Mellanox InfiniHost™ III Lx
Single-Port 10 or 20Gb/s 4X InfiniBand HCA with PCI Express x8

- Enables expansion of PCI Express infrastructure in the data center
- Supports Remote Direct Memory Access (RDMA) and Hardware Transport
- InfiniBand Version 1.2 Compatible Host/Target Channel Adapter (HCA/TCA)
- Supports 16 million QPs, EEs & CQs
- Multicast support
- Programmable MTU Size from 256 to 2K bytes
- Four Virtual Lanes supported plus Management Lane
- Support for 2GB messages
- Support for IPv6 inter-subnet routing
- Integrated 2.5Gb/s (SDR version) or 5Gb/s (DDR version) SerDes transceivers
- Hardware backward compatibility with previous InfiniBand infrastructure
- Software compatible with existing device drivers and ULPs for faster time to market
- Support MSI-X (Message Signaled Interrupts)
- Embedded InfiniRISC™ Processors for Management & Special Functions
- Flexible Completion Mechanism Support (completion queue, event, or polled operation)
- Large on-chip InfiniBand port buffers
- 0.13um process technology

Interfaces

- Single 10Gb/s (SDR) or 20Gb/s (DDR) 4X InfiniBand Port
- PCI Express x8 interface (20 + 20Gb/s)
- GPIO Pins (General Purpose I/O)
- Serial Flash interface for boot code
- SMBUS (System Management Bus) for management (IBML) & serial EEPROM for Vital Product Data (VPD)
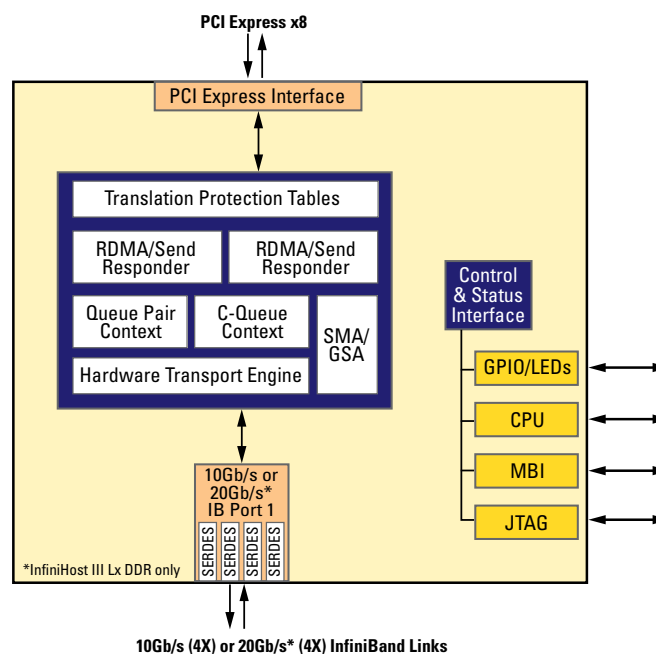- 1149.1 Boundary Scan JTAG

Overview

The Mellanox InfiniHost™ III Lx is a single-port 4X InfiniBand Host Channel Adapter (HCA) silicon device that enables the expansion of PCI Express infrastructure in the data center and high performance computing environments. The 4X InfiniBand port on the InfiniHost III Lx supports either 10Gb/s (SDR version) or 20Gb/s (DDR version). The InfiniBand port features four integrated 2.5Gb/s (SDR version) or 5Gb/s (DDR version) SerDes interfaces eliminating the requirement for external physical layer devices. By providing world-class latency and high band-width connectivity over a PCI Express x8 interface, the devices provide the optimal solution for high-performance server and storage clustering.

Used as either a Host or Target Channel Adapter, InfiniHost III Lx devices feature MemFree Technology. MemFree allows system memory, as opposed to locally attached memory, to store connection information—saving cost, power and board area. Consuming around 3W (SDR version) or 3.5W (DDR version), and with a small overall footprint, the InfiniHost III Lx is ideal for Landed on Motherboard (LOM) and Blade Server designs.

The InfiniHost III Lx also maintains binary software compatibility with the InfiniHost III Ex (MT25208), and leverages existing device drivers, verbs software libraries, and upper layer protocols for faster time to market.

InfiniHost III Lx Block Diagram

InfiniHost™ III Lx - MT25204

HCA Architecture

The flexible architecture achieves optimal cost/performance and supports both low latency clustering, as well as applications requiring high throughput and scalable connectivity. These devices implement a very high performance and scalable packet processing HCA core. Dedicated packet processing engines and Direct Memory Access (DMA) engines provide concurrent receive and transmit data path processing and support both physical and virtual addressing modes.

The InfiniHost III Lx HCA is fully autonomous and capable of managing multiple I/O operations and associated data transfers without host intervention. The HCA architecture fully supports kernel bypass which allows de-coupling of the host CPU from I/O operations in addition to supporting transport layer processing directly in hardware. The HCA can manage up to 16 million queues and provides data integrity checking mechanisms.

Standard PCI Express Adapter Cards Based on the InfiniHost III Lx

MHES14-X – 10Gb/s InfiniBand Adapter Card w/ PCI Express x4
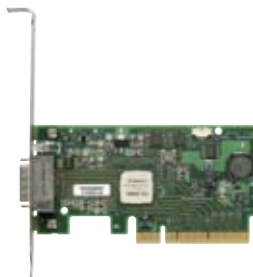
MHES18-X –10Gb/s InfiniBand Adapter Card w/ PCI Express x8

MHGS18-X – 20Gb/s InfiniBand Adapter Card w/ PCI Express x8

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

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