Mellanox InfiniHost™
Dual-Port 10Gb/s InfiniBand HCA with PCI-X

- IBTA v1.2 Compatible Design
- Dual 10Gb/s InfiniBand 4X Ports
- InfiniBand Low Latency Transport
- Support for up to 16 Million Queue Pairs
- Externally attached DDR Memory support up to 4 Gbytes with support for 64-bit addressing
- Memory Protection Tables in Hardware
- InfiniBand Native Layer 4 Hardware Acceleration
- Support for Eight Data VLs plus the VL15 Management Lane
- Programmable MTU Sizes to 2K Bytes
- Support for 2GB Messages
- Integrated SMA and GSA
- 40Gb/s Total InfiniBand Bandwidth
- 8Gb/s PCI-X Bus Bandwidth
- 20Gb/s DDR Local HCA Memory Bandwidth
- Atomic Support
- Hardware Credit Based Link Level Flow Control
- HW RDMA read/write support
- Shared RQ support
- Hardware CRC Checking and Generation
- Bad Packet Filtering
- Large On-chip InfiniBand Port Buffers
- Quality of Service
- Multicast Support
- Hardware Support for all InfiniBand Transport Mechanisms

- Dual 10Gb/s 4X InfiniBand ports
- PCI-X 133 MHz Compatible Interface
- General Purpose I/O Pins
- I²C Compatible Bus
- 1149.1 Boundary Scan JTAG
- 167Mhz DDR Memory Interface
- Flash Interface for Boot Code

Overview

The InfiniHost is Mellanox's second generation InfiniBand architecture host or target channel adapter (HCA/TCA) silicon. The chip architecture unleashes 10Gb/s data center performance, and is designed to saturate dual 4X links.

InfiniHost is a single chip dual-port 10Gb/s InfiniBand host channel adapter with a PCI-X interface and integrated physical layer serializer/deserializer (SerDes) interfaces. The device features an HCA core that is capable of full wire speed transmissions over InfiniBand links. The core features a full hardware implementation of the InfiniBand architecture memory protection and translation tables, as well as, hardware transport. This drastically reduces CPU overhead to enable the host processor to spend its cycles on applications and not on communications.

InfiniHost Feature Set

The InfiniHost advances performance, scalability, interoperability and the cost effectiveness of InfiniBand based copper and fiber fabrics. Infini-Host devices are designed to be fully compatible with the InfiniBand Trade Associations (IBTA) 1.2 specification, and are interoperable with other devices designed to meet the specification. Developers can combine InfiniHost, InfiniBridge and InfiniScale devices to enable large 4X InfiniBand sub-nets. The architecture includes fast external DDR memory support for up to 4GB of DDR memory and supports an industry leading number of Queue Pairs (QPs).

For TCA implementations, an Application Specific Programmable Packet Engine (ASPPE) and internal InfiniRISC processor allows application specific processing. In routing applications, the DDR
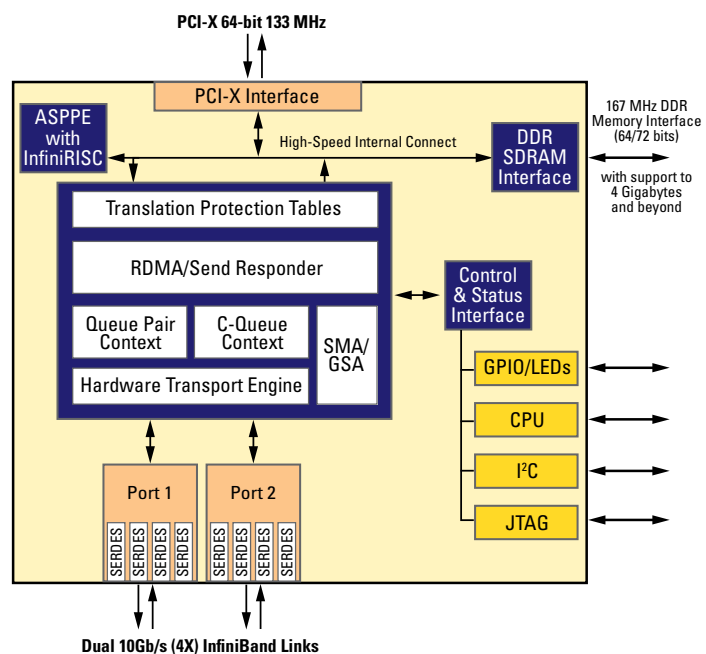
InfiniHost Block Diagram

InfiniHost™ - MT23108

- Virtualized data centers that require a high-bandwidth, low-latency interconnect for server and storage grids
- High performance parallelized computing leveraging Message Passing Interface (MPI) based applications such as molecular modeling, oil and gas exploration, car crash simulations, etc.
- Clustered database applications, parallel RDBMS queries, high-throughput data warehousing
- Performance storage applications such as backup, restore, mirroring, etc.
- High bandwidth streaming content such as video-on-demand and HDTV
- Electronic Design Automation (EDA)
- Networking, telecom and industrial data acquisition

INFINIBAND BENEFITS

- Industry-standard technology
- Unified communications, computing, management, and storage
- High-bandwidth, low-latency
- Performance roadmap to 120Gb/s
- Highly-efficient clustering
- Ultimate reliability and scalability
- Multi-platform support
- Congestion management and QoS
- Virtualized I/O fabric
- World-class price/performance

memory improves performance by enabling packet payloads to be stored and forwarded directly from the local HCA memory, not system memory.

Integrated Physical Layer SerDes

The InfiniHost device integrates eight 2.5Gb/s SerDes in a single 580-pin package. This high-level of integration reduces power consumption, system cost, and PCB size, simplifies board designs, and eliminates all external physical layer parts needed to connect to either 2.5 or 10 Gb/s copper or fiber optical links.

Standard PCI-X Adapter Card Based on the InfiniHost

MHXL-CF128-T –Dual 10Gb/s InfiniBand
w/128MB Local Memory
or
MHXL-CF256-T – Dual 10Gb/s InfiniBand
w/256MB Local Memory

HCA Silicon Family

Dual Port HCA	InfiniBand Ports	Typical Power	Package	Part Number
InfiniHost	Dual 10Gb/s	10W	27x27mm L2BGA	MT23108
InfiniHost III Ex SDR	Dual 10Gb/s	7W	27x27mm BGA	MT25208A0-FCC
InfiniHost III Ex DDR	Dual 20Gb/s	10W	27x27mm BGA	MT25208A0-FCC-D
Single Port HCA	**InfiniBand Ports**	**Typical Power**	**Package**	**Part Number**
InfiniHost III Lx SDR	Single 10Gb/s	3W	16x16mm BGA	MT25204A0-FCC
InfiniHost III Lx DDR	Single 20Gb/s	3.5W	16x16mm BGA	MT25204A0-FCC-D

Mellanox
TECHNOLOGIES

2900 Stender Way, Santa Clara, CA 95054
Tel: 408-970-3400 • Fax: 408-970-3403
www.mellanox.com

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