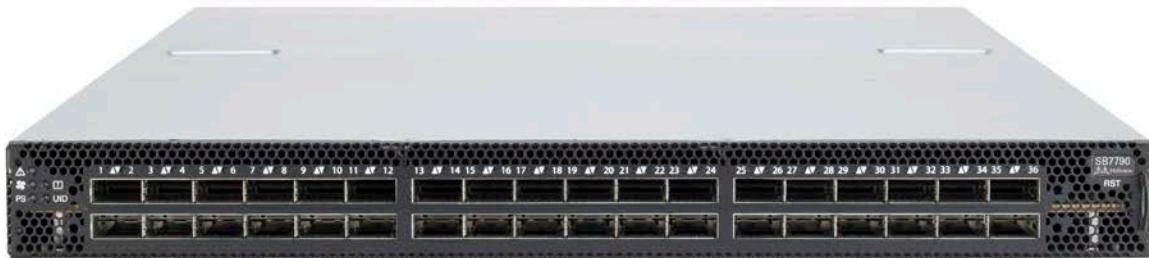


Overview

Mellanox InfiniBand EDR Switch Series

Mellanox InfiniBand (IB) EDR Switches are supported to work with HPE InfiniBand Adapters to deliver high performance connectivity for HPC clusters using HPE ProLiant XL and DL Server families. The 1U switches feature 36 QSFP28 ports delivering up to 7Tbps of non-blocking bandwidth with 90ns port-to-port latency.

Ideally suited for Customers who deploy high-performance computing (HPC) clusters based on HPE ProLiant XL and DL Servers using InfiniBand technology.



Standard Features

Key features

- 36 ports, each providing EDR (100Gbps) performance
- 7Tbps non-blocking aggregate bandwidth with 90ns port-to-port latency
- In-network computing through the Co-Design Scalable Hierarchical Aggregation Protocol (SHArP) technology (supported on Mellanox IB EDR v2 36-port switches)
- Quick and easy setup and management
- Multiple Virtual Lanes (VLs) per physical port
- Improved performance by removing fabric congestion
- Backward compatibility to Mellanox FDR InfiniBand technology for ease of migration

Features and benefits

Switch Specifications

- Mellanox EDR IB 36P switches are based on Mellanox Switch-IB™ Switch Silicon 36-port ASIC
- Mellanox EDR IB v2 36P switches are based on Mellanox Switch-IB™ 2 Switch Silicon 36-port ASIC with SHArP support
- EDR (100Gbps) per port bidirectional
- Switching capacity 7Tbps
- Virtual lanes, configurable from one to eight VLs plus one management VL
- Configurable MTU size of up to 4 KB
- Maximum multicast table size: 16384 entries
- Support QSFP28 passive copper and active optical cables
- Compliant with IBTA 1.21 and 1.3
- Adaptive Routing
- Port Mirroring

Management

- Unmanaged switches
 - Require external subnet manager on the fabric (see more description below)
- Managed switches
 - Embedded subnet manager supporting fabrics of up to 2K nodes
 - Enables command line interface and chassis management GUI through dual 100/1000 Ethernet ports
 - RS232 port over DB9
 - Enables serial console through USB serial port
 - Supports Management over IPv4 or IPv6
 - Supports SNMP v1, v2, v3

Connectors and cabling

- QSFP28 ports
- Passive copper or active optical cables

Indicators

Standard Features

- Per QSFP28 port status LED for link and activity
- System status LEDs for system, fans, power supplies
- Unit ID (beacon) LED

Power Supply

- Dual redundant (1+1) hot-plug power supplies
- Frequency: 50-60Hz, single phase AC

Cooling

- Front-to-rear (power side inlet) airflow
- RAF: reversed airflow, rear-to-front (connector side inlet) airflow
- 4 (N+1) Hot-swappable fan units

Warranty and support

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

Configuration

Mellanox IB EDR 36P Unmanaged Switch	834976-B21
Mellanox IB EDR v2 36P Switch <ul style="list-style-type: none">• 36 QSFP28 ports externally managed switch• 2 (1+1) Power Supplies• 2 Power cords, 6ft, C13-C14• 4 (N+1) Fan units<ul style="list-style-type: none">○ Power side inlet airflow• Sliding rail rackmount kit• Quick Start Guide	834976-B22
Mellanox IB EDR 36P Unmanaged RAF Switch	834977-B21
Mellanox IB EDR v2 36P RAF Switch <ul style="list-style-type: none">• 36 QSFP28 ports externally managed switch• 2 (1+1) Power Supplies• 2 Power cords, 6ft, C13-C14• 4 (N+1) Fan units<ul style="list-style-type: none">○ Reversed airflow RAF – connector side inlet airflow• Sliding rail rackmount kit• Quick Start Guide	834977-B22
Mellanox IB EDR 36P Managed Switch	834978-B21
Mellanox IB EDR v2 36P Managed Switch <ul style="list-style-type: none">• 36 QSFP28 ports internally managed switch• 2 (1+1) Power Supplies• 2 Power cords, 6ft, C13-C14• 4 (N+1) Fan units<ul style="list-style-type: none">○ Power side inlet airflow• Sliding rail rackmount kit• 1 Serial cable (DB9 to RJ-45)• Quick Start Guide	834978-B22
Mellanox IB EDR 36P RAF Managed Switch	834979-B21
Mellanox IB EDR v2 36P RAF Managed Switch <ul style="list-style-type: none">• 36 QSFP28 ports internally managed switch• 2 (1+1) Power Supplies• 2 Power cords, 6ft, C13-C14• 4 (N+1) Fan units<ul style="list-style-type: none">○ Reversed airflow RAF – connector side inlet airflow• Sliding rail rackmount kit• 1 Serial cable (DB9 to RJ-45)• Quick Start Guide	834979-B22

Technical Specifications

Mellanox IB EDR 36P Unmanaged Switch		834976-B21
Mellanox IB EDR 36P Unmanaged RAF Switch		834977-B21
Mellanox IB EDR v2 36P Switch		834976-B22
Mellanox IB EDR v2 36P RAF Switch		834977-B22
I/O ports and slots	36 QSFP28 ports	
Additional ports and slots	1 System reset button	
Power supplies	2 power supplies (1+1 redundant and hot-swappable)	
Fan units	4 fan units (N+1 redundant and hot-swappable)	
Physical characteristics	Dimensions	1.72in (H) x 16.84in (W) x 27in (D) 4.37cm (H) x 42.77cm (W) x 68.58cm (D)
	Weight	11kg 24.2lb
Performance	Latency	90ns port-to-port
	Throughput	up to 7Tbps
	Linear forwarding data base	4x48K entries
Environment	Operating temperature	32°F to 113°F (0°C to 45°C)
	Non-Operating temperature	-40°C to 70°C
	Operating humidity	5% to 95%
	Operating Altitude	-60 to 3200m
	Acoustic	ISO 7779 ETS 300 753
Electrical characteristics	Frequency	50/60 Hz
	Voltage	100 - 240 VAC
	Typical power with passive cables (ATIS)	122.32W
	Max power with optical cables (assuming 3.5W per port)	332W
Safety	US/Canada: cTUVus EU: EN60950-1 International: IEC60950-1 Customs Union, Russian Federation, Belarus and Kazakhstan	
Emissions	USA: FCC, Class A Canada: ICES, Class A EU: EN55022, Class A EU: EN55024, Class A EU: EN61000-3-2, Class A EU: EN61000-3-3, Class A Japan: VCCI, Class A	

Technical Specifications

Australia/New Zealand: AS/NZS CISPR 22, Class A
 Korea : KCC (KN32, KN35), Class A
 Taiwan : BSMI (CNS 13438), Class A

Others

RoHS-6 compliant

Management

Externally managed – requires a subnet manager (for example, the subnet manager on an internally managed switch, or the Mellanox Unified Fabric Manager™ running the host) on the fabric to manage the InfiniBand fabric.

Mellanox Unified Fabric Manager Advanced (UFM) is a powerful platform for managing scale-out computing environments. UFM enables data center operators to efficiently provision, monitor and operate the modern data center fabric.

UFM runs on a server and is used to monitor and analyze Mellanox fabrics health and performance. UFM also can be used to automate provisioning and device management tasks. For example, UFM can communicate with devices, to reset or shut down ports or devices, perform firmware and software upgrades, etc. UFM's extensive API enables it to easily integrate with existing management tools for a unified cluster view. UFM also includes the ability to save historical information, to send alerts to external systems and to activate user made scripts based on system events.

Mellanox IB EDR 36P Managed Switch	834978-B21
Mellanox IB EDR 36P RAF Managed Switch	834979-B21
Mellanox IB EDR v2 36P Managed Switch	834978-B22
Mellanox IB EDR v2 36P RAF Managed Switch	834979-B22
I/O ports and slots	36 QSFP28 ports
Additional ports and slots	Dual 100/1000 Ethernet ports 1 RS232 port over DB9 1 USB port
Power supplies	2 power supplies (1+1 redundant and hot-swappable)
Fan units	4 fan units (N+1 redundant and hot-swappable)
Physical characteristics	Dimensions 1.72in (H) x 16.84in (W) x 27in (D) 4.37cm (H) x 42.77cm (W) x 68.58cm (D)
	Weight 11kg 24.2lb
Management processor	Dual-core x86 CPU for the onboard subnet manager
Performance	Latency 90ns port-to-port Throughput up to 7Tbps Linear forwarding data base 4x48K entries
Environment	Operating temperature 32°F to 113°F (0°C to 45°C) Non-Operating temperature -40°C to 70°C Operating humidity 5% to 95% Operating Altitude -60 to 3200m
	Acoustic ISO 7779 ETS 300 753
Electrical characteristics	Frequency 50/60Hz Voltage 100 - 240VAC Typical power with passive cables (ATIS) 136.08W

Technical Specifications

Max power with optical cables (assuming 3.5W per port) 374W

Safety	US/Canada: cTUVus EU: EN60950-1 International: IEC60950-1 Customs Union: Russian Federation, Belarus and Kazakhstan
Emissions	USA: FCC, Class A Canada: ICES, Class A EU: EN55022, Class A EU: EN55024, Class A EU: EN61000-3-2, Class A EU: EN61000-3-3, Class A Japan: VCCI, Class A Australia/New Zealand: AS/NZS CISPR 22, Class A Korea : KCC (KN32, KN35), Class A Taiwan : BSMI (CNS 13438), Class A
Others	RoHS-6 compliant
Management	Internally managed switch comes with a dual-core x86 CPU for the onboard subnet manager, enabling simple, out-of-the-box fabric bring-up for up to 2k nodes. The InfiniBand fabric can also be managed by the Mellanox Unified Fabric Manager™. The Mellanox Unified Fabric Manager Advanced (UFM) is a powerful platform for managing scale-out computing environments. UFM enables data center operators to efficiently provision, monitor and operate the modern data center fabric. UFM runs on a server and is used to monitor and analyze Mellanox fabrics health and performance. UFM also can be used to automate provisioning and device management tasks. For example, UFM can communicate with devices, to reset or shut down ports or devices, perform firmware and software upgrades, etc. UFM's extensive API enables it to easily integrate with existing management tools for a unified cluster view. UFM also includes the ability to save historical information, to send alerts to external systems and to activate user made scripts based on system events.
Services	Mellanox EDR InfiniBand 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 24x7 monitoring, 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.

- IDC 2015
- 2 – HPE CSC reports 2014 – 2015

Technical Specifications

Learn more about getting connected at <http://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. <https://www.hpe.com/h20195/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.

<https://www.hpe.com/h20195/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.

<https://www.hpe.com/h20195/V2/GetDocument.aspx?docname=4AA4-8876ENW&cc=us&lc=en>

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.

<https://www.hpe.com/h20195/V2/GetPDF.aspx/5981-9356EN.pdf>

Technical Specifications

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 MSAxxx3PAR 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 <http://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.

Standards and protocols IBTA 1.2.1 and 1.3

Related Options

Mellanox Unified Fabric Manager (UFM) Software Licenses

Mellanox Unified Fabric Manager Advanced 1yr 24x7 Updates and Technical Support Flex License	BD571A
Mellanox Unified Fabric Manager Advanced 3yr 24x7 Updates and Technical Support Flex License	BD572A

HPE InfiniBand EDR cables

Passive Copper cables

HPE 0.5M IB EDR QSFP Copper cable	834973-B21
HPE 1M IB EDR QSFP Copper cable	834973-B22
HPE 1.5M IB EDR QSFP Copper cable	834973-B23
HPE 2M IB EDR QSFP Copper cable	834973-B24
HPE 3M IB EDR QSFP Copper cable	834973-B25

Active Optical cables

HPE 3M IB EDR QSFP Optical Cable	834972-B21
HPE 5M IB EDR QSFP Optical Cable	834972-B22
HPE 7M IB EDR QSFP Optical Cable	834972-B23
HPE 10M IB EDR QSFP Optical Cable	834972-B24
HPE 12M IB EDR QSFP Optical Cable	834972-B25
HPE 15M IB EDR QSFP Optical Cable	834972-B26
HPE 20M IB EDR QSFP Optical Cable	834972-B27
HPE 30M IB EDR QSFP Optical Cable	834972-B28

Summary of Changes

Date	Version History	Action	Description of Change
7-Oct-2016	From version 2 to 3	Updated	Update all the sections from the QuickSpecs
26-Aug-2016	From version 1 to 2	Updated	Update all the sections from the QuickSpecs
31-Mar-2016	Version 1	Created	Initial version of QuickSpecs for Mellanox InfiniBand EDR Switches.



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