Overview

Intel Omni-Path 1U Switches

The Intel® Omni-Path 1U Switch is a rack-mountable switch with 48 QSFP28 ports. The 1U Switch cost-effectively supports a cluster of up to 48 servers, or provides an edge or core switch option for a larger fabric. This fixed configuration switch is a member of the Intel® Omni-Path Fabric series of switches, delivering an exceptional set of high-speed networking features and functions.

The Intel Omni-Path Switch is ideal for customers who deploy high-performance computing (HPC) clusters based on HPE ProLiant XL and DL Servers using the Intel Omni-Path technology.

Standard Features

Key features

- 48 ports, each providing 100 Gbps performance
- 9.6 Tbps aggregate bandwidth
- Optimized for message rate and latency
- Multiple Virtual Lanes (VLs) per physical port
- Supports virtual fabric partitioning
- Supports adaptive routing
- Chassis and fabric management capable through management card (Managed Switch) or Intel® Omni-Path Fabric Suite management solution (see management section for more details)

Features and benefits

Switch Specifications

- Based on Intel® Omni-Path Switch Silicon 100 Series 48-port ASIC
- 100 Gbps per port bidirectional
- Switching capacity 9.6 Tbps
- Virtual lanes: configurable from one to eight VLs plus one management VL
- Configurable MTU size of 2 KB, 4 KB, 8 KB, or 10KB
- Maximum multicast table size: 8192 entries
- Maximum unicast table size: 49151 entries
- Supports QSFP28 passive copper and active optical cables

Management

- Managed switch
- Pluggable Q7 Intel® Atom™ processor-based board
- Enables command line interface and chassis management GUI through 10/100/1000 Base-T Ethernet
- Enables serial console through USB serial port
- Enables Network Time Protocol (NTP), SNMP/MIBs, and LDAP
- Supports Embedded Subnet Manager (ESM) and Performance Manager (PM) for up to 100 Nodes
- Unmanaged switch
- Requires a host-based or Managed switch Intel Fabric Manager (FM) for in-band management of switch

Connectors and cabling

- QSFP28 ports
- Passive copper or active optical cables

Indicators

- Per QSFP28 port status LED for link and activity
- Two (2) Ethernet indicators (off = 10; Green = 100; Orange = 1G)
- Two (2) Chassis indicators (Green = Status OK; Amber = Need attention)
- Power Supply Good indicators (Green = Good)
- Management enabled indicator
- Fabric Manager enabled indicator

Power Supply

- Redundant (1+1) power supplies

Standard Features

- Max inrush current per power supply: 15A

Cooling

- Redundant 6 (N+1) Fans
- Customer selectable reverse airflow option

Warranty and support

- 3-year warranty, On Site, next business day response

Configuration

Models

Intel® Omni-Path Architecture 100Gb 48-port Unmanaged Switch 829910-B21
Intel® Omni-Path Architecture 100Gb 48-port Managed Switch 829911-B21

Intel® Omni-Path Architecture 100Gb 48-port Unmanaged Switch 829910-B21

- 48 QSFP28 ports externally managed switch
- 1U form factor
- 2 (1+1) Power Supplies
- 2 Power cords, 6ft, C13-C14
- 6 (N+1) Fans (customer selectable reverse airflow option)
- 19" rack rail kit (Rails have adjustable depth mounting from 26"-32")
- Quick Start Guide

NOTE: See Related Options for supported cables

Intel® Omni-Path Architecture 100Gb 48-port Managed Switch 829911-B21

- 48 QSFP28 ports externally managed switch
  - 1U form factor
- 2 Power Supplies
- 2 Power cords, 6ft, C13-C14
- 6 (N+1) Fans (customer selectable reverse airflow option)
- 19" rack rail kit (Rails have adjustable depth mounting from 26"-32")
- Quick Start Guide

NOTE: See Related Options for supported cables

Related Options

Supported cables for Intel Omni-Path Switches

Passive Copper cables

HPE 0.5m 100Gb QSFP28 Omni-Path Architecture Copper Cable	830024-B21
HPE 1m 100Gb QSFP28 Omni-Path Architecture Copper Cable	830024-B22
HPE 1.5m 100Gb QSFP28 Omni-Path Architecture Copper Cable	830024-B23
HPE 2m 100Gb QSFP28 Omni-Path Architecture Copper Cable	830024-B24
HPE 3m 100Gb QSFP28 Omni-Path Architecture Copper Cable	830024-B25

Active Optical cables

HPE 3m 100Gb QSFP28 Omni-Path Architecture Optical Cable	830025-B21
HPE 5m 100Gb QSFP28 Omni-Path Architecture Optical Cable	830025-B22
HPE 7m 100Gb QSFP28 Omni-Path Architecture Optical Cable	830025-B23
HPE 10m 100Gb QSFP28 Omni-Path Architecture Optical Cable	830025-B24
HPE 12m 100Gb QSFP28 Omni-Path Architecture Optical Cable	830025-B25
HPE 15m 100Gb QSFP28 Omni-Path Architecture Optical Cable	830025-B26
HPE 20m 100Gb QSFP28 Omni-Path Architecture Optical Cable	830025-B27
HPE 30m 100Gb QSFP28 Omni-Path Architecture Optical Cable	830025-B28
HPE 3M 100Gb QSFP28 Omni-Path Optical Power Class 2 Cable	881204-B21
HPE 5M 100Gb QSFP28 Omni-Path Optical Power Class 2 Cable	881204-B22
HPE 7M 100Gb QSFP28 Omni-Path Optical Power Class 2 Cable	881204-B23
HPE 10M 100Gb QSFP28 Omni-Path Optical Power Class 2 Cable	881204-B24
HPE 12M 100Gb QSFP28 Omni-Path Optical Power Class 2 Cable	881204-B25
HPE 15M 100Gb QSFP28 Omni-Path Optical Power Class 2 Cable	881204-B26
HPE 20M 100Gb QSFP28 Omni-Path Optical Power Class 2 Cable	881204-B27
HPE 30M 100Gb QSFP28 Omni-Path Optical Power Class 2 Cable	881204-B28

Services

Services

Intel Omni-Path Switches should have the same attached support level as the Server and Enclosure.

Protect your business beyond warranty with HPE Support Services	HPE Technology Services delivers confidence, reduces risk and helps customers realize agility and stability. Connect to Hewlett Packard Enterprise to help prevent problems and solve issues faster. HPE Support Services enable you to choose the right service level, length of coverage and response time as you purchase your new server, giving you full entitlement to the support for need for your IT and business. Protect your product, beyond warranty. Connect your devices: Unlock all of the benefits of your technology investment by connecting your products to Hewlett Packard Enterprise. Achieve up to 77%1 reduction in down time, near 100%2 diagnostic accuracy and a single consolidated view of your environment. By connecting, you will receive 24x7monitoring, pre-failure alerts, automatic call logging, and automatic parts dispatch. HPE Proactive Care Service and HPE Datacenter Care Service customers will also benefit from proactive activities to help prevent issues and increase optimization. All of these benefits are already available to you with your server storage and networking products, securely connected to Hewlett Packard Enterprise support. 1.-IDC 2015 2.-HPE CSC reports 2014 – 2015 Learn more about getting connected at **www.hpe.com/services/getconnected**
HPE Proactive Care* with 24x7 coverage, three year Support Service	HPE Proactive Care gives customers an enhanced call experience. When your products are connected to Hewlett Packard Enterprise, Proactive Care helps prevent problems and maintains IT stability by utilizing personalized proactive reports with recommendations and advice This Service combines three years proactive reporting and advice with our 24x7 coverage, four hour hardware response time when there is a problem. This service also includes collaborative software support for Independent Software Vendors (ISVs), (Red Hat, VMWare, Microsoft, etc.) running on your Hewlett Packard Enterprise servers. **http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA3-8855ENW.pdf**
HPE Foundation Care 24x7, three-year Support Service	HPE Foundation Care 24x7 gives you access to Hewlett Packard Enterprise 24 hours a day, seven days a week for assistance on resolving issues. This service includes need based Hardware onsite response within four hours. In addition, collaborative software support is included in this service that provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make Hewlett Packard Enterprise your first call to help resolve hardware or software problems. **http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en**
HPE Foundation Care NBD, three-year Support Service	HPE Foundation Care Next Business Day connects you to Hewlett Packard Enterprise during business hours for assistance on resolving issues – This service features need based next business day hardware onsite response and software call back within two hours. In addition, Collaborative software support and provides troubleshooting assistance on industry leading software running on your HPE server. Simplify your support experience and make Hewlett Packard Enterprise your first call to help resolve hardware or software problems. **http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en**

Services

	Parts and Materials	Hewlett Packard Enterprise will provide HPE-supported replacement parts and materials necessary to maintain the covered hardware product in operating condition, including parts and materials for available and recommended engineering improvements. Parts and components that have reached their maximum supported lifetime and/or the maximum usage limitations as set forth in the manufacturer's operating manual, product QuickSpecs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services. The defective media retention service feature option applies only to Disk or eligible SSD/Flash Drives replaced by Hewlett Packard Enterprise due to malfunction.
Other related Services	HPE Server Hardware Installation	Provides for the basic hardware installation of Hewlett Packard Enterprise branded servers, storage devices and networking options to assist you in bringing your new hardware into operation in a timely and professional manner. **http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-9356EN.pdf**
	HPE Factory Express for Servers and storage	HPE Factory Express offers configuration, customization, integration and deployment services for Hewlett Packard Enterprise servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed. Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. Hewlett Packard Enterprise products supported through Factory Express include a wide array of servers and storage: HPE Integrity, HPE ProLiant, HPE Apollo, HPE ProLiant Server Blades, HPE BladeSystem, HPE 9000 servers as well as the MSAxxxx3PAR suite, XP, rackable tape libraries and configurable network switches. HPE Technology Services Support Credits offer flexible services and technical skills to meet your changing IT demands. With a menu of service that is tailored to suit your needs, you get additional resources and specialist skills to help you maintain peak performance of your IT. Offered as annual credits, you can plan your budgets while proactively responding to your dynamic business.
	HPE Datacenter Care service	HPE Datacenter Care helps improve IT stability and security, increase the value of IT, and enable agility and innovation. It is a structured framework of repeatable, tested, and globally available services "building blocks." You can deploy, operate, and evolve your datacenter wherever you are on your IT journey. With HPE Datacenter Care, you benefit from a personalized relationship with Hewlett Packard Enterprise via a single point of accountability for Hewlett Packard Enterprise and others' products. For more information, visit **www.hpe.com/services/datacentercare** HPE Flexibly Capacity, a building block of HPE Datacenter Care is a pay per use model for on premise infrastructure, giving you the technology you want, the ability to manage capacity when you need it, with no upfront payment. Flexible Capacity provides the needed room to grow your environment, but only pay for actual metered use. Technology transitions with refresh can be built in, and infrastructure and services are billed monthly, enabling you to align costs to business use.

Technical Specifications

Intel® Omni-Path Architecture 100Gb 48-port Unmanaged Switch			829910-B21
Intel® Omni-Path Architecture 100Gb 48-port Managed Switch			829911-B21
I/O ports and slots	48 QSFP28 ports		
Additional ports and slots (Managed switch only)	10/100/1000 Base-T Ethernet port 1 USB port		
Power supplies	2 power supplies (1+1 redundant)		
Fan units	6 Fans (N+1 redundant)		
Physical characteristics	Dimensions	1.72 in (H) x 17.3 in (W) x 16.8 in (D) 4.32 cm (H) x 43.96 cm (W) x 42.67 cm (D)	
	Weight	6.67 kg (Unmanaged) 14.7 lb (Unmanaged) 7.01 kg (Managed) 15.45 lb (Managed)	
Management processor (Managed Switch only)	Q7 Intel® Atom™ processor		
Performance	Latency	≤110 ns port-to-port	
	Throughput	up to 9.6 Tbps	
	Maximum multicast table size	8192 entries	
	Maximum unicast table size	49151 entries	
Environment	Operating temperature	0°C to 40°C (32°F to 104°F)	
	Storage temperature	-40°C to 70°C	
	Operating humidity	10% to 85% non-condensing	
	STORAGE HUMIDITY	5% to 95% non-condensing	
	Operating Altitude	0 to 3,048m (0 to 10,000 feet)	
	Storage Altitude	0 to 12,192m (0 to 40,000 feet)	
	Acoustic	Less than 7.0 Bels (70 dB)	
	Airflow	70 CFM maximum at 40°C	
Electrical characteristics	Frequency	50/60 Hz	
	Voltage	100 - 240 VAC	
	Maximum power rating	238W	
Safety	US/Canada • TUV NRTL: UL 60950-1, CSA 22.1.No. 60950-1 Europe • TUV: EN60950-1 International • CB Scheme: IEC 60950-1 Customs Union: Russian Federation, Belarus and Kazakhstan • TR CU 004/2011 “On Safety of Low-Voltage Equipment”		
Emissions	US/Canada • FCC Part 15, Subpart B, Class A • CAN ICES-3 (A)/NMB-3(A) Europe/International • CISPR22		

Technical Specifications

- CISPR32/EN55032
- EN55024
- EN61000-3-2
- EN61000-3-3

Japan

- VCCI, Class A

Australia/New Zealand

- AS/NZS CISPR 22, Class A

Korea

- RRA/KC (KN32, KN35), Class A

Taiwan

- BSMI (CNS 13438), Class A

Customs Union: Russian Federation, Belarus and Kazakhstan

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- GOST R IEC 60950-1
- GOST R 51318.22
- GOST 30805.24
- GOST R 51317.3.2 (Section 6, 7)
- GOST R 51317.3.3

RoHS/REACH Complies with RoHS II Directive 2011/65/EU of the European Parliament
Complies with REACH Regulation (EC) No 1907/2006

Fabric Management The Intel® Omni-Path Fabric Suite Fabric Manager (FM) solution can be deployed as either a host-based or an embedded solution for an Omni-Path 1U Switch. The host solution uses the Intel® Omni-Path Fabric stack running on a Linux Server to access and manage the fabric. The host based FM is required for managing large fabrics greater than 100 nodes, as the FM software is able to make use of the large memory resources and high speed processor technology of standard servers.

The Managed Switch FM deploys all of the host based FM components in an embedded solution using the Pluggable Q7 Intel® Atom™ processor board. The maximum fabric configuration supported by the Embedded FM is 100 HFI ports involving less than 20 Switch ASICs (1 ASIC per 1U switch). For the small-to-moderate fabrics, the embedded FM provides cost savings in that the fabric is able to utilize an existing resource for the embedded FM purposes.

The Unmanaged Switch does not have the Q7 Intel® Atom™ processor and requires either a host-based FM or Managed Switch solution.

Summary of Changes

Date	Version History	Action	Description of Change
4-Dec-2017	From version 2 to 3	Updated	Add SKUs to related options section
25-Sept-2017	From version 1 to 2	Updated	Updated content throughout the QuickSpecs
6-June-2016	Version 1	Created	Initial version of QuickSpecs for Intel Omni-Path 1U Switches.

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