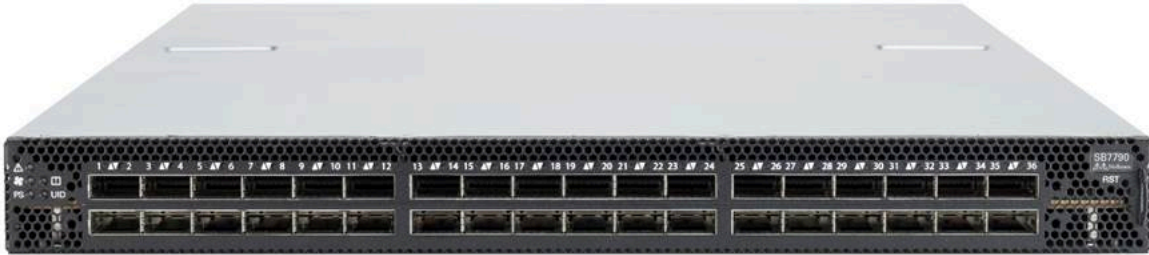


Overview

Mellanox InfiniBand EDR Switches

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 passible 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

- 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
-

Service and Support

HPE Services

No matter where you are in your digital transformation journey, you can count on HPE Services to deliver the expertise you need when, where and how you need it. From planning to deployment, ongoing operations and beyond, our experts can help you realize your digital ambitions.

<https://www.hpe.com/services>

Consulting Services

No matter where you are in your journey to hybrid cloud, experts can help you map out your next steps. From determining what workloads should live where, to handling governance and compliance, to managing costs, our experts can help you optimize your operations.

<https://www.hpe.com/services/consulting>

HPE Managed Services

HPE runs your IT operations, providing services that monitor, operate, and optimize your infrastructure and applications, delivered consistently and globally to give you unified control and let you focus on innovation.

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Operational services

Optimize your entire IT environment and drive innovation. Manage day-to-day IT operational tasks while freeing up valuable time and resources. Meet service-level targets and business objectives with features designed to drive better business outcomes.

<https://www.hpe.com/services/operational>

HPE Complete Care Service

HPE Complete Care Service is a modular, edge-to-cloud IT environment service designed to help optimize your entire IT environment and achieve agreed upon IT outcomes and business goals through a personalized experience. All delivered by an assigned team of HPE Services experts. HPE Complete Care Service provides:

- A complete coverage approach -- edge to cloud
- An assigned HPE team
- Modular and fully personalized engagement
- Enhanced Incident Management experience with priority access
-  Digitally enabled and AI driven customer experience

<https://www.hpe.com/services/completecure>

HPE Tech Care Service

HPE Tech Care Service is the operational support service experience for HPE products. The service goes beyond traditional support by providing access to product specific experts, an AI driven digital experience, and general technical guidance to not only reduce risk but constantly search for ways to do things better. HPE Tech Care Service delivers a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Tech Care Service is available in three response levels. Basic, which provides 9x5 business hour availability and a 2-hour response time. Essential which provides a 15-minute response time 24x7 for most enterprise level customers, and Critical which includes a 6-hour repair commitment where available and outage management response for severity 1 incidents.

<https://www.hpe.com/services/techcare>

HPE Lifecycle Services

HPE Lifecycle Services provide a variety of options to help maintain your HPE systems and solutions at all stages of the product lifecycle. A few popular examples include:

- Lifecycle Install and Startup Services: Various levels for physical installation and power on, remote access setup, installation and startup, and enhanced installation services with the operating system.
- HPE Firmware Update Analysis Service: Recommendations for firmware revision levels for selected HPE products, taking into account the relevant revision dependencies within your IT environment.
- HPE Firmware Update Implementation Service: Implementation of firmware updates for selected HPE server, storage, and solution products, taking into account the relevant revision dependencies within your IT environment.
- Implementation assistance services: Highly trained technical service specialists to assist you with a variety of activities, ranging from design, implementation, and platform deployment to consolidation, migration, project management, and onsite technical forums.
- HPE Service Credits: Access to prepaid services for flexibility to choose from a variety of specialized service activities, including assessments, performance maintenance reviews, firmware management, professional services, and operational best practices.

Notes: To review the list of Lifecycle Services available for your product go to:

<https://www.hpe.com/services/lifecycle>

For a list of the most frequently purchased services using service credits, see the [HPE Service Credits Menu](#)

Other Related Services from HPE Services:

HPE Education Services

Training and certification designed for IT and business professionals across all industries. Broad catalogue of course offerings to expand skills and proficiencies in topics ranging from cloud and cybersecurity to AI and DevOps. Create learning paths to expand proficiency in a specific subject. Schedule training in a way that works best for your business with flexible continuous learning options.

<https://www.hpe.com/services/training>

Defective Media Retention

An option available with HPE Complete Care Service and HPE Tech Care Service and applies only to Disk or eligible SSD/Flash Drives replaced by HPE due to malfunction.

Consult your HPE Sales Representative or Authorized Channel Partner of choice for any additional questions and services options.

Parts and Materials

HPE 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 quick-specs, or the technical product data sheet will not be provided, repaired, or replaced as part of these services.

How to Purchase Services

Services are sold by Hewlett Packard Enterprise and Hewlett Packard Enterprise Authorized Service Partners:

- Services for customers purchasing from HPE or an enterprise reseller are quoted using HPE order configuration tools.
- Customers purchasing from a commercial reseller can find services at <https://ssc.hpe.com/portal/site/ssc/>

AI Powered and Digitally Enabled Support Experience

Achieve faster time to resolution with access to product-specific resources and expertise through a digital and data driven customer experience

Sign into the HPE Support Center experience, featuring streamlined self-serve case creation and management capabilities with inline knowledge recommendations. You will also find personalized task alerts and powerful troubleshooting support through an intelligent virtual agent with seamless transition when needed to a live support agent.

<https://support.hpe.com/hpesc/public/home/signin>

Consume IT On Your Terms

HPE GreenLake edge-to-cloud platform brings the cloud experience directly to your apps and data wherever they are-the edge, colocations, or your data center. It delivers cloud services for on-premises IT infrastructure specifically tailored to your most demanding workloads. With a pay-per-use, scalable, point-and-click self-service experience that is managed for you, HPE GreenLake edge-to-cloud platform accelerates digital transformation in a distributed, edge-to-cloud world.

- Get faster time to market
- Save on TCO, align costs to business
- Scale quickly, meet unpredictable demand
- Simplify IT operations across your data centers and clouds

To learn more about HPE Services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Contact information for a representative in your area can be found at "Contact HPE" <https://www.hpe.com/us/en/contact-hpe.html>

For more information

<http://www.hpe.com/services>

Configuration

Mellanox InfiniBand EDR (100 Gb/sec) 36-port Power-side-inlet Airflow Unmanaged Switch	834976-B21
Mellanox InfiniBand EDR 100 Gb/sec v2 36-port Power-side-inlet Airflow Unmanaged Switch • 36 QSFP28 ports externally managed switch • 2 (1+1) Power Supplies • 2 Power cords, 6ft, C13-C14 • 4 (N+1) Fan units ◦ Power side inlet airflow • Sliding rail rackmount kit • Quick Start Guide	834976-B22
Mellanox InfiniBand EDR (100 Gb/sec) 36-port Connector-side-inlet Airflow (RAF) Unmanaged Switch	834977-B21
Mellanox InfiniBand EDR 100 Gb/sec v2 36-port Connector-side-inlet Airflow (RAF) Unmanaged Switch • 36 QSFP28 ports externally managed switch • 2 (1+1) Power Supplies • 2 Power cords, 6ft, C13-C14 • 4 (N+1) Fan units ◦ Reversed airflow RAF - connector side inlet airflow • Sliding rail rackmount kit • Quick Start Guide	834977-B22
Mellanox InfiniBand EDR (100 Gb/sec) 36-port Power-side-inlet Airflow Managed Switch	834978-B21
Mellanox InfiniBand EDR 100 Gb/sec v2 36-port Power-side-inlet Airflow Managed Switch • 36 QSFP28 ports internally managed switch • 2 (1+1) Power Supplies • 2 Power cords, 6ft, C13-C14 • 4 (N+1) Fan units ◦ Power side inlet airflow • Sliding rail rackmount kit • 1 Serial cable (DB9 to RJ-45) • Quick Start Guide	834978-B22
Mellanox InfiniBand EDR (100 Gb/sec) 36-port Connector-side-inlet Airflow (RAF) Managed Switch	834979-B21
Mellanox InfiniBand EDR 100 Gb/sec v2 36-port Connector-side-inlet Airflow (RAF) Managed Switch • 36 QSFP28 ports internally managed switch • 2 (1+1) Power Supplies • 2 Power cords, 6ft, C13-C14 • 4 (N+1) Fan units ◦ 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 InfiniBand EDR (100 Gb/sec) 36-port Power-side-inlet Airflow Unmanaged Switch	834976-B21
Mellanox InfiniBand EDR (100 Gb/sec) 36-port Connector-side-inlet Airflow (RAF) Unmanaged Switch	834977-B21
Mellanox InfiniBand EDR 100 Gb/sec v2 36-port Power-side-inlet Airflow Unmanaged Switch	834976-B22

**Mellanox InfiniBand EDR 100 Gb/sec v2 36-port Connector-side-inlet Airflow (RAF)
Unmanaged 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

332W

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

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 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 InfiniBand EDR (100 Gb/sec) 36-port Power-side-inlet Airflow Managed Switch		834978-B21
Mellanox InfiniBand EDR (100 Gb/sec) 36-port Connector-side-inlet Airflow (RAF) Managed Switch		834979-B21
Mellanox InfiniBand EDR 100 Gb/sec v2 36-port Power-side-inlet Airflow Managed Switch		834978-B22
Mellanox InfiniBand EDR 100 Gb/sec v2 36-port Connector-side-inlet Airflow (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

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 Tech Care Service and HPE Complete 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

Learn more about getting connected at <http://www.hpe.com/services/getconnected>
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>

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.

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
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Mellanox Unified Fabric Manager Advanced 3yr 24x7 Updates and Technical Support Flex License	BD572A
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HPE InfiniBand EDR cables

Passive Copper cables

HPE 0.5m InfiniBand EDR QSFP Copper Cable	834973-B21
HPE 1m InfiniBand EDR QSFP Copper Cable	834973-B22
HPE 1.5m InfiniBand EDR QSFP Copper Cable	834973-B23
HPE 2m InfiniBand EDR QSFP Copper Cable	834973-B24
HPE 3m InfiniBand EDR QSFP Copper Cable	834973-B25

Active Optical cables

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

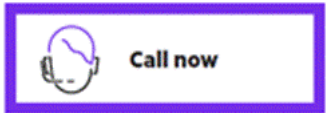
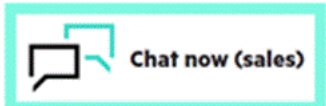
Summary of Changes

Date	Version History	Action	Description of Change
08-Jan-2024	Version 5	Changed	HPE Services Rebranding

15-Nov-2021	Version 4	Changed	Service and Support section was updated.
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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