Cisco InfiniBand Host Channel Adapters

The Cisco® InfiniBand Host Channel Adapters (HCAs) deliver industry-leading bandwidth and latency performance to InfiniBand-based server clusters. High performance computing environments utilizing Cisco InfiniBand HCAs will benefit from increased cluster efficiency and application productivity, maximizing return on investment (ROI).

As an integral part of the Cisco SFS Family of server fabric switches, the Cisco InfiniBand HCAs support Message Passing Interface (MPI), IP over InfiniBand (IPoIB), Sockets Direct Protocol (SDP), and SCSI RDMA Protocol (SRP). SDP and SRP use Remote Direct Memory Access (RDMA) to support the most demanding high-performance computing and storage applications. In choosing Cisco commercial version of the OpenFabrics Enterprise Distribution (OFED) stack, our customers benefit from the best engineering and support teams in the industry. OpenFabrics is the open-source community development of InfiniBand drivers.

Benefits

- Create high-performance 10 and 20 Gbps inter-connected server clusters
- Use the full performance of PCIe x8 servers (40 Gbps, full-duplex bandwidth)
- Optimize performance of your computing and database clusters
- Implement highly available clusters by connecting both ports of the 2-port HCAs
- Achieve communications up to 100m by connecting to optical transceiver

Features

- Full suite of integrated InfiniBand protocols
- 10 and 20 Gbps (4X) InfiniBand ports
- Part of integrated Cisco SFS Family
- Powered ports supporting optical transceivers

Unified Driver Architecture

With the Cisco SFS system architecture, multiple protocols are optimized to run simultaneously on the same host. For example, parallel databases can communicate between cluster nodes and application nodes at the same time that storage blocks are accessed while Infiniband RDMA technology optimizes transactional performance of the system..

Multiprotocol Support

Cisco InfiniBand HCAs support all important InfiniBand protocols necessary to build a server cluster. These include IP over InfiniBand (IPoIB), Sockets Direct Protocol (SDP), SRP, and Message Passing Interface (MPI) protocols for Linux and Windows. Both 32- and 64-bit architectures are supported. This comprehensive protocol support provides flexibility to build server clusters for a wide range of applications.

Remote Boot Capability

Cisco InfiniBand HCAs can be configured with firmware to support booting an image from a storage area network (SAN) or using the pre-boot execution environment (PXE). This optional feature enables clusters to be deployed using diskless servers that can reduce the failure rate of servers and simplify image management.

HCA Diagnostic Support

Utilities supplied with the Cisco InfiniBand HCA support diagnostic capability to ensure smooth operation of the HCA. This includes the ability to test ports with loopback and display traffic statistics. LED ports on the HCA blink to indicate traffic on the InfiniBand link, helping during initial setup of the cluster. Vital product data is stored on the HCA and can be accessed programmatically to provide additional diagnostic and reporting capability.

Unified Management

As part of the complete Cisco SFS Family, the Cisco InfiniBand HCA simplifies management by integrating with the Cisco SFS management framework. Administrators can capitalize on existing management frameworks using native Simple Network Management Protocol (SNMP) to reduce management time and total cost of ownership.

Technical Specifications

Table 1.   General Specifications and Ordering Information

Cisco Part Number	Ports	On-Board Memory	PCI Compatibility	Bracket Size	Remote-Boot Capable
SFS DDR (20 Gbps) HCAs					
SFS-HCA-220-A1=	2, 4X IB Ports	128 MB	PCI-Express 1.0a, x8	Tall	No
SFS-HCA-320-A1=	1, 4X IB Ports	0 MB	PCI-Express 1.0a, x8	Tall	No
SFS SDR (10 Gbps) HCAs					
SFS-HCA-X2T7-A1=	2, 4X IB Ports	128 MB	PCI-X 1.0a, 166 Mhz	Tall	Yes
SFS-HCA-E2T7-A1=	2, 4X IB Ports	128 MB	PCI-Express 1.0a, x8	Tall	Yes
SFS-HCA-250-A1=	2, 4X IB Ports	0 MB	PCI-Express 1.0a, x8	Tall	No
SFS-HCA-310-A1=	1, 4X IB Port	0 MB	PCI-Express 1.0a, x8	Tall	No

* All HCAs bundled with spare short brackets.

Table 2.   General Specifications (Continued)

Cisco Part Number	OS Support*	Powered Port	Flash Size	RoHS
SFS DDR (20 Gbps) HCAs				
SFS-HCA-220-A1=	Linux, Windows	Standard	4MB	Yes
SFS-HCA-320-A1=	Linux, Windows	Standard	2 MB	Yes
SFS SDR (10 Gbps) HCAs				
SFS-HCA-X2T7-A1=	Linux, Windows, UNIX	Optional	4 MB	Yes
SFS-HCA-E2T7-A1=	Linux, Windows, UNIX	Optional	4 MB	Yes
SFS-HCA-250-A1=	Linux, Windows	Standard	4 MB	Yes
SFS-HCA-310-A1=	Linux, Windows	Standard	2 MB	Yes

* Windows drivers can be downloaded from Open Fabrics website. UNIX drivers are provided by the respective OS vendor.

Table 3. Environmental Specifications

Cisco Part Number	Power	Physical Size	Operational Temperature	Airflow Required
SFS DDR (20 Gbps) HCAs				
SFS-HCA-220-A1=	10.3W	2.5 in. x 6.6 in.	• 32 to 131℉ • 0 to 55℃	200LFM at 131℉ (55℃)
SFS-HCA-320-A1=	4W	2.1 in. x 4 in.	• 32 to 131℉ • 0 to 55℃	200LFM at 131℉ (55℃)
SFS SDR (10 Gbps) HCAs				
SFS-HCA-X2T7-A1=	12W	2.5 in. x 6.6 in.	• 32 to 131℉ • 0 to 55℃	200LFM at 131℉ (55℃)
SFS-HCA-E2T7-A1=	9W	2.5 in. x 6.6 in.	• 32 to 131℉ • 0 to 55℃	200LFM at 131℉ (55℃)
SFS-HCA-250-A1=	5.5W	2.7 in. x 4.6 in.	• 32 to 131℉ • 0 to 55℃	200LFM at 131℉ (55℃)
SFS-HCA-310-A1=	3.5W	2.1 in. x 4 in.	• 32 to 131℉ • 0 to 55℃	200LFM at 131℉ (55℃)

Table 4. InfiniBand Features

Features	Description
IBTA Compliance	Compliant to InfiniBand Specification v1.2
Virtual Lane Support	• 2-port HCA supports 8 lanes and management lane • 1-port HCA supports 4 lanes and management lane
MTU Size	Programmable between 256 Bytes to 2048 Bytes
RDMA Support	On all HCAs, including up to Layer 4 InfiniBand support in hardware
InfiniBand Connector	MicroGigaCN (CX-4) Copper Connector

Table 5. Software Support

Features	Descriptions
IP over InfiniBand	Transparently transport IP traffic over InfiniBand fabric
SCSI RDMA Protocol (SRP)	Access block storage using InfiniBand-Fibre Channel Gateway
Sockets Direct Protocol (SDP)	Obtain RDMA benefits for TCP traffic
Message Passing Interface (MPI)	Use message passing methodologies to obtain full benefits of InfiniBand
OFED Stack Support	Cisco InfiniBand HCAs are fully qualified with the OFED stack.
Remote Boot	Boot an image from a SAN or a pre-boot execution environment. License sold separately.
Architectures and Processors Supported	• Architectures: IA32, IA64, x86_64, PPC_64 • AMD: Athlon, Opteron • Intel: Xeon, Nocona, Itanium • IBM: PowerPC
Linux Kernel Support	Drivers for 2.4 and 2.6 kernels, 32-bit and 64-bit support
Linux Distribution Support	Major distributions including Red Hat, SUSE

Family of Products

The Cisco InfiniBand Host Channel Adapters are available as part of a complete Cisco SFS system.

Service and Support

Cisco offers a wide range of services programs to accelerate customer success. These innovative services programs are delivered through a unique combination of people, processes, tools, and partners, resulting in high levels of customer satisfaction. Cisco services help you to protect your network investment, optimize network operations, and prepare the network for new applications to extend network intelligence and the power of your business. For more information about Cisco Services, see Cisco Technical Support Services or Cisco Advanced Services.

For More Information

For more information about the Cisco InfiniBand Host Channel Adapters, visit http://www.cisco.com/en/US/partner/products/ps6418/index.html, contact your local account representative or mail ask-sfs-pm@cisco.com.

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