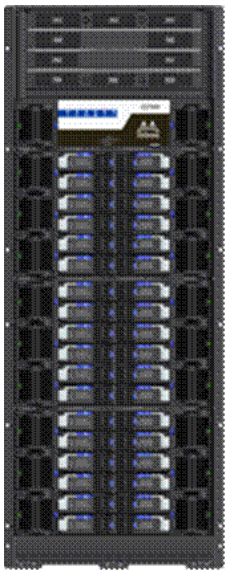
Overview

Mellanox InfiniBand Switch Chassis

Mellanox InfiniBand (IB) EDR Modular 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 Modular switches feature the Mellanox Switch-B™ 2 ASIC, and include three chassis with 216 ports, 324 ports, and 648 ports, respectively.
The Mellanox InfiniBand EDR Switch is ideally suited for customers who deploy high-performance clusters based on HPE ProLiant XL and DL Servers using InfiniBand technology.







Standard Features

Key features

- Modular switches for 216 ports, 324 ports, and 648 ports, respectively
- QSFP28 ports for EDR 100Gb/s per port
- Non-blocking switch throughput
- Ultra-low switch latency
- N+N redundant & hot-swappable power supplies
    - 80 gold+ and energy star certified
- Dual-core x86 CPU for management
- Backward compatibility to Mellanox FDR technology for ease of migration

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Features and benefits

Switch Specifications

- Mellanox Switch-IB 2 ASIC
- Compliant with IBTA 1.21 and 1.3
- 9 virtual lanes: 8 data + management
- 256 to 4Kbytes MTU
- 4x48K entry linear forwarding data base

Management

- Dual-core x86 CPU for on-board Subnet Manager
    o Support fabrics of up to 2k nodes

- Unified Fabric Manager™ (UFM™) Agent
- Optional Mellanox Unified Fabric Manager (UFM)

Connectors and cabling

- QSFP28 ports
- Passive copper or active optical cables

Warranty and support

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

Service and Support

HPE Pointnext - Service and Support

Get the most from your HPE Products. Get the expertise you need at every step of your IT journey with **HPE Pointnext Services**. We help you lower your risks and overall costs using automation and methodologies that have been tested and refined by HPE experts through thousands of deployments globally. HPE Pointnext **Advisory Services**, focus on your business outcomes and goals, partnering with you to design your transformation and build a roadmap tuned to your unique challenges. Our **Professional** and **Operational Services** can be leveraged to speed up time-to-production, boost performance and accelerate your business. HPE Pointnext specializes in flawless and on-time implementation, on-budget execution, and creative configurations that get the most out of software and hardware alike.

Consume IT on your terms

HPE GreenLake 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 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

Managed services to run your IT operations

HPE GreenLake Management Services provides 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.

Recommended Services

HPE Pointnext Tech Care.

HPE Pointnext Tech Care is the new operational service experience for HPE products. Tech Care 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 Pointnext Tech Care has been reimagined from the ground up to support a customer-centric, AI driven, and digitally enabled customer experience to move your business forward. HPE Pointnext Tech Care 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 Pointnext Complete Care

HPE Pointnext Complete Care is a modular, edge-to-cloud IT environment service that provides a holistic approach to optimizing your entire IT environment and achieving agreed upon IT outcomes and business goals through a personalized and customer-centric experience. All delivered by an assigned team of HPE Pointnext Services experts. HPE Pointnext Complete Care 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/completecare

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.

Standards and protocols

IBTA 1.2.1 and 1.3

Configuration Information

Mellanox InfiniBand EDR Modular Switch Series

Models

Mellanox InfiniBand EDR 648 Port Switch Chassis	843188-B21
Mellanox InfiniBand EDR 324 Port Switch Chassis	843189-B21
Mellanox InfiniBand EDR 216 Port Switch Chassis	843190-B21
Mellanox InfiniBand EDR Modular Management Board	843191-B21
Mellanox InfiniBand EDR Modular Fabric Board	843192-B21
Mellanox InfiniBand EDR 36 Port Modular Line Board	843193-B21
Mellanox InfiniBand EDR 648 Port Switch Chassis	843188-B21

- 28U Chassis (+ 1U Shelf)
- Up to Eighteen (18) Modular Line Boards, each with 36 QSFP28 ports
  - None included
- Up to Eighteen (18) Modular Fabric Boards
  - None included
- Up to Two (2) Modular Management Boards

    - None included; One (1) required.
- Ten (10) Power Supplies (N+N redundant)
    - Ten (10) included
    - Ten (10) PDU Power cards (C19/C20 2-meter) included
- Twenty (20) Fan Units
    - Twenty (20) included
- Rack kit and cable management kit

Mellanox InfiniBand EDR 324 Port Switch Chassis 843189-B21

- 16U Chassis (+ 1U Shelf)
- Up to Nine (9) Modular Line Boards, each with 36 QSFP28 ports
    - None included
- Up to Nine (9) Modular Fabric Boards
    - None included
- Up to Two (2) Modular Management Boards
    - None included; One (1) required.
- Six (6) Power Supplies (N+N redundant)
    - Six (6) included
    - Six (6) PDU Power cards (C19/C20 2-meter) included
- Twelve (12) Fan Units
    - Twelve (12) included
- Rack kit and cable management kit

Mellanox InfiniBand EDR 216 Port Switch Chassis 843190-B21

- 12U Chassis (+ 1U Shelf)
- Up to Six (6) Modular Line Boards, each with 36 QSFP28 ports
    - None included
- Up to Six (6) Modular Fabric Boards
    - None included
- Up to Two (2) Modular Management Boards
    - None included; One (1) required.
- Four (4) Power Supplies (N+N redundant)
    - Four (4) included
    - Four (4) PDU Power cards (C19/C20 2-meter) included
- Eight (8) Fan Units
    - Eight (8) included
- Rack kit and cable management kit

Mellanox InfiniBand EDR Modular Management Board 843191-B21

- One (1) is required, up to two supported per switch chassis
- Hot swappable

Mellanox InfiniBand EDR Modular Fabric Board 843192-B21

- Hot swappable

Mellanox InfiniBand EDR 36 Port Modular Line Board 843193-B21

- Hot swappable
- Per port status LED
- Port Error LED

Notes: See Related Options for supported cables

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 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

Technical Specifications

Mellanox InfiniBand EDR 648 Port Switch Chassis		843188-B21
I/O ports and slots	Eighteen (18) Slots for Line Boards, each with 36 QSFP28 ports Eighteen (18) Slots for Modular Fabric Boards	
Power supplies	Ten (10) Power Supplies (N+N redundant), hot swappable	
Fan units	Twenty (20) Fan Units (N+N redundant), hot swappable	
Physical characteristics	Dimensions	48.96 in (H) x 17.64 in (W) x 30.3 in (D) 124.4 cm (H) x 44.8 cm (W) x 77.0 cm (D)
	Weight	369.5 kg (fully configured) 815 lb (fully configured)
Performance	Latency	≤ 0.5 µs
	Throughput	up to 130 Tbps
	Linear forwarding data base	4x48K entries
Power Consumption (fully populated)	Passive cable	9161 W
	Active cable	12370 W

Mellanox InfiniBand EDR 324-port Switch Chassis		843189-B21
I/O ports and slots	Nine (9) Slots for Line Boards, each with 36 QSFP28 ports Nine (9) Slots for Modular Fabric Boards	
Power supplies	Six (6) Power Supplies (N+N redundant), hot swappable	
Fan units	Twelve (12) Fan Units (N+N redundant), hot swappable	
Physical characteristics	Dimensions	28 in (H) x 17.64 in (W) x 30.3 in (D) 71.1 cm (H) x 44.8 cm (W) x 77.0 cm (D)
	Weight	275 kg (fully configured) 606 lb (fully configured)
Performance	Latency	≤ 0.5 µs
	Throughput	up to 64 Tbps
	Linear forwarding data base	4x48K entries
Power Consumption (fully populated)	Passive cable	4939 W
	Active cable	6543 W

Mellanox InfiniBand EDR 216-port Switch Chassis	843190-B21

I/O ports and slots	Six (6) Slots for Line Boards, each with 36 QSFP28 ports Six (6) Slots for Modular Fabric Boards	
Power supplies	Four (4) Power Supplies (N+N redundant), hot swappable	
Fan units	Eight (8) Fan Units (N+N redundant), hot swappable	
Physical characteristics	Dimensions	20.96 in (H) x 17.64 in (W) x 30.3 in (D) 53.2 cm (H) x 44.8 cm (W) x 77.0 cm (D)
	Weight	200 kg (fully configured) 441 lb (fully configured)
Performance	Latency	≤ 0.5 µs
	Throughput	up to 43 Tbps
	Linear forwarding data base	4x48K entries
Power Consumption (fully populated)	Passive cable	3474 W
	Active cable	4543 W

Mellanox InfiniBand EDR Modular Management Board		843191-B21
Additional ports and slots	One (1) System reset button One (1) USB port One (1) Console port Two (2) RJ45 Ethernet management ports	
Physical characteristics	Dimensions	Plug into the management slots on the switch chassis

Mellanox InfiniBand EDR Modular Fabric Board		843192-B21
Additional ports and slots		
Physical characteristics	Dimensions	Plug into the fabric slots on the switch chassis

Mellanox InfiniBand EDR 36-port Modular Line Board		843193-B21
I/O ports and slots	Thirty-six (36) QSFP28 ports per Line Board	
Physical characteristics	Dimensions	Plug into the line-board slots on the switch chassis
Environment	Operating temperature	0°C to 45°C (32°F to 113°F)
	Non-Operating temperature	-40°C to 70°C
	Operating humidity	10% to 85%
	Operating Altitude	-60 to 2000m
	Acoustic	ISO 7779 ETS 300 753
Electrical characteristics	Frequency	47/63 Hz, single phase AC
	Voltage	180 - 265 VAC
Safety	US/Canada: cTUVus EU: EN60950-1 International: IEC60950-1	
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	
Others	RoHS-6 compliant	
Management	The Management Board 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.

Summary of Changes

Date	Version History	Action	Description of Change
15-Nov-2021	Version 2	Changed	Service and Support section was updated
06-June-2016	Version 1	Created	Initial version of QuickSpecs for Mellanox InfiniBand Switch Chassis

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