

Overview

HP supports 56 Gbps Fourteen Data rate (FDR), 40Gbps 4x Quad Data Rate (QDR) InfiniBand products that include Host Channel Adapters (HCA), HP FlexLOM adaptors, switches, and cables for HP ProLiant servers, and HP Integrity servers.

For details on the InfiniBand support for HP BladeSystem c-Class and server blades, please refer to the HP InfiniBand for HP BladeSystem c-Class QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12586_na/12586_na.html.

HP supports InfiniBand products from InfiniBand technology partners Mellanox and QLogic.

The following InfiniBand adaptor products based on Mellanox technologies are available from HP

- HP IB FDR/EN 10/40Gb 2P 544QSFP Adaptor (Dual IP/IB)
- HP IB FDR/EN 10/40Gb 2P 544FLR-QSFP Adaptor (Dual IP/IB)
- HP IB QDR/EN 10Gb 2P 544FLR-QSFP Adaptor (Dual IP/IB)
- HP IB 4X QDR CX-2 PCI-e G2 Dual-port HCA

The HP IB FDR/EN 10/40Gb 2P 544QSFP Adaptor, HP IB FDR/EN 10/40Gb 2P 544FLR-QSFP Adaptor and HP IB QDR/EN 10Gb 2P 544FLR-QSFP Adaptor are based on the Mellanox ConnectX-3 IB technology. The HP IB 4X QDR PCI-e Dual-port is based on the Mellanox ConnectX-2 IB technology. The FDR IB HCA delivers low-latency and up to 56Gbps (FDR) bandwidth for performance-driven server and storage clustering applications in High-Performance Computing (HPC) and enterprise data centers. The HP IB FDR/EN 10/40Gb 2P Adaptors are also capable of dual 40 or 10 Gb Ethernet ports. The HP IB FDR/EN 10/40Gb 2P 544 HCA card is designed for PCI Express 3.0 x8 connectors on HP Gen8 servers.

InfiniBand host stack software (driver) is required to run on servers connected to the InfiniBand fabric. For HCAs based on Mellanox technologies, HP supports Mellanox OFED driver stacks on Linux 64-bit operating systems, and Mellanox WinOF driver stack on Microsoft Windows (HPC) server 2008.

An InfiniBand fabric is constructed with one or more InfiniBand switches connected via inter-switch links. The most commonly deployed fabric topology is a fat tree or its variations. A subnet manager is required to manage an InfiniBand fabric. OpenSM is a host-based subnet manager that runs on a server connected to the InfiniBand fabric. Mellanox OFED software stack includes OpenSM for Linux, and Mellanox WinOF includes OpenSM for Windows. For comprehensive management and monitoring capabilities, Mellanox FabricIT™ is recommended for managing the InfiniBand fabric based on Mellanox InfiniBand products.

The following InfiniBand switch products based on Mellanox technologies are available from HP

- Mellanox IB FDR 36-port Managed switch (front-to-rear cooling)
- Mellanox IB FDR 36-port Managed switch with reversed airflow fan unit (rear-to-front cooling)
- Mellanox IB FDR 36-port switch (front-to-rear cooling)
- Mellanox IB FDR 36-port switch with reversed airflow fan unit (rear-to-front cooling)
- Voltaire IB 4X QDR 36-port switch (front-to-rear cooling)
- Voltaire IB 4X QDR 36-port switch with reversed airflow fan unit (rear-to-front cooling)
- Voltaire IB 4X QDR 162-port (144 ports fully non-blocking) director switch
- Voltaire IB 4X QDR 324-port director switch
- Mellanox IB 4X QDR Modular Switches

The front-to-rear cooling switch has air flow from the front (Power side) to the rear (ports side), and the rear-to-front cooling switch has air flow from the rear (ports side) to the front.

For HCAs based on Mellanox technologies, HP also supports Mellanox OFED driver stacks on Linux 64-bit operating system. A subnet manager is required to manage an InfiniBand fabric. For comprehensive management and monitoring capabilities, Mellanox Unified Fabric Manager™ (UFM) is recommended for managing the InfiniBand fabric based on Voltaire InfiniBand switch products



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and Mellanox HCA products with Mellanox OFED stack.

The following InfiniBand products based on QLogic technologies are available from HP

- QLogic IB 4X QDR PCI-e G2 Dual-port HCA
- QLogic IB 4X QDR 36-port Switch
- QLogic IB 4X QDR 324-Port Switch
- QLogic IB 4X QDR 648-Port Switch
- The QLogic IB 4X QDR HCA is part of the QLogic family of InfiniBand Host Channel Adapters based on the TrueScale ASIC architecture. It has a unique hardware architecture that delivers unprecedented levels of performance, reliability, and scalability, making it an ideal solution for highly scaled High Performance Computing (HPC) and high throughput, low-latency enterprise applications.

InfiniBand host stack software (driver) is required to run on servers connected to the InfiniBand fabric. For HCAs based on QLogic technology, HP supports QLogic OFED driver stacks on Linux 64-bit operating systems.

QLogic IB 4X QDR 36 Port Switch, QLogic IB 4X QDR 324 Port Switch and QLogic IB 4X QDR 648 Port Switch are based on QLogic TrueScale™ technology. The QLogic 36-port switch supports QLogic BLC 4X QDR IB Management Module (505959-B21). QLogic 324- and 648-port switch chassis are configurable: with the QLogic 18-port high performance leaf modules, they can be configured to support up to 324 and 648 ports, respectively; with the QLogic 24-port high density leaf modules, they can be configured to support up to 432 and 864 ports, respectively, with 2:1 oversubscribed bandwidth on the backplane.

An InfiniBand fabric is constructed with one or more InfiniBand switches connected via inter-switch links. The most commonly deployed fabric topology is a fat tree or its variations. A subnet manager is required to manage an InfiniBand fabric. OpenSM is a host-based subnet manager that runs on a server connected to the InfiniBand fabric. QLogic OFED software stack includes OpenSM for Linux. For comprehensive management and monitoring capability, QLogic InfiniBand Fabric Suite (IFS) is recommended for managing the InfiniBand fabric based on QLogic InfiniBand products.

HP supports InfiniBand copper and fiber optic cables with QSFP to QSFP connectors.

- QSFP to QSFP FDR copper cables range from .5M to 3M for HCA to switch, or inter-switch links at FDR speed.
- QSFP to QSFP FDR fiber optic cables range from 3M to 30M for HCA to switch, or inter-switch links at FDR speed.
- QSFP to QSFP QDR copper cables range from .5M to 7M for HCA to switch, or inter-switch links at either DDR or QDR speed (please note that QLogic QDR switches only support up to 5 meters at QDR speed) , and up to 10M at DDR speed.
- QSFP to QSFP QDR fiber optic cables range from 3M to 30M for HCA to switch, or inter-switch links at either DDR or QDR speed.

What's New

- Mellanox ConnectX-3 HCA technology
- Mellanox SwitchX switch technology
- IB FDR/EN 10/40Gb 2P 544 Adaptors
- FDR InfiniBand Cables and Cable Adaptors
- Mellanox 36 Port FDR InfiniBand Switches (four models)

At A Glance

- **Dual Function Ethernet/InfiniBand HCA cards based on Mellanox CX-3 technologies**
 - HP IB FDR/EN 10/40Gb 2P 544QSFP Adaptor
 - Dual QSFP ports Dual function PCI-e gen 3 card based on ConnectX-3 technology
 - Support PCI Express 3.0 x8



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- Single or dual port FDR InfiniBand
- Single or dual port 40 or 10 Gbps Ethernet
- Single port FDR IB and single port Ethernet
- Support the following ProLiant servers: DL160 Gen8 , DL360 G7, DL360p Gen8, DL380 G7, DL380p Gen8, ML350p Gen8, SL230 Gen8, SL250 Gen8, SL270 Gen8
- HP IB FDR/EN 10/40Gb 2P 544FLR-QSFP Adaptor
 - Dual QSFP ports Dual function HP Flex LOM Adaptor based on ConnectX-3 technology
 - Support PCI Express 3.0 x8
 - Single or dual port FDR InfiniBand
 - Single or dual port 40 or 10 Gbps Ethernet
 - Single port FDR IB and single port Ethernet
 - Support the following ProLiant servers: DL160 Gen8 , DL360p Gen8, DL380p Gen8, ML350p Gen8, SL230 Gen8, SL250 Gen8, SL270 Gen8
- P IB QDR/EN 10Gb 2P 544QSFP Adaptor
 - Dual QSFP ports Dual function HP Flex LOM Adaptor based on ConnectX-3 technology
 - Support PCI Express 3.0 x8
 - Single or dual port QDR InfiniBand
 - Single or dual port 10 Gbps Ethernet
 - Single port QDR IB and single port Ethernet
 - Support the following ProLiant servers: DL160 Gen8 , DL360p Gen8, DL380p Gen8, ML350p Gen8, SL230 Gen8, SL250 Gen8, SL270 Gen8
- **InfiniBand HCA cards based on Mellanox technologies**
 - HP IB 4X QDR CX-2 PCI-e G2 Dual-port HCA
 - Dual QSFP ports 4X QDR InfiniBand card based on ConnectX-2 technology
 - Support PCI Express 2.0 x8
 - Support the following ProLiant servers:
 - DL160 G6, DL160 Gen8, DL160se G6 (DISC), DL165 G7, DL170e G6, DL170h G6 (DISC), DL180 G6, DL180se G6, DL360 G7, DL360e Gen8, DL360p Gen8, DL380e Gen8, DL380 G7, DL380 G7SE, DL380 G7 X5698, DL380p Gen8, DL385 G7, DL385 Gen8, DL580 G7, DL585 G7, DL980 G7, ML350p Gen8, ML/DL370 G6, SE1170sG6, SE2170sG6, SL140s Gen8, SL160s G6, SL160s Gen8, SL160z G6, SL165s G7, SL165z G7, SL170s G6, SL170z G6, SL230 Gen8, SL250 Gen8,, SL270 Gen8 , SL2x170z G6, SL390s G7 SL395s Gen8, SWD X9300 G2, SWD X9300 G3
 - Support Mellanox OFED Linux driver stacks, and Mellanox WinOF on Microsoft Windows HPC server 2008
- **InfiniBand HCA cards based on QLogic technology**
 - QLogic IB 4X QDR PCI-e G2 Dual-port HCA
 - Dual QSFP ports 4X QDR InfiniBand card based on QLogic TrueScale InfiniBand
 - Support PCI Express 2.0 x8
 - Support the following ProLiant servers:
 - DL160 G6,DL165 G7,DL170e G6,DL170h G6 (DISC),DL180 G6,DL180se G6,DL360 G7, DL380 G7, DL380 G7SE, DL380 G7 X5698, DL385 G7, DL580 G7, DL585 G7, ML/DL370 G6, " SE1170sG6, SE2170sG6, SL160s G6, SL160z G6, SL165s G7, SL165z G7, SL170s G6, SL170z G6, SL2x170z G6, SL390s G7
 - Support QLogic OFED Linux driver stack
- **InfiniBand switches based on Mellanox technology**
 - 36 FDR QSFP ports, support FDR InfiniBand copper and fiber optic cables
 - Mellanox IB FDR 36-port unmanaged switch with reversed airflow fan unit
 - 36 FDR QSFP ports, support FDR InfiniBand copper and fiber optic cables, with the rear-to-front cooling fan that has air flow from the rear (ports side) to the front.
 - Mellanox IB FDR 36-port managed switch
 - 36 FDR QSFP ports, support FDR InfiniBand copper and fiber optic cables



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- Integrated management module for Fabric Management
- Mellanox IB FDR 36-port managed switch with reversed airflow fan unit
 - 36 FDR QSFP ports, support FDR InfiniBand copper and fiber optic cables, with the rear-to-front cooling fan that has air flow from the rear (ports side) to the front.
 - Integrated management module for Fabric Management
- Mellanox IB 4X QDR 324-port switch
 - 19U, 19" rack mountable chassis, configurable redundant management module, redundant (N+2) power supplies, up to 18 18-port InfiniBand QDR line boards
 - Up to 324 4X QDR QSFP ports, support 4X QDR InfiniBand copper and fiber optic cables
- **InfiniBand switches based on Voltaire technology**
 - Voltaire IB 4X QDR 36-port internally managed switch
 - 36 4X QDR QSFP ports, support 4X QDR InfiniBand copper and fiber optic cables
 - Voltaire IB 4X QDR 36-port internally managed switch with reversed airflow fan unit
 - 36 4X QDR QSFP ports, support 4X QDR InfiniBand copper and fiber optic cables, with the rear-to-front cooling fan that has air flow from the rear (ports side) to the front.
 - Voltaire IB 4X QDR 162-port (144 ports fully non-blocking) director switch
 - 11U, 19" rack mountable chassis with up to 4 fabric boards, up to 9 18-port line boards, up to 2 redundant management modules, up to 4 redundant power supplies, and 2 fan units
 - Up to 162 4X QDR QSFP ports (with up to 144 ports fully non-blocking when up to 16 ports are used per line board), support 4X QDR InfiniBand copper and fiber optic cables.
 - Voltaire IB 4X QDR 324-port director switch
 - 19U, 19" rack mountable chassis with up to 9 fabric boards, up to 18 18-port line boards, up to 2 redundant management modules, up to 6 redundant power supplies, 3 fan units
 - Up to 324 4X QDR QSFP ports with 324P fabric boards, or up to 648 4X QDR QSFP ports with 648P fabric boards with 108 CPX cables, support 4X QDR InfiniBand copper and fiber optic cables
 - Voltaire IB 4X DDR 24-port Externally Managed Switch
 - 24 4X DDR CX4 ports, support 4X DDR InfiniBand copper cables, and optionally support InfiniBand fiber optic cables on the top row 12 ports
 - Voltaire IB 4X DDR 24-port Internally Managed Switch
 - 24 4X DDR CX4 ports, support 4X DDR InfiniBand copper cables, and optionally support InfiniBand fiber optic cables on the top row 12 ports
- **InfiniBand / Ethernet Gateway switches based on Voltaire technology**
 - Voltaire 34P QDR IB 2P 10G internally managed switch
 - 34 4X QDR QSFP ports, support 4X QDR InfiniBand copper and fiber optic cables
 - 2 10 GbE SFP+ ports, support SFP+ copper cables and SFP+ optical transceivers.
 - Voltaire 34P QDR IB 2P 10G internally managed switch with reversed airflow fan unit
 - 34 4X QDR QSFP ports, support 4X QDR InfiniBand copper and fiber optic cables,
 - 2 10 GbE SFP+ ports, support SFP+ copper cables and SFP+ optical transceivers.
 - with the rear-to-front cooling fan that has air flow from the rear (ports side) to the front.
 - Voltaire 34P QDR IB 2P 10G internally managed switch HPC version
 - 34 4X QDR QSFP ports, support 4X QDR InfiniBand copper and fiber optic cables
 - 2 10 GbE SFP+ ports, support SFP+ copper cables and SFP+ optical transceivers.
 - Lower memory model for HPC clusters
 - Voltaire 34P QDR IB 2P 10G internally managed switch HPC Version with reversed airflow fan unit
 - 34 4X QDR QSFP ports, support 4X QDR InfiniBand copper and fiber optic cables,
 - 2 10 GbE SFP+ ports, support SFP+ copper cables and SFP+ optical transceivers.
 - with the rear-to-front cooling fan that has air flow from the rear (ports side) to the front.
 - Lower memory model for HPC clusters
- **InfiniBand switch based on QLogic technology**
 - QLogic IB 4X QDR 36 Port Switch
 - 36 4X QDR QSFP ports, support 4X QDR InfiniBand copper and fiber optics cables.
 - **NOTE:** This switch supports [QLogic BLC 4X QDR IB Management Module option](#).



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- QLogic IB 4X QDR 324 Port Switch
 - QLogic 12800-180 switch chassis with up to 2 redundant management modules, 6 power supplies
 - Up to 324 4X QDR QSFP ports with 18 18-port leaf modules in a 1:1 none oversubscribed bandwidth configuration, or up to 432 4X QDR QSFP ports with 18 24-port leaf modules in a 2:1 oversubscribed bandwidth configuration.
- QLogic IB 4X QDR 648 Port Switch
 - QLogic 12800-360 switch chassis with up to 2 redundant management modules, 12 power supplies.
 - Up to 648 4X QDR QSFP ports with 36 18-port leaf modules in a 1:1 none oversubscribed bandwidth configuration, or up to 864 4X QDR QSFP ports with 36 24-port leaf modules in a 2:1 oversubscribed bandwidth configuration.
- **InfiniBand cables**
 - Copper cables from 0.5 meter to 3 meters at FDR speed
 - Fiber optic cables from 3 meters up to 30 meters at FDR speed
 - Copper cables from 0.5 meter to 7 meters at QDR speed
 - Fiber optic cables from 3 meters up to 30 meters at QDR speed



Models

HP Dual Function Adaptors Ethernet/InfiniBand	HP InfiniBand FDR/EN 10/40Gb Dual Port 544QSFP Adapter	649281-B21
	HP InfiniBand FDR/EN 10/40Gb Dual Port 544FLR-QSFP Adapter	649282-B21
	HP InfiniBand QDR/EN 10Gb Dual Port 544FLR-QSFP Adapter	649283-B21
<p>NOTE: The HCA cards listed in this section are based on Mellanox technology.</p> <p>NOTE: FLR Indicates new HP FlexLOM Adaptor series.</p>		
HP IB PCIe HCA cards and options	HP InfiniBand 4X QDR ConnectX-2 PCIe G2 Dual Port HCA	592520-B21
QLogic IB PCIe HCA cards	QLogic InfiniBand 4X QDR PCI-E G2 Dual Port HCA	583211-B21
Mellanox IB switch and options	Mellanox InfiniBand FDR 36P Switch	670767-B21
	Mellanox InfiniBand FDR 36P RAF Switch	670768-B21
	Mellanox InfiniBand FDR 36P Managed Switch	670769-B21
	Mellanox InfiniBand FDR 36P RAF Managed Switch	670770-B21
	Mellanox InfiniBand QDR 324 Port Switch Chassis	572769-B21
	<p>NOTE: Chassis ships with 1 management board (572771-B21, 2 max), 9 QDR spine blades, 4 line boards (572770-B21, 4 included, 14 additional possible), 8 power supplies (N+2 redundant), 8 power cords, and rack kit.</p>	
	Mellanox InfiniBand QDR 324 Port Line Board	572770-B21
	<p>NOTE: Up to 14 additional line boards can be configuration into the Mellanox IB QDR 324P Switch Chassis. Each line board has 18 4X QDR QSFP ports.</p>	
	Mellanox InfiniBand QDR 324 Port Management Module	572771-B21
	<p>NOTE: One additional management module can be added to the Mellanox IB QDR 324P Switch Chassis for redundancy.</p>	
Voltaire IB switches and options	Voltaire InfiniBand 4X QDR 36P Managed Switch	519571-B21
	Voltaire InfiniBand 4X QDR 36-port Reversed Air Flow Managed Switch	619672-B21
	Voltaire InfiniBand QDR 144-port Switch Chassis	615679-B21
	<p>NOTE: Voltaire® Grid Director™ 4200 162-port (with up to 144 ports fully non-blocking when up to 16 ports are used per line board) 4X QDR InfiniBand switch chassis ships with 1 management module (590204-B21, 2 max), 2 power supplies (588686-B21, 4 max), 0 fabric boards (615680-B21, 4 max), 0 line boards (590203-B21, 9 max), 2 fan units, Rack Kit and cable management kit.</p>	
	Voltaire InfiniBand QDR 144-port Switch Fabric Board	615680-B21
	<p>NOTE: Voltaire® Grid Director™ 4200 QDR InfiniBand fabric board.</p>	
	Voltaire InfiniBand QDR 324-port Switch Chassis	590200-B21
	<p>NOTE: Voltaire® Grid Director™ 4700 324 port QDR InfiniBand switch chassis ships with 1 management module (590204-B21, 2 max), 2 power supplies (588686-B21, 6 max), 0 fabric boards (590201-B21 or 590202-B21, 9 max), 0 line boards (590203-B21, 18 max), three fan units, Rack Kit and cable management kit.</p>	
	Voltaire InfiniBand QDR 324-port Switch Fabric Board	590201-B21
	<p>NOTE: Voltaire® Grid Director™ 4700 QDR InfiniBand Fabric board for the 324 port switch version.</p>	
	Voltaire InfiniBand QDR 648-port Switch Fabric Board	590202-B21
	<p>NOTE: Voltaire® Grid Director™ 4700 QDR InfiniBand Fabric board for the 648 port switch version.</p>	
Voltaire InfiniBand QDR 324-port Switch 18-port Line Board	590203-B21	
<p>NOTE: Voltaire® Grid Director™ 4700 line board with 18 QSFP ports.</p>		
Voltaire InfiniBand QDR 324-port Switch Management Module	590204-B21	
<p>NOTE: Voltaire® Grid Director™ 4700 management module.</p>		



Models

	Voltaire Very Large Level 2 10Gbe Power Supply	588686-B21
	NOTE: Voltaire® 1500 Power Supply the 324-port director switch.	
	Voltaire InfiniBand QDR 648-port Switch 2M Cable	590510-B22
	NOTE: Voltaire® Grid Director™ 4700 QDR CXP cable, 2 meters long, 28 gauge for use in connecting two 324 port chassis into one 648.	
	Voltaire InfiniBand QDR 648-port Switch 5M Cable	590510-B25
	NOTE: Voltaire® Grid Director™ 4700 QDR CXP cable, 5 meters long, 26 gauge for use in connecting two 324 port chassis into one 648.	
	Voltaire InfiniBand 4X DDR 24P External Managed Switch	409366-B21
	Voltaire InfiniBand 4X DDR 24P Internal Managed Switch	409367-B21
	Voltaire Unified Fabric Manager Per Node Right To Use License	590643-B21
	NOTE: Right to use (RTU) License for Voltaire Unified Fabric Manager (UFM), 1 per node for every node connected to the Voltaire InfiniBand fabric.	
Voltaire IB/Ethernet Gateway switches	Voltaire InfiniBand 34P QDR 2-port 10GbE Switch	632220-B21
	Voltaire InfiniBand 34P QDR 2-port 10GbE Reversed Air Flow Switch	632221-B21
	Voltaire InfiniBand 34P Low Memory Version QDR 2-port 10GbE Managed Switch	632222-B21
	Voltaire InfiniBand 34P Low Memory Version QDR 2-port 10GbE Reversed Air Flow Managed Switch	632223-B21
QLogic IB switches and options	QLogic InfiniBand QDR 36-port Switch	589478-B21
	QLogic InfiniBand 4X QDR Management Module for c-Class BladeSystem	505959-B21
	NOTE: This management module is an option for the QLogic 4X QDR 36 Port Switch.	
	QLogic InfiniBand QDR 324-port Switch Chassis	589479-B21
	NOTE: QLogic 12800-180 4X QDR IB switch chassis contains: 1 management board (589481-B21, 2 max), 4 double QDR spine fabric boards, 1 single QDR spine fabric board, 0 leaf module (589482-B21 for 24-port leaf module or 589483-B21 for 18-port leaf module, 18 max. Leaf module types cannot be mixed), 4 power supplies (6 max), 4 power cords, rack kit.	
	QLogic InfiniBand QDR 648-port Switch Chassis	589480-B21
	NOTE: QLogic 12800-360 4X QDR IB switch chassis contains: 1 management board (589481-B21, 2 max), 9 double QDR spine fabric boards, 0 leaf module (589482-B21 for 24-port leaf module or 589483-B21 for 18-port leaf module, 36 max. Leaf module types cannot be mixed), 8 power supplies (12 max), 8 power cords, rack kit.	
	QLogic InfiniBand QDR Management Module	589481-B21
	NOTE: QLogic redundant management board for the 12800 series switch chassis.	
	QLogic InfiniBand QDR/DDR 24-port Line Board	589482-B21
NOTE: QLogic 12800 series switch line card with 24 QSFP ports.		
QLogic InfiniBand QDR 18-port Line Board	589483-B21	
NOTE: QLogic 12800 series switch line card with 18 QSFP ports.		
QLogic InfiniBand QDR Power Supply	589484-B21	
QLogic InfiniBand Fabric Suite (IFS)	QL470A	
NOTE: Right to use (RTU) License for QLogic IFS, 1 per node for every node connected to the QLogic InfiniBand fabric.		
Cabling Options	NOTE: Maximum length of 12 meters; cable length support may depend on the actual configuration. Please consult a HPC expert on specifics.	
	InfiniBand QSFP/FDR Optical Cables	
	HP 3M FDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	670760-B21
	HP 5M FDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	670760-B22
	HP 7M FDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	670760-B23
HP 10M FDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	670760-B24	



Models

HP 12M FDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	670760-B25
HP 15M FDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	670760-B26
HP 20M FDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	670760-B27
HP 30M FDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	670760-B28

InfiniBand QSFP/FDR Copper Cables

HP 0.5M FDR Quad Small Form Factor Pluggable InfiniBand Copper Cable	670759-B21
HP 1M FDR Quad Small Form Factor Pluggable InfiniBand Copper Cable	670759-B22
HP 1.5M FDR Quad Small Form Factor Pluggable InfiniBand Copper Cable	670759-B23
HP 2M FDR Quad Small Form Factor Pluggable InfiniBand Copper Cable	670759-B24
HP 3M FDR Quad Small Form Factor Pluggable InfiniBand Copper Cable	670759-B25

InfiniBand QSFP/QSFP Copper Cables

HP 1M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Copper Cable	498385-B21
HP 2M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Copper Cable	498385-B22
HP 3M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Copper Cable	498385-B23
HP 5M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Copper Cable	498385-B24
HP 7M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Copper Cable	498385-B25

InfiniBand QSFP/QSFP Fiber Optic Cables

HP 3M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	498386-B23
HP 5M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	498386-B24
HP 10M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	498386-B25
HP 15M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	498386-B26
HP 20M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	498386-B27
HP 30M 4X DDR/QDR Quad Small Form Factor Pluggable InfiniBand Optical Cable	498386-B28



Performance

Bandwidth

All ports on 4X FDR HCA card and switch are capable of supporting 56Gbps signaling rate, with a peak data rate of 52 Gbps in each direction.

All ports on 4X QDR HCA card and switch are capable of supporting 40Gbps signaling rate, with a peak data rate of 32 Gbps in each direction



Scalability and Reliability

Standards support

- Dual-port 4X FDR FlexLOM HCA: PCI Express revision 3.0x8
 - Dual-port 4X QDR FlexLOM HCA: PCI Express revision 3.0x8
 - Dual-port 4X FDR PCI-e HCA: PCI Express revision 3.0x8
 - Dual-port 4X QDR PCI-e HCA: PCI Express revision 2.0x8
 - IBTA version 1.2 compatible
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Operating systems support

- Mellanox OFED 1.5.3_3.0.0 for Linux (64 bit)
 - RHEL 5, U5, U6, U7 in G7 servers U7 in Gen8 servers
 - RHEL 6 U1, U2
 - SLES 10 SP4,
 - SLES 11 SP1, SP2
 - Mellanox WinOF 3.0 for Microsoft Windows HPC server 2008 (64-bit)
 - Microsoft Windows 2008
 - Microsoft Windows HPC server 2008
 - Microsoft Windows HPC server 2008 R2
- QLogic OFED+ 7.0.1.0.43 for Linux (64-bit)
 - RHEL 5 U4, U5, U6, U7
 - RHEL 6 U1, U2
 - SLES 10 SP3, SP4
 - SLES 11 SP1
 - CentOS (Rocks) 5.4, 5.5, 5.6, 6.0
 - Scientific Linux 5.4, 5.5, 5.6, 6.0

InfiniBand Fabric Management

Auto-negotiation/ self-discovery

InfiniBand QDR ports support auto-negotiation down to DDR/SDR, InfiniBand DDR ports support auto-negotiation down to SDR. For example, external uplink ports of a DDR switch blade will negotiate down to SDR speed if they are connected to a device which can only operate at SDR.

Self-discovery is supported by subnet manager. Check the documents of the specific subnet manager for more details: <http://www.docs.hp.com>.

Management

Mellanox OFED, Voltaire OFED and QLogic OFED+ include drivers and utilities to configure and manage the HCA in a Linux environment and Mellanox WinOF includes drivers and utilities to configure and manage the HCA in the Microsoft Windows server HPC 2008 environment.

InfiniBand fabric has to be set up with a subnet manager: see the subnet manager discussion above.



Service and Support

Service and Support

HP Technology Services

HP Technology Services offers you consultants and support experts to solve your most complex infrastructure problems. We help keep your business running, boost availability and avoid downtime.

Protect your business beyond warranty with HP Care Pack Services

When you buy HP Options, it's also a good time to think about what level of service you may need. HP Care Pack services provide total care and support expertise with committed response choices designed to meet your IT and business need.

HP Foundation Care services deliver scalable support-packages for HP industry-standard servers and software. You can choose the type and level of service that is most suitable for your business needs. New to this portfolio is HP Collaborative Support. If you are running business critical environments, HP offers Proactive Care or Critical Advantage. These services help you deliver high levels of application availability through proactive service management and advanced technical response.

Here is the support service recommendation from the Foundation Care and Proactive Care portfolio. For customized support service solution, HP can work with you to tailor a service solution for your unique support requirements using broader services portfolio of Foundation Care and Proactive Care.

Recommended Services

Recommended HP Care Pack Services for optimal satisfaction with your HP product

3-Year HP 24x7 4 hour Response, Hardware Support Onsite Service

Provides you with rapid remote support and if required an HP authorized representative who will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/5982-6547EEE.pdf>

3-Year HP 24x7 4 hour Response, HP Collaborative Support

Offers customers a single point of contact for server problem diagnosis, hardware problem resolution, and basic software problem diagnosis, fault isolation, and resolution if available to HP. If the problem is with HP HW, the representative will arrive on site any time and day of the year to begin hardware maintenance service within 4 hours of the service request being logged. In case, the issue is with HP or supported third-party software product and cannot be resolved by applying known fixes, HP will contact the third-party vendor and create a problem incident on your behalf.

HP ProLiant Server Hardware Installation

Provides for the basic hardware installation of HP 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>



Service and Support

Related Services

Related HP Care Pack Services to enhance your HP product experience

3-Year HP 24x7 4 hour Response, Proactive Care or Critical Advantage

Helps optimize your systems and delivers high levels of application availability through proactive service management and advanced technical response. A skilled Technical Manager will own your query or issue end to end until resolved, delivering a single point of contact for you.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA3-2140ENW.pdf>

3-Year HP 6-hour Onsite Call-to-Repair, HP Collaborative Support

Offers customers a single point of contact for server problem diagnosis, hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request to the HP Global Solution Center, and basic software problem diagnosis, fault isolation, and resolution if available to HP. In case, the issue is with HP or supported third-party software product and cannot be resolved by applying known fixes, HP will contact the third-party vendor and create a problem incident on your behalf.

HP Proactive Select Service

Provides a flexible way to purchase HP best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months.

<http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf>

Insight Remote Support

Provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. Learn more

<http://www.hp.com/go/insightremotesupport>



Technical Specifications

Compliance	InfiniBand HCA cards	<p>HP IB 4X QDR CX-2 PCI-e PCI Express 2.0 x8 (1.1 compatible) G2 Dual-port HCA, HP IB 4X DDR CX-2 PCI-e G2 Dual-port HCA</p> <p>HP IB 4X DDR PCI-e Dual- PCI Express 1.0a x8 compatible port HCA</p> <p>IBTA version 1.2 compatible</p> <p>ROHS-R5</p> <p>QLogic 4X QDR IB PCI-e PCI Express 2.0 x8 (1.1 compliant) G2 Dual-port HCA</p> <p>IBTA version 1.2 compatible, RoHS 6</p>									
Power and Environmental Specification	Operating	<table border="0"> <tr> <td data-bbox="660 680 798 713">Temperature</td> <td data-bbox="959 680 1085 713">HCA cards:</td> <td data-bbox="1230 680 1353 713">0 to 55° C.</td> </tr> <tr> <td></td> <td data-bbox="959 721 1054 754">Switches:</td> <td data-bbox="1230 721 1493 1543"> <p>NOTE: Please refer to Voltaire product specifications for Voltaire switch models.</p> <p>NOTE: Please refer to Mellanox product specification for Mellanox MTS3610Q.</p> <p>NOTE: Please refer to QLogic product specification for QLogic InfiniBand switches.</p> <p>NOTE: Please refer to Voltaire product specifications for Voltaire switch models.</p> <p>NOTE: Please refer to Mellanox product specifications for Mellanox MTS3610Q.</p> <p>NOTE: Please refer to QLogic product specifications for QLogic InfiniBand switches.</p> </td> </tr> <tr> <td data-bbox="660 1122 847 1183">Humidity (non-condensing)</td> <td></td> <td></td> </tr> </table>	Temperature	HCA cards:	0 to 55° C.		Switches:	<p>NOTE: Please refer to Voltaire product specifications for Voltaire switch models.</p> <p>NOTE: Please refer to Mellanox product specification for Mellanox MTS3610Q.</p> <p>NOTE: Please refer to QLogic product specification for QLogic InfiniBand switches.</p> <p>NOTE: Please refer to Voltaire product specifications for Voltaire switch models.</p> <p>NOTE: Please refer to Mellanox product specifications for Mellanox MTS3610Q.</p> <p>NOTE: Please refer to QLogic product specifications for QLogic InfiniBand switches.</p>	Humidity (non-condensing)		
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	Power requirement	<table border="0"> <tr> <td data-bbox="660 1555 788 1588">HCA cards:</td> <td data-bbox="959 1555 1477 1759"> <p>HP IB 4X QDR CX-2 PCI-e G2 Dual-port HCA , typical 8.7W, max 9.8W</p> <p>HP IB 4X DDR CX-2 PCI-e G2 Dual-port HCA, typical 8.1W, max 8.3W</p> <p>QLogic 4X QDR IB PCI-e G2 Dual-port HCA, max 8.1W.</p> </td> </tr> <tr> <td data-bbox="660 1768 759 1800">Switches:</td> <td data-bbox="959 1768 1394 1833"> <p>NOTE: Please refer to Voltaire product specifications for Voltaire switch models.</p> </td> </tr> </table>	HCA cards:	<p>HP IB 4X QDR CX-2 PCI-e G2 Dual-port HCA , typical 8.7W, max 9.8W</p> <p>HP IB 4X DDR CX-2 PCI-e G2 Dual-port HCA, typical 8.1W, max 8.3W</p> <p>QLogic 4X QDR IB PCI-e G2 Dual-port HCA, max 8.1W.</p>	Switches:	<p>NOTE: Please refer to Voltaire product specifications for Voltaire switch models.</p>					
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Switches:	<p>NOTE: Please refer to Voltaire product specifications for Voltaire switch models.</p>										



Technical Specifications

Emissions Classifications HCA cards:

NOTE: Please refer to Mellanox product specifications for Mellanox MTS3610Q.

NOTE: Please refer to QLogic product specifications for QLogic InfiniBand switches.

HP IB 4X QDR CX-2 PCI-e G2 Dual-port HCA

HP IB 4X DDR CX-2 PCI-e G2 Dual-port HCA

HP IB 4X DDR PCI-e Dual- port HCA

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

Korea: MIC, Class A

Taiwan: BSMI, Class A

QLogic 4X QDR IB PCI-e G2 Dual-port HCA

US/Canada: FCC Part 15, Subpart B

ICES-003

Europe: EN55022:1994+A1+A2

EN55024:1998+A1+A2 EN6100-3-2:2000

(Harmonic Current) EN61000-3-3:1995+A1
(Voltage Fluctuation & Flicker)

Japan: VCCI V-3/2004.4

New Zealand/Australia: AN/NZS CISPR

22:2002

Korea: MIC (KN22, KN24)

Taiwan: BSMI (CNS 13438)

China: CCC

Switches:

NOTE: Please refer to Voltaire product specifications for Voltaire switch models.

NOTE: Please refer to Mellanox product specification for Mellanox MTS3610Q.

NOTE: Please refer to QLogic product specifications for QLogic InfiniBand switches.

Technical Specifications

Environment-friendly Products and Approach

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to: <http://www.hp.com/go/green>. To recycle your product, please go to: <http://www.hp.com/go/green> or contact your nearest HP sales office. Products returned to HP 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 web site at: <http://www.hp.com/go/green>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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