



## KEY FEATURES

- 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
- Eight 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 interface and ULPs for faster time to market
- Support MSI-X (Message Signaled Interrupts)
- Embedded InfiniRISC processors for management & special functions
- Integrated SMA and GSA
- Flexible Completion Mechanism Support (completion queue, event, or polled operation)
- Large on-chip InfiniBand port buffers
- 0.13um process technology

## INTERFACES

- Dual 10Gb/s (SDR) or 20Gb/s (DDR) 4X InfiniBand ports
- 64-bit (72-bit with ECC) DDR SDRAM local memory interface for connection information
- PCI Express x8 interface (20+20Gb/s)
- GPIO Pins (General Purpose I/O)
- Flash interface for boot code
- SMBUS (System Management Bus) for management (IBML) & serial EEPROM for Vital Product Data (VPD)
- 1149.1 Boundary Scan JTAG

# Mellanox InfiniHost™ III Ex

## Dual-Port 10 or 20Gb/s 4X InfiniBand HCA with PCI Express x8

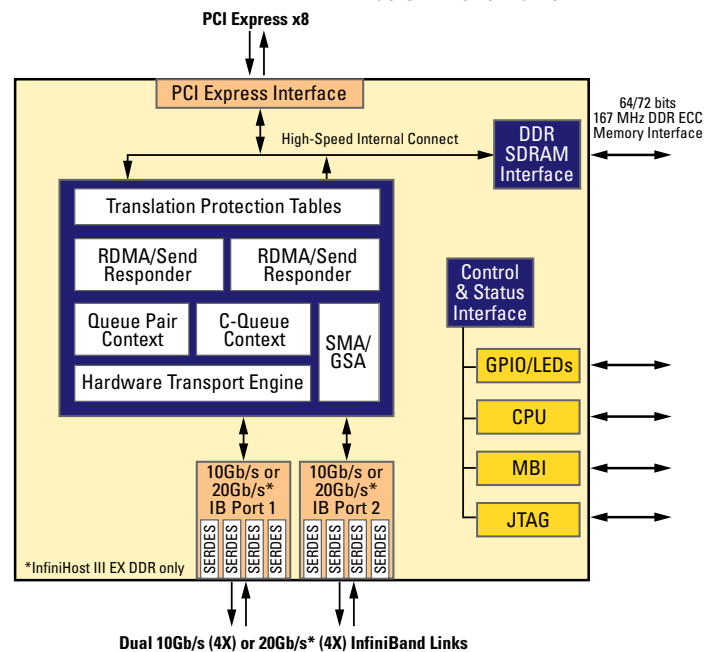


### Overview

The Mellanox InfiniHost™ III Ex is a dual-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 dual 4X InfiniBand ports on the InfiniHost III Ex supports either 10Gb/s (SDR version) or 20Gb/s (DDR version) per port. Each InfiniBand interface 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 bandwidth 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 Ex devices feature a local 64-bit (72- bits with ECC) SDRAM memory interface for storing connection information, or the flexibility of using MemFree Technology. MemFree enables system memory, as opposed to locally-attached adapter memory, to store connection information—saving cost, power and board area. Consuming around 7W (SDR version) or 10W (DDR version), and with a small overall footprint, the InfiniHost III Ex is ideal for Landed on Motherboard (LOM) and Blade Server designs.

The InfiniHost III Ex also maintains binary software compatibility with the InfiniHost III Lx (MT25204) and the InfiniHost (MT23108) HCA, and leverages existing device drivers, verbs software libraries, and upper layer protocols for faster time to market.



InfiniHost III Ex Block Diagram

# InfiniHost™ III Ex - MT25208

## KEY APPLICATIONS

- 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 computing, storage and management
- 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

## 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 Ex 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.

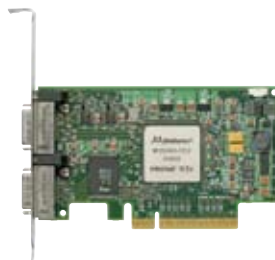
### Standard PCI Express x8 Adapter Cards Based on the InfiniHost III Ex



**MHEL-CF128T** – Dual 10Gb/s InfiniBand  
w/128MB Local Memory



**MHGA28-1T** – Dual 20Gb/s InfiniBand  
w/128MB Local Memory



**MHEA28-X** – Dual 10Gb/s  
InfiniBand MemFree



**MHGA28-X** – Dual 20Gb/s  
InfiniBand MemFree

### 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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