumbo frames are supported
- **Line card scalability**
Altoline 9960 line cards deliver the scalability needed for data center spine networks:
 - 16 MB integrated packet buffer
 - 8K min and 136K max MAC entries
 - 16K Layer 2 multi-cast (L2MC)
 - 4K VLANs
 - 8K min and 72K max IPv4 L3 hosts
 - 4K min and 36K max IPv6 L3 hosts
 - Layer 3 longest prefix match (L3LPM), TCAM-only mode, of 16K (IPv4/32), 8K (IPv6/64), and 4K (IPv6/128)
 - Above may be subject to additional constraints determined by the installed NOS

Warranty and support

- **1-year Warranty**
see <http://www.hpe.com/networking/warrantysummary> for warranty and support information included with your product purchase.
- **Software releases**
to find software for your product, refer to <http://www.hpe.com/networking/support> ; for details on the software releases available with your product purchase, refer to <http://www.hpe.com/networking/warrantysummary>

Configuration

Build To Order:

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

HPE Altoline 9960 C1 8-slot 10RU Chassis JC910A

- 4 Fabric Modules Slots
- 8 Line cards Slots, each with 32 x QSFP+ \ QSFP28 Ports
- 6 Power Supply Slots
- 16 Fan Tray Slots
- 10U - Height

Switch Options

Modules

Fabric Modules

For Switch Chassis JC910A System (std 0 // max 4) User Selection (min 4 // max 4) per enclosure

HPE AL 9960 FM1 Fabric Module JL911A

Configuration Rules:

Remarks:

OCA Blue NOTE:

For every 1 Fabric Module, up to qty 2 Line cards can be support

Line Cards

For Switch Chassis JC910A System (std 0 // max 8) User Selection (min 0 // max 8) per enclosure

HPE AL 9960 LC1 32x100G Line Card JL912A
 • min=0 \ max=32 QSFP+ \ QSFP28 40G \ 100G Transceivers See Configuration NOTE: 1

Configuration Rules:

Note 1 **The following 100G Transceivers install into this Module: (Use BTO only when adding to switch)**

HPE X150 100G QSFP28 CWDM4 2km SM Transceiver JH673A

HPE X240 100G QSFP28 to QSFP28 1m Direct Attach Copper Cable JL271A

HPE X240 100G QSFP28 to QSFP28 3m Direct Attach Copper Cable JL272A

Transceivers

QSFP28 Transceivers

HPE X150 100G QSFP28 CWDM4 2km SM Transceiver JH673A

Cables

HPE X240 100G QSFP28 to QSFP28 1m Direct Attach Copper Cable JL271A

HPE X240 100G QSFP28 to QSFP28 3m Direct Attach Copper Cable JL272A

Configuration

Internal Power Supplies

For Switch Chassis JC910A System (std 0 // max 6) User Selection (min 3 // max 6) per enclosure

HPE Altoline 9960 P1 3KW AC Power Supply Module	JC913A
<ul style="list-style-type: none"> includes 1 x c19, 3000W 	See Configuration NOTE: 1
PDU Cable NA/MEX/TW/JP	JC913A#B2B
<ul style="list-style-type: none"> C19 PDU Jumper Cord (NA/MEX/TW/JP) 	
PDU Cable ROW	JC913A#B2C
<ul style="list-style-type: none"> C19 PDU Jumper Cord (ROW) 	
High Volt Switch to Wall Power Cord	JC913A#B2E
<ul style="list-style-type: none"> HPE 2.5m C19 to NEMA 6-20P 250V 20Amp Non-locking Power Cord(JL351A) 	
No Power Cord	JC913A#AC3
<ul style="list-style-type: none"> No Localized Power Cord Selected. Use JL335A to obtain a Locking Plug Power Cord (L6-20P) 	

Configuration Rules:

Note 1 Localization (Wall Power Cord) required on orders without #B2B, #B2C, (PDU Power Cord),#B2E and #AC3. (See Localization Menu)

Remarks:

Drop down under power supply should offer the following options and results:
 Switch/Router to PDU Power Cord - #B2B in NA, Mexico, Taiwan, and Japan or #B2C ROW. (Watson Default B2B or B2C for Rack Level CTO)
 Switch/Router/Power Supply to Wall Power Cord - Localized Option (Watson Default for BTO and Box Level CTO)
 High Volt Switch/Router/Power Supply to Wall Power Cord - #B2E Option. (Offered only in North America, Mexico, Taiwan, and Japan)
 No Localized Power Cord Selected - #AC3 Option
 OCA Blue **NOTE:** Locking Power Cord (JL335A) L6-20P is available through the Watson Accessories tab

Switch Enclosure Options

Fan Tray

For Switch Chassis JC910A System (std 0 // max 16) User Selection (min 16 // max 16) per enclosure

HPE Altoline 9960 F1 Single Fan	JC914A
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Technical Specifications

HPE Altoline 9960 C1 8-slot 10RU Chassis (JC910A)

Switch ports	8 switch port slots Supports up to 256 QSFP28 ports each supporting 100 GbE or 40 GbE QSFP+ or 4 x 25 GbE or 2 x 50 GbE or 4 x 10 GbE
Management ports	2 x USB 2.0 Type A RS232 console ports for each line card 2 x USB 2.0 Type A storage port for each line card and fabric card 2 x RJ-45 serial console ports for fabric card 1 x RJ-45 RS232 management port for fabric card
Power supply	6 power supplies (3+3) hot-swappable and redundant
Fan	16 fan modules (15+1) hot-swappable and redundant
Physical characteristics	<p>Chassis Dimensions 30.0 (d) x 21.0 (w) x 17.5 (h) in (76.2 x 53.34 x 44.45 cm) (21" rack required)</p> <p>Chassis Weight (no line cards; four fabric cards) 134.5 lb (61 kg)</p> <p>Chassis Weight (eight line cards; four fabric cards) 320.8 lb (145.5 kg)</p> <p>Fan dimensions 5.3 (d) x 4.4 (w) x 3.7 (h) in (13.4 x 11.3 x 9.4 cm)</p> <p>Fan weight 1.8 lb (0.82 kg)</p> <p>Power supply dimensions 23.8 (d) x 2.8 (w) x 1.7 (h) in (60.4 x 7.2 x 4.3 cm)</p> <p>Power supply weight 5.5 lb (2.5 kg)</p>
Memory and processor	<p>CPU modules CPU modules x 2 for each line card and fabric card Intel XeonD-1548 processor, DDR4 SO-DIMM 4GB x 2, NOR Flash: 8 MB Intel Rangeley 2.4 GHz processor, DDR3 SO-DIMM 4GB x 2, NOR Flash 8 MB x 2 Freescale T2080 1.8 GHz processor, DDR3 SO-DIMM 8 GB x 2, NOR Flash: 128 MB</p>
Environment	<p>Operating relative humidity 5% to 95%, noncondensing</p> <p>Operating temperature 0°C to 40°C (32°F to 104°F)</p> <p>Storage temperature -40°C to 40°C (-40°F to 104°F)</p>
Electrical characteristics	<p>Voltage AC input range: 200-240VAC, 15A per power supply</p> <p>Frequency 50/60 Hz</p>
Safety	IEC/EN 60950-1; UL 609501-1; CSA 22.2 No 60950-1; IEC/EN 62368-1
Laser safety	Fiber needs to use a Clas 1 laser product and meet the following standards: IEC/EN 60825-1 (3rd edition); U.S. Code of Federal Regulations 21 CFR 1040; Canadian Radiation Emitting Devices Act, REDR C1370
Emissions	FCC part 15 Subpart B Class A; EN 55032 Class A; VCCI-CISPR 32 Class A; FCC part 15 Subpart B Class A; ICES-003 Class A; BSMI CNS 13438 Class A; EN 61000-3-2 Class A; EN 61000-3-3
Immunity	EN55024; IEC 61000-4-2/3/4/5/6/8/11
Management	Command-line interface; out-of-band management; SNMP manager; Telnet; FTP
Services	Refer to the Hewlett Packard Enterprise website at http://www.hpe.com/networking/services for details on the service-level descriptions and product numbers. For details about services and response times in your area, please contact your local Hewlett Packard Enterprise sales office.

Accessories

HPE Altoline 9960 Switch Series accessories

Transceivers

HPE X240 100G QSFP28 to QSFP28 3m Direct Attach Copper Cable
HPE X150 100G QSFP28 CWDM4 2km SM Transceiver
HPE X240 100G QSFP28 to QSFP28 1m Direct Attach Copper Cable

JL272A
JH673A
JL271A

CNTTSHOP.VN
CHUYÊN NGHIỆP - THÂN THIỆN

Summary of Changes

Date	Version History	Action	Description of Change:
04-Sep-2018	Version 2	Changed	Minor edits made on Overview and Technical Specifications
05-Feb-2018	Version 1	Created	Document creation



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