



HPE Altoline 9960 Switch Series



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 100GbE. The 9960 platform, deployed to form the data center spine network, lowers equipment cost and power consumption, simplifies cabling, and supports independent NOS software.

The Altoline 9960, targeted for modern cloud scale data center, is designed to fit in a 21 inch rack. The design provides the benefits of improved airflow, energy efficiency, and volumetric efficiency.

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

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

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 [hpe.com/networking/warrantysummary](https://www.hpe.com/networking/warrantysummary) for warranty and support information included with your product purchase.



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Specifications	HPE Altoline 9960
Switch ports	8 switch port slots Supports up to 256 QSFP28 ports each supporting 100GbE or 40GbE QSFP+ or 4 x 25GbE or 2 x 50GbE or 4 x 10GbE
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	
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)
Chassis weight (no line cards; four fabric cards)	134.5 lb (61 kg)
Chassis weight (eight line cards; four fabric cards)	320.8 lb (145.5 kg)
Fan dimensions	5.3 (d) x 4.4 (w) x 3.7 (h) in. (13.4 x 11.3 x 9.4 cm)
Fan weight	1.8 lb (0.82 kg)
Power supply dimensions	23.8 (d) x 2.8 (w) x 1.7 (h) in. (60.4 x 7.2 x 4.3 cm)
Power supply weight	5.5 lb (2.5 kg)
Memory and processor	
CPU modules	CPU modules x 2 for each line card and fabric card Intel® Xeon® D-1548 processor, DDR4 SO-DIMM 4 GB x 2, NOR Flash: 8 MB Intel Rangeley 2.4 GHz processor, DDR3 SO-DIMM 4 GB 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
Environment	
Operating relative humidity	5% to 95%, noncondensing
Operating temperature	0°C to 40°C (32°F to 104°F)
Storage temperature	-40°C to 40°C (-40°F to 104°F)
Electrical characteristics	
Frequency	50–60 Hz
Voltage	AC input range: 200–240VAC, 15A per power supply
Regulatory compliance	
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 Class 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	
Service	
Refer to the Hewlett Packard Enterprise website at 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.	



HPE Altoline 9960 Switch Series ordering information

JC910A	HPE Altoline 9960 C1 8-slot 10RU Chassis
JC911A	HPE Altoline 9960 FM1 Fabric Module
JC912A	HPE Altoline 9960 LC1 32x100G Line Card
JC913A	HPE Altoline 9960 P1 3KW AC Power Supply Module
JC914A	HPE Altoline 9960 F1 Single Fan
JL272A	HPE X240 100G QSFP28 to QSFP28 3m Direct Attach Copper Cable
JH673A	HPE X150 100G QSFP28 CWDM4 2km SM Transceiver
JL271A	HPE X240 100G QSFP28 to QSFP28 1m Direct Attach Copper Cable

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