Maximizing Application Performance and Scalability
Leading Supplier of End-to-End Interconnect Solutions

Comprehensive End-to-End Software Accelerators and Management

- MPI
- SHMEM
- PGAS
- MXM: Mellanox Messaging Acceleration
- FCA: Fabric Collectives Acceleration

Management

- UFM: Unified Fabric Management

Storage and Data

- VSA: Storage Accelerator (iSCSI)
- UDA: Unstructured Data Accelerator

Comprehensive End-to-End InfiniBand and Ethernet Portfolio

- ICs
- Adapter Cards
- Switches/Gateways
- Host/Fabric Software
- Metro / WAN
- Cables/Modules
Technology Roadmap – One-Generation Lead over the Competition

Mellanox ➔ 20Gbs ➔ 40Gbs ➔ 56Gbs ➔ 100Gbs ➔ 200Gbs

Terascale

3rd

TOP500 2003
Virginia Tech (Apple)

Petascale

1st

“Roadrunner”
Mellanox Connected

Exascale

Mega Supercomputers

<table>
<thead>
<tr>
<th>Year</th>
<th>VPI</th>
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<tr>
<td>2011</td>
<td>FDR InfiniBand, 40/56GbE</td>
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<td>2012</td>
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<td>2013</td>
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<td>2014</td>
<td>EDR, 100GbE</td>
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<td>2015</td>
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Recent Acquisitions of Kotura and IPtronics Enable Mellanox to Deliver Complete High-Speed Optical Interconnect Solutions for 100Gb/s and Beyond
Mellanox Connect-IB The World’s Fastest Adapter

- The 7th generation of Mellanox interconnect adapters
- World’s first 100Gb/s interconnect adapter (dual-port FDR 56Gb/s InfiniBand)
- Delivers 137 million messages per second – 4X higher than competition
- Advanced Offload Engines and Capabilities uniquely designed for HPC
- Support the new innovative InfiniBand scalable transport – Dynamically Connected
Connect-IB Delivers Highest Application Performance

200% Higher Performance Versus Competition, with Only 32-nodes
Performance Gap Increases with Cluster Size

WIEN2k Performance

WRF Performance (conus12km)

- Competition (InfiniBand)  - ConnectX-3 FDR  - Connect-IB FDR
Mellanox Communication Libraries to Accelerate Applications

**MPI**
- Reliable Messaging
- Hybrid Transport Mechanism
- Efficient Memory Registration
- Receive Side Tag Matching

**OpenSHMEM / PGAS**
- Topology Aware Collective Optimization
- Hardware Multicast
- Separate Virtual Fabric for Collectives
- CORE-Direct Hardware Offload

**FCA**
- Reliable Messaging
- Hybrid Transport Mechanism
- Efficient Memory Registration
- Receive Side Tag Matching

**MXM**
- Reliable Messaging
- Hybrid Transport Mechanism
- Efficient Memory Registration
- Receive Side Tag Matching

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**Barrier Collective Latency**

Without FCA

With FCA

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**Reduce Collective Latency**

Without FCA

With FCA
What is PeerDirect™

PeerDirect is natively supported by Mellanox OFED 2.1 or later distribution
Supports peer-to-peer communications between Mellanox adapters and third-party devices
No unnecessary system memory copies & CPU overhead

- GPUDirect RDMA allows direct peer to peer GPU communications over InfiniBand
- Supports NVIDIA® GPUDirect RDMA and Intel XEON PHI
- Supports IProvides support for other acceleration devices, FPGAs, Storage
- Support for RoCE protocol over Mellanox VPI

Supported with all Mellanox ConnectX-3 and Connect-IB Adapters
Maximize Application Performance

World’s Fastest Available Non-Proprietary Interconnect and supporting software!

Maximize application performance with the underlying hardware architecture
Increase application scalability, user productivity and CPU efficiency
Thank You