

Overview

Mellanox SH2200 TAA Switch Module for HPE Synergy

Mellanox SH2200 TAA Switch Module for HPE Synergy delivers high-performance, high-speed 25Gb and 50Gb Ethernet connectivity to the Synergy compute modules, and 40/100Gb Ethernet to the upstream network switches. Designed for hybrid IT data centers requiring advanced feature sets such as deterministic low latency network fabric, hardware-based virtualization support, or storage offloading. Based on the Mellanox Spectrum™ ASIC, the module delivers up to 2.8 Tbps switching capacity, 8.4 BPPS throughput and ultra low latency for the most demanding data center workloads such as Network Function Virtualization, financial services, high frequency trading, or virtualized enterprise data centers.

HPE Synergy is a single infrastructure of physical and virtual pools of compute, storage, and fabric resources, and a management interface that allows configuration of server resources in any configuration. The Mellanox SH2200 Switch Module is managed by industry standard management resources that allows network functions to be managed by network administrators. As the foundation for the New Style of Business infrastructure, HPE Synergy eliminates hardware and operational complexity so IT organizations can precisely deliver infrastructure resources to applications faster and with greater flexibility.

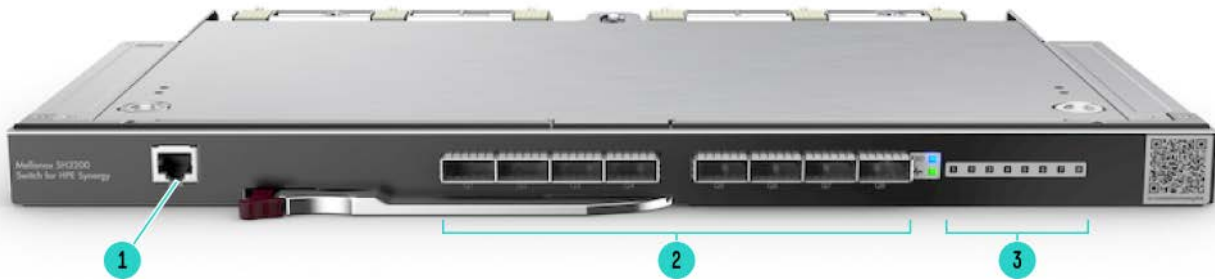


Figure 1 Mellanox SH2200 Switch Module for HPE Synergy Bezel

1. Console port
2. 40/100Gb QSFP28 Ethernet uplink ports
3. Status LEDs

Overview

Platform Information

Models

Mellanox SH2200 TAA-compliant Switch Module for HPE Synergy 866573-B21

Notes: HPE offers multiple Trade Agreement Act (TAA) compliant configurations to meet the needs of US Federal Government customers. This product is either manufactured or substantially transformed in a designated country.

Compatibility

Mellanox SH2200 TAA Switch Module for HPE Synergy supports the following hardware.

Active HPE Compute Modules

HPE Synergy 480 Gen10 Configure-to-order Compute Module	871940-B21
HPE Synergy 480 Gen10 Configure-to-order without Drive Bays Compute Module	871941-B21
HPE Synergy 480 Gen10 Configure-to-order Premium Compute Module	871942-B21
HPE Synergy 660 Gen10 Configure-to-order Compute Module	871929-B21
HPE Synergy 660 Gen10 Configure-to-order without Drive Bays Compute Module	871930-B21
HPE Synergy 660 Gen10 Configure-to-order Premium Backplane Compute Module	871931-B21

Obsolete Products*

Notes: *No longer available for purchase, informational only

- HPE Synergy 480 Gen9 Configure-to-order Compute Module (732350-B21)
- HPE Synergy 480 Gen9 Configure-to-order without Drive Bays Compute Module (732351-B21)
- HPE Synergy 480 Gen9 Configure-to-order Premium Compute Module (732352-B21)
- HPE Synergy 620 Gen9 2S-EX Configure-to-order Compute Module (834485-B21)
- HPE Synergy 620 Gen9 2S Base Build-to-order Compute Module (834484-B21)
- HPE Synergy 620 Gen9 2S-EX Performance Build-to-order Compute Module (834483-B21)
- HPE Synergy 660 Gen9 E5-4610v4 2P Compute Module Entry BTO (826958-B21)
- HPE Synergy 660 Gen9 E5-4650v4 4P Compute Module Performance BTO (826956-B21)
- HPE Synergy 660 Gen9 Configure-to-Order SAS Compute Module (732360-B21)
- HPE Synergy 660 Gen9 Configure-to-Order SATA Compute Module (732361-B21)
- HPE Synergy 660 Gen9 Configure-to-Order Expanded Storage Compute Module (732365-B21)
- HPE Synergy 680 Gen9 4S-EX Configure-to-Order Compute Module (834482-B21)
- HPE Synergy 680 Gen9 4S-EX Build-to-order Base Compute Module (834481-B21)
- HPE Synergy 680 Gen9 4S-EX Build-to-order Performance Compute Module (834480-B21)

HPE Network Adapters

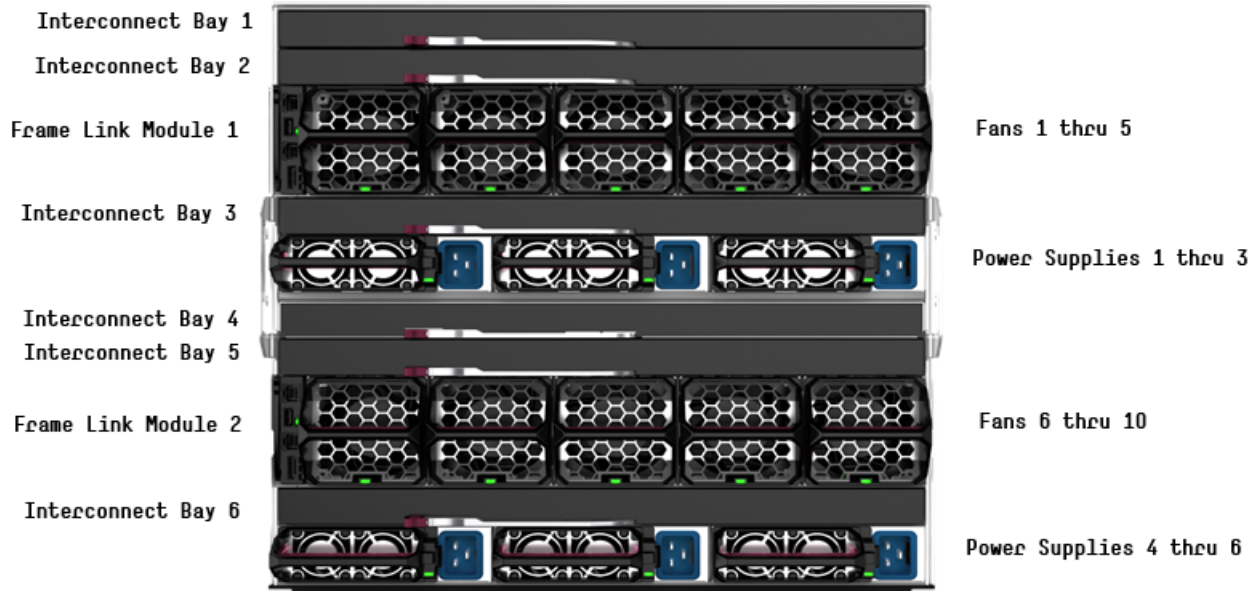
HPE Synergy 4610C 10/25Gb Ethernet Adapter	813890-B21
HPE Synergy 4820C 10/20/25Gb Converged Network Adapter	876449-B21
HPE Synergy 6410C 25/50Gb Ethernet Adapter	868779-B21
HPE Synergy 6810C 25/50Gb Ethernet Adapter	867322-B21
HPE Synergy 6820C 25/50Gb Converged Network Adapter	P02054-B21

Notes: Consult individual compute module QuickSpecs for specific adapter support



Overview

Supported Configurations

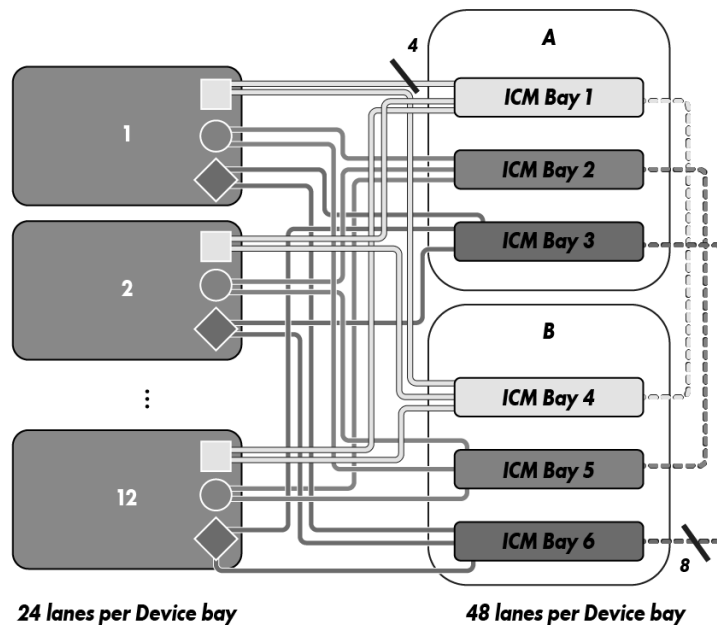


HPE Synergy 12000 Frame - Rear View

Mezzanines to Interconnect Port Mapping

The first interconnect in an ICM bay set is connected to Port 1 of the mezzanine card and the second interconnect in an ICM bay set is connected to Port 2 of that mezzanine card. If the two interconnects in an ICM bay set are of the same type, they provide redundant connectivity to the two mezzanine ports.

Notes: Dotted lines in the figure below indicate paired Interconnect Bay



Standard Features

Product Features

Performance

- 12 x 25/50Gb Ethernet downlinks to compute module Ethernet Adapters
- Each 25/50Gb downlink supports one Ethernet connectivity to the adapter
- 8 x QSFP28 external uplink ports configurable as 1x100Gb, 1x40Gb, 4x25Gb or 4x10Gb Ethernet ports connected to external LAN switches
- Extended list of direct attach copper and active optical cable connections supported
- Ultra low latency (<300 ns Ethernet ports)
- Line-rate, full-duplex 2.8 Tbps switching capacity with 8.4 BPPS throughput
- Hardware-based VXLAN VTEP support

Management

- Monitored by HPE OneView
- CLI support, SSH and Console, IPv4 and IPv6, for configuration and troubleshooting, integrated with security architecture and multi-level user administration
- Web UI
- RMON2
- Status and statistics reporting, system health, port status, through CLI and SNMP
- 802.1AB Link Layer Discovery Protocol (LLDP) v1, v2
- Dual flash images
- Multiple configuration files
- Telnet
- SSHv2
- SNMP v1, v2, v3
- Syslog client, both IPv4 and IPv6
- Network Time Protocol (NTP)
- Secure Copy (SCP), FTP & TFTP
- STP Root Guard
- DHCP protection from unauthorized DHCP servers
- RADIUS
- TACACS+
- sFLOW
- Port mirroring
- Port counters
- Event notification
- JSON
- Puppet Agent
- Mellanox NEO™
- OpenFlow 1.4
- Notification by E-Mail
- Predefined Scheduled Scripts
- System Health Monitoring
- Enhanced Telemetry



Standard Features

Layer 2 Switching

- 88K L2 forwarding entries
- 802.1Q VLAN support (4094 VLAN)
- Jumbo Frame (9216 bytes)
- Q-in-Q
- 802.3ad Link Aggregation/LACP
 - 32 ports/channel
 - 64 groups per system
- Multi-module Chassis Link Aggregation Group (MLAG)
- 802.3X Flow Control
- 802.1Qbb Priority-based Flow Control (PFC)
- 802.1Qaz Enhanced Transmission Selection (ETS)
- 802.1Qau Congestion Notification
- Data Center Bridging Capabilities Exchange Protocol (DCBX)
- RFC3168 Explicit Congestion Notification (ECN)
- ICMP – IPv4 and IPv6
- IGMPv1, v2, v3 snooping, Querier
- 802.1W Rapid Spanning Tree Protocol (RSTP)
 - BPDU filter
 - Root guard
 - Loop guard
 - BPDU guard
- 802.1Q Multiple Spanning Tree Protocol (MSTP)
- Per-VLAN Rapid Spanning Tree+ (PVRST+)
- Access control lists (ACL) – (L2 – L4)
- 802.1X Port-based Network Access Control
- QoS – qualification, rewrite, policers

Layer 3 Switching

- Static Routing
- IPv4
- IPv6
- OSFpv2
- BGPv4
- 64-way ECMP
- Virtual Router Redundancy Protocol (VRRPv2)
- PIM Bi-Dir
- DHCP Relay
- Remote Direct Memory Access (RDMA) over Converged Ethernet (RoCEv2)
- VXLAN Tunnel End Point (VTEP)
- Open vSwitch Database (OVSDb)



Standard Features

SNMP MIBs

- RFC 4293 IP-MIB
- RFC 2572 SNMP-MPD-MIB
- RFC 4268 ENTITY-STATE-MIB
- RFC 3433 ENTITY-SENSOR-MIB
- RFC 4133 ENTITY-MIB
- RFC 4188 BRIDGE-MIB
- RFC 4363 Q-BRIDGE-MIB
- 802.1AB-2005 LLDP-MIB
- RFC 4318 RSTP-MIB
- RFC 2863 IF-MIB
- LANaifType-MIB
- RFC 4001 INET-ADDRESS-MIB
- RFC 4022 TCP-MIB
- RFC 4113 UDP-MIB
- RFC 4292 IP-FORWARD-MIB
- RFC 2790 HOST-RESOURCES-MIB
- RFC 1213
- SNMPV2-CONF
- RFC 2579 SNMPV2-TC MIB
- RFC 3417 SNMPV2-TM MIB
- RFC 3826 SNMP-USM-AES-MIB
- Mellanox SMI MIB
- Mellanox IF-VPI-MIB
- Mellanox enhanced ENTITY-MIB
- Mellanox Power-Cycle-MIB
- Mellanox SW-Update-MIB
- Mellanox Config-MIB

Options

- Optional HPE 100Gb QSFP28 SR4 modules
- Optional HPE 40Gb QSFP+ SR, SR 300M and LR modules, 40Gb QSFP+ DAC and AOC cables

Supports Ethernet adapters for HPE Synergy Compute Nodes (Supported functionality defined by each adapter)



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

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/h20195/v2/Getdocument.aspx?docname=a00108652enw>

HPE Datacenter Care

HPE Datacenter Care helps customers address the pressing needs of IT today and smoothly transform to a more agile cloud-like IT operations model. We help run and monitor your IT by offloading the day to day routine tasks, helping customers be more predictive and proactive, and saving time with one place to call with for all of their IT.

Partner with an assigned account team backed by local and global experts, access HPE enhanced call experience with priority access, use specialized support for complex, technologies, choose hardware and software support for your devices, implement proactive monitoring to stay ahead of issues, and access HPE IT best practices and IP. HPE Datacenter Care advantage options are available to add to your agreement to give you specialized expertise for performance, security, back up analysis, and much more. Datacenter Care is available as both tailored statement of work and as a packaged service for 3, 4, and 5 year terms.

<https://www.hpe.com/us/en/services/datacenter-hybrid-services.html>

For more information: <http://www.hpe.com/services>



Service and Support

HPE Technology Services for HPE Synergy

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. Our support technology lets you to tap into the knowledge of millions of devices and thousands of experts to stay informed and in control, anywhere, any time.

Protect your business beyond warranty with HPE Support Services

HPE support services offer complete care and support expertise with committed response choices that are designed to meet your IT and business needs.

Advise, transform, integrate, support, automate, and flex

HPE Technology Services helps you get the most out of what you have today and transition to HPE Synergy, a composable infrastructure, at your pace and from wherever you are on the journey.

Start with the HPE Transformation Workshop to ensure that your business and IT organizations collaborate, define the topline strategy for composable, software-defined, cloud-ready infrastructure and kick-start your projects confidently. This workshop clarifies your business requirements and the issues that IT and operations teams must resolve in order to meet these requirements. A detailed executive briefing or high-level report summarizes the strategies, high-level plan and functional requirements.

HPE Modernization and Migration Services helps you choose the right platform for the right workload at the right cost and evolve your IT infrastructure, processes and organization taking advantage of “on-hybrid infrastructure” innovations such as composable, converged, software-defined, technologies. Hewlett Packard Enterprise experts advise, transform, integrate and implement for platform refresh, datacenter consolidation virtualization, migration and automation projects.

HPE Flexible Capacity is a pay per use model for on premise infrastructure. This offers needed HPE Synergy capacity in the datacenter, plus a buffer of additional capacity. As HPE Synergy will be a dynamic environment, this provides enough room to grow your environment, but only pay for actual metered use. Technology transitions and refresh can be built in, infrastructure and services are billed monthly, enabling you to align costs to business use.

HPE Datacenter Care Infrastructure Automation: HPE Synergy with OneView embedded helps enable infrastructure automation and is integrated with tools such as those from Chef, Puppet, and Docker, to enable rapid bare metal provisioning. With DC-IA, HPE service experts provide advice, support, best practices, for these tools that work with OneView to help create a fast, agile, and reliable automated IT environment. With this approach, customers can deploy faster. DC-IA delivers support to customers to enable infrastructure as code and agile processes as part of the service. Customers schedule quarterly reviews and reports with HPE Center of Expertise, as well as having access to these experts when needed, for automation development and code coaching.

Deploy and integrate

HPE Factory Express Initial Frame Service for Synergy

Factory Express allows a customers' configurations to be pre-configured in the HPE Integration center with an implementation project manager to manage the deployment end to end. The project manager will act as a single point of contact to coordinate the build, delivery and onsite installation and commissioning of the solution. In addition to the configuration and deployment activities, your HPE Synergy configuration goes through comprehensive testing and a detailed documentation package on the configuration and settings of the delivered solution will be provided.

HPE Factory Express Synergy Additional Frame Service for Synergy

Add additional frames to your HPE Synergy Factory Express service or expand your existing HPE Synergy Infrastructure.



Service and Support

HPE Synergy First Frame Installation and Startup –

Provides for hardware installation (HPE Synergy compute modules, Storage Modules, Virtual Connect modules, Interconnect Link Modules, Fibre Channel Modules, Frame Link Modules, and HPE Synergy D3940 Storage Modules) and software startup for the first frame of your HPE Synergy deployment. Additional frames can be added using the HPE Synergy Additional Frame Installation and Startup Service.

HPE Synergy Additional Frame Installation and Startup Service –

Add additional frames to your HPE Synergy First Frame Startup service or expand your existing HPE Synergy Infrastructure.

HPE Education

Training your IT staff is critical to help drive the value of HPE Synergy with increased efficiencies and better business outcomes. Training is key to the transformation and management of HPE Synergy.

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.

Warranty

Mellanox SH2200 Switch Module for HPE Synergy Limited Warranty includes 3 year Parts, 3 year Labor, 3-year on-site support. Additional information regarding worldwide limited warranty and technical support is available at: <http://h17007.www1.hpe.com/us/en/enterprise/servers/warranty/>.

For more information

Additional Support Services can be found at HPE Support Services Central
<http://ssc.hpe.com/portal/site/ssc/>



Related Options

QSFP28 uplink ports options

HPE 100Gb QSFP28 MPO SR4 100m Transceiver	845966-B21
HPE 100Gb QSFP28 Bidirectional Transceiver	845972-B21
HPE 100Gb QSFP28 to QSFP28 3m Direct Attach Copper Cable	845406-B21
HPE 100Gb QSFP28 to QSFP28 5m Direct Attach Copper Cable	845408-B21
HPE QSFP28 to SFP28 Adapter	845970-B21

Notes: HPE QSA28 (QSFP28 to SFP28) adapter (845970-B21) is required to convert a QSFP+/QSFP28 slot to a single SFP+/SFP28 slot for 25G or 10G operation with this switch model.

QSFP+ uplink ports options

HPE BladeSystem c-Class 40Gb QSFP+ MPO SR4 100m Transceiver	720187-B21
HPE 40Gb QSFP+ Bidirectional Transceiver	841716-B21
HPE BladeSystem c-Class 40G QSFP+ to QSFP+ 15m Active Optical Cable	720211-B21
HPE BladeSystem c-Class QSFP+ to 4x10G SFP+ 15m Active Optical Cable	721076-B21

SFP+ uplink ports options

HPE 10GBASE-T SFP+ RJ45 300m 1-pack Transceiver.	ROR41B
HPE BladeSystem c-Class 10Gb SFP+ SR Transceiver	455883-B21
HPE FlexNetwork X240 10G SFP+ to SFP+ 0.65m Direct Attach Copper Cable	JD095C

HPE Synergy Services

Notes: See HPE Support Services Central for additional services at <http://ssc.hpe.com/portal/site/ssc/>

Deployment/Installation & Start-up Services

HPE Factory Express Synergy Initial Frame Package 4 Service	HA454A1-300
HPE Factory Express Synergy Add-on Frame Package 4 Service	HA454A1-301
HPE Synergy First Frame Startup Service	U8JM3E
HPE Synergy Additional Frame Startup Service	U8JM4E



Technical Specifications

Shipping Dimensions	Length	19.53 in (496 mm)		
	Width	15.59 in (396 mm)		
	Height	5.87 in (149 mm)		
Shipping Weight	Weight	Approximately 5.3Kg (11.7 Lbs)		
Product Specifications Hardware	Performance	Line-rate, full-duplex 2.8 Tbps Ethernet fabric		
		Non-blocking architecture		
		Maximum transmission unit (MTU) of up to 12000 bytes (super jumbo frames)		
	Connectors and Cabling	12 x 25/50Gb downlinks through the midplane 8 x 40/100Gb QSFP28 uplink ports Console port		
	Indicators	QSFP28 port LED Health LED UID LED		
	Weight	4.00Kg (8.8 Lbs)		
	Latency	<300 ns		
	Environmental Ranges	Temperature Range		
		Specification	10°C to 40°C (50°F to 104°F)*	
		Temperature Range		
		Operating	10°C to 40°C (50°F to 104°F)	
		Shipping	Shipping -40°C to 70°C (-40°F to 158°F)	
		Storage	-30°C to 60°C (-22°F to 140°F)	
Maximum wet bulb temperature		38.7°C (101.66°F)		
Relative Humidity (noncondensing)				
Operating		5% to 95%		
Shipping		5% to 95%		
Notes: All temperature ratings shown are for sea level. An altitude derating of 1°C per 304.8 m (1.8°F per 1,000 ft) to 3048 m (10,000 ft) is applicable. No direct sunlight allowed. Upper operating limit is 3,048m (10,000 ft) or 70 Kpa/10.1 psia. Upper non-operating limit is 9,144 m (30,000 ft) or 30.3 KPa/4.4 psia.				
Notes: Storage maximum humidity of 95% is based on a maximum temperature of 45°C (113°F). Altitude maximum for storage corresponds to a pressure minimum of 70 KPa.				
Power Specification	12V @ 17A (200 W max)			

Safety and Compliance

To view the regulatory information for your product, view the Safety and Compliance Information for Server, Storage, Power, Networking, and Rack Products, available at the Hewlett Packard Enterprise Support Center: <http://www.hpe.com/support/Safety-Compliance-EnterpriseProducts>

Environment-friendly Products and Approach

End-of-life Management and Recycling

Hewlett Packard Enterprise Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hpe.com/info/recycle>. To recycle your product, please go to: <http://www.hpe.com/info/recycle> or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: <http://www.hpe.com/info/recycle>. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.



Summary of Changes

Date	Version History	Action	Description of Change
02-Aug-2021	Version 4	Changed	Added more network adapters and transceivers to the document Overview and Related Options sections were updated Service and Support Pointnext information added Obsolete SKUs were removed
05-Nov-2018	Version 3	Changed	Platform Information section was updated. Obsolete SKUs were deleted: 720190-B21, 720208-B21, 721073-B21.
23-Oct-2017	Version 2	Changed	Platform Information, Service and Support and Technical Specifications sections were updated. SKUs added in Related Options section: 845404-B21, 845406-B21, 845408-B21.
11-Jul-2017	Version 1	Created	New QuickSpecs



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