Mellanox Interconnects Boost Performance
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Safe Harbor Statement

These slides and the accompanying oral presentation contain forward-looking statements and information.

The use of words such as “may”, “might”, “will”, “should”, “expect”, “plan”, “anticipate”, “believe”, “estimate”, “project”, “intend”, “future”, “potential” or “continued”, and other similar expressions are intended to identify forward-looking statements.

All of these forward-looking statements are based on estimates and assumptions by our management that, although we believe to be reasonable, are inherently uncertain. Forward-looking statements involve risks and uncertainties, including, but not limited to, economic, competitive, governmental and technological factors outside of our control, that may cause our business, industry, strategy or actual results to differ materially from the forward-looking statement.

These risks and uncertainties may include those discussed under the heading “Risk Factors” in the Company’s most recent 10K and 10Qs on file with the Securities and Exchange Commission, and other factors which may not be known to us. Any forward-looking statement speaks only as of its date. We undertake no obligation to publicly update or revise any forward-looking statement, whether as a result of new information, future events or otherwise, except as required by law.
Company Overview

- **Leading provider of high-throughput, low-latency server and storage interconnect**
  - FDR 56Gb/s InfiniBand and 10/40/56GbE
  - Reduces application wait-time for data
  - Dramatically increases ROI on data center infrastructure

- **Company headquarters:**
  - Yokneam, Israel; Sunnyvale, California
  - ~1,160 employees* worldwide

- **Solid financial position**
  - Record revenue in FY12; $500.8M
  - Q1’13 guidance ~$78M to $83M
  - Cash + investments @ 12/31/12 = $426.3M

* As of December 2012
<table>
<thead>
<tr>
<th>Market</th>
<th>HPC</th>
<th>Web 2.0</th>
<th>DB/Enterprise</th>
<th>Cloud</th>
<th>Financial Services</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Up to 10X Performance and Simulation Runtime</td>
<td>2X Hadoop Performance</td>
<td>10X Database Query Performance</td>
<td>12X More Throughput</td>
<td>Lowest Latency</td>
</tr>
<tr>
<td></td>
<td>33% Higher GPU Performance</td>
<td>13X Memcached Performance</td>
<td>4X Faster VM Migration</td>
<td>Support More Users at Higher Bandwidth</td>
<td>62% Better Execution Time</td>
</tr>
<tr>
<td></td>
<td>Unlimited Scalability</td>
<td>4X Price/Performance</td>
<td>More VMs per Server and More Bandwidth per VM</td>
<td>Improve and Guarantee SLAs</td>
<td>42% Faster Messages Per Second</td>
</tr>
</tbody>
</table>

**Storage**

Mellanox storage acceleration software provides >80% more IOPS (I/O operations per second)

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Leading Supplier of End-to-End Interconnect Solutions

Server / Compute
- Virtual Protocol Interconnect
  - 56G IB & FCoIB
  - 10/40/56GbE & FCoE

Switch / Gateway
- Virtual Protocol Interconnect
  - 56G InfiniBand
  - 10/40/56GbE
  - Fibre Channel

Storage Front / Back-End
- Connect X:3
- Connect IB

Comprehensive End-to-End InfiniBand and Ethernet Portfolio

ICs
Adapter Cards
Switches/Gateways
Host/Fabric Software
Cables

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Top Tier OEMs, ISVs and Distribution Channels

Hardware OEMs
- Server
  - HP
  - ORACLE
  - DELL
  - IBM
  - ASUS
  - Bull
  - Quanta
  - SGI
  - Sun

- Storage
  - EMC
  - HP
  - IBM
  - NetApp
  - ORACLE
  - DataDirect
  - Teradata
  - SGI
  - Xyratex
  - LSI

- Embedded
  - AdvanTech
  - Dalsa
  - Fujitsu
  - Mercury
  - Moxa

Software Partners
- Microsoft
- redhat.
- Novell
- Solaris
- AIX
- HP-UX
- VMware
- Oracle
- IBM DB2
- TIBCO
- Infor
- Autodesk
- Synopsys

Selected Channel Partners
- Altima
- Arrow
- Avnet
- Atlantik
- Avnet
- DSC
- DSCon
- hammer
- NetWeb
- SAMBO
- Tech Data
- Servants
- STORDIS
Virtual Protocol Interconnect (VPI) Technology

ConnectX-3 VPI Adapter

Ethernet: 10/40/56 Gb/s
InfiniBand: 10/20/40/56 Gb/s

SwitchX-2 VPI Switch

Unified Fabric Manager

Switch OS Layer

64 ports 10GbE
36 ports 40/56GbE
48 10GbE + 12 40/56GbE
36 ports IB up to 56Gb/s
8 VPI subnets

From data center to campus and metro connectivity

Applications
Networking, Storage, Clustering, Management

Acceleration Engines
LOM, Adapter Card, Mezzanine Card

From data center to campus and metro connectivity

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High-Performance Computing Market Leadership

- InfiniBand is the most used interconnect on the November 2012 TOP500 list
  - 224 systems, 45% of the TOP500 list
  - Positioned to expand in cloud and Web 2.0

- InfiniBand is the most used interconnect for Petascale systems
  - Mellanox InfiniBand is the only Petascale-proven solution

- FDR InfiniBand connected systems increased 2.3X on the November 2012 TOP500 list compared to June 2012
  - From 21 systems to 45 systems
  - FDR InfiniBand connects the fastest InfiniBand system on the list: #6 LRZ

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FDR InfiniBand Maximizes Server and Storage System Potential

FDR InfiniBand Provides Extreme Performance
187 Teraflops with ONLY 648 Servers
Half the server count, double the performance from prior cluster
3 Petaflop Systems: Tera100, Curie & Helios

Tera100
1.25 PetaFlops
- 140,000 Xeon cores
- SMP nodes
- 256 TB memory
- 30 PB disk storage
- 500 GB/s IO throughput
- 580 m² footprint

Curie
2.0 PetaFlops
- 90,000 Xeon cores
- +SMP + GPU
- 360 TB memory
- 10 PB disk storage
- 250 GB/s IO throughput
- 200 m² footprint

Helios
1.5 PetaFlops
- 70,000 Xeon cores
- 280 TB memory
- 15 PB disk storage
- 120 GB/s IO throughput
- 200 m² footprint

InfiniBand Deployment
Provides on-demand access to support users spread across 70 research groups
- Coupled atmosphere-ocean models
- Traditional sciences such as chemistry, physics and biology
- HPC-based research such as bio-medicine, clinical-medicine and social sciences.

Dell based, Mellanox end-to-end 56Gb/s FDR InfiniBand
- Mellanox 56Gb/s InfiniBand Orca Modular Director 648 ports switch
- ConnectX-3 HCAs
- Integrated Gateway capabilities in the Switch tbd
KTH Royal University Stockholm

- Dell based, “Ekman” cluster, 1,300 nodes, 86Tflops
- Located at PDC, Stockholm
- Mellanox 20Gb/s InfiniBand solutions
- Fat Tree, full bisection bandwidth

Foto: Harald Barth
- **T-Platforms** based “Lomonosov” cluster, #15
- 674 TFlops, T-Platforms TB2-XN T-Blade Chassis
- 4.4K nodes, 36K cores
- Mellanox end-to-end 40Gb/s InfiniBand connectivity
AIRBUS HPC Centers

- 4K nodes total in two locations – France and Germany
- HP based, Mellanox InfiniBand end-to-end – adapters and switches
- Mellanox UFM for advanced fabric management
- To support their business needs, the AIRBUS HPC computing capability needs to double every year
The Fastest Supercomputer in Europe
Mellanox end-to-end FDR InfiniBand solutions
~ 3 (sustained) Petaflop performance
IBM iDataPlex and Intel Sandy Bridge
~ 150,000 cores
Summary

- Interconnect technology is critical for business performance
  - Increases application productivity and ROI

- Interconnect market has shown consistent growth
  - In HPC, Web 2.0, storage, database, cloud and Big Data markets

- Mellanox uniquely positioned to continue leading the market
  - Provider of fastest interconnect technology currently available
  - Strong partnerships, channel relationships
  - Providing compelling benefits to multiple, high growth markets

- Demonstrated revenue growth, strong cash flow and increasing profitability with attractive gross margins
  - Solid revenue growth (~43% CAGR) over the last 5 years
  - Products address large $5.3 billion TAM
Thank You
Backup
10X Performance with Mellanox for Oracle

**Accelerated and Connected by Mellanox End-to-End InfiniBand Solutions**

- Exadata (database in-memory appliance)
- Exalytics (Big Data)
- Exalogic (cloud computing appliance)
- ZFS (storage over InfiniBand)
- SuperCluster (Data Center in a box)

**Reduced hardware costs by a factor of 5X**

**Improved performance by a factor of 10X**

Enabling Superior Database and Cloud Interconnect Performance
Oracle Exadata
The World’s Fastest Database Machine

Runs Oracle 10X Faster

IBM XIV Storage System
Power to serve even more applications from a single system
4 Times the Throughput

IBM DB2 pureScale
95% Efficiency and Scalability

InfiniBand provides leading performance for virtualized server and storage environments, online transaction processing, analytics and cloud computing
Mellanox Interconnect, Standard for Storage and Database

Oracle ZFS

IBM XIV Storage System

Power to serve even more applications from a single system

IBM DB2 pureScale
95% Efficiency and Scalability

EMC Isilon

Scale out Network Attached Storage

Teradata Aster
Big Analytics Appliance
InfiniBand Maximizes ROI at Microsoft Bing Maps

10x performance improvement compared to previous systems

> 2x better cost effective solution compared to 10GigE
50% CAPEX Reduction for Bing Maps

- High-performance system to support map image processing
- Half the cost compared to 10GbE
- Mellanox end-to-end InfiniBand interconnect solutions

Microsoft

Enabling Cost-Effective Accelerated Web 2.0 Services
InfiniBand Enables Microsoft Windows Azure

- **Microsoft Windows Azure high-performance cloud computing**
- **InfiniBand enables 90.2% cloud efficiency!**
  - 33% higher efficiency versus Amazon 10GbE Cloud
  - 33% more compute per square foot
  - Results in higher return on investment for both the cloud provider and the user
- **TOP500 #165**
Delivering Scalable High-Performance Computing for World-Wide Leading HPC Systems

Paving the Road to Exascale!

LANL (USA)  Nebulae (China)  TSUBAME (Japan)  CEA (France)  NASA (11K nodes, USA)  TACC (USA)
3 Petaflop Systems: Tera100, Curie & Helios

**Tera100**
- 1.25 PetaFlops
- 140,000 Xeon cores
- SMP nodes
- 256 TB memory
- 30 PB disk storage
- 500 GB/s IO throughput
- 580 m² footprint

**Curie**
- 2.0 PetaFlops
- 90,000 Xeon cores
- +SMP + GPU
- 360 TB memory
- 10 PB disk storage
- 250 GB/s IO throughput
- 200 m² footprint

**Helios**
- 1.5 PetaFlops
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InfiniBand Deployment
Commissariat a l’Energie Atomique (CEA) - #20

- 1st Petaflop system in Europe
- Tera 100, 1.05 PF performance
- 4,300 Bull S Series servers
- 140,000 Intel® Xeon® 7500 processing cores
- 300TB of central memory, 20PB of storage
- Mellanox 40Gb/s InfiniBand
Bull B510, Intel Sandy Bridge
70,560 cores
1.24 sustained Petaflop performance
Mellanox end-to-end InfiniBand solutions

PetaFlop
Mellanox Connected

International Fusion Energy Research Centre (IFERC), EU(F4E) - Japan Broader Approach collaboration - #15
~ 12,000 nodes
~ 126,000 cores
1.24 Petaflops sustained performance
SGI Altix ICE X/8200EX/8400EX
Mellanox end-to-end FDR and QDR InfiniBand
Supports variety of scientific and engineering projects
  • Coupled atmosphere-ocean models
  • Future space vehicle design
  • Large-scale dark matter halos and galaxy evolution
Goethe University “LOEWE-CSC”

- 470TFlops, 20K CPU cores and 800 GPUs
- **Supermicro** based AMD Opteron Magny-Cours, ATI GPUs
- Mellanox 40Gb/s InfiniBand solutions
- System supports wide range of research activities
  - Theoretical physics
  - Chemistry
  - Life sciences
  - Computer science.
University of Cambridge - HPC Cloud

- Provides on-demand access to support users spread across 70 research groups
  - Coupled atmosphere-ocean models
  - Traditional sciences such as chemistry, physics and biology
  - HPC-based research such as bio-medicine, clinical-medicine and social sciences.

- Dell based, Mellanox end-to-end 56Gb/s FDR InfiniBand
  - Mellanox 56Gb/s InfiniBand Orca Modular Director 648 ports switch
  - ConnectX-3 HCAs
  - Integrated Gateway capabilities in the Switch tbd
“Stampede” system
- 6,000+ nodes (Dell), 96,000+ cores, Intel Phi co-processors
- 2.66 Petaflops
- Mellanox end-to-end FDR InfiniBand
Dell based, “Ekman” cluster, 1,300 nodes, 86Tflops
Located at PDC, Stockholm
Mellanox 20Gb/s InfiniBand solutions
Fat Tree, full bisection bandwidth
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Source:
- TSUBAME 2.0, 1\textsuperscript{st} Petaflop system in Japan
- 1.2 PF performance
- HP ProLiant SL390s G7 1,400 servers
- 4,200 NVIDIA Tesla M2050 Fermi-based GPUs
- Mellanox 40Gb/s InfiniBand
“Client focus combined with state-of-the-art technology are essential to attracting additional liquidity.

Right now, we are setting a new standard for trading, risk management and the future growth of SIX Swiss Exchange.”

Christian Katz, CEO SIX Swiss Exchange
“Yellowstone” system
72,288 processor cores, 4,518 nodes (IBM)
Mellanox end-to-end FDR InfiniBand, full fat tree, single plane
IBM 108 Node GPFS Cluster

Mellanox FabricIT™ management software allows the GPFS clusters to be part of several class C networks
- Using redundant switch fabric

Mellanox BridgeX bridge the InfiniBand network to a 10G/1G Ethernet intra-network

Partitioning ensures no traffic cross between the different clusters connected to the GPFS file system

Uses High Availability for IPoIB
World’s first machine to break the Petaflop barrier
- Usage - national nuclear research, astronomy, human genome science and climate change

CPU-GPU-InfiniBand combination for balanced computing
- More than 1,000 trillion operations per second
- 12,960 IBM PowerXCell CPUs, 3,456 tri-blade units
- Mellanox ConnectX 20Gb/s InfiniBand adapters
- Mellanox-based InfiniScale III 20Gb/s switches

Mellanox Interconnect is the only scalable solution for Petascale computing
- The Fastest Supercomputer in Europe
- Mellanox end-to-end FDR InfiniBand solutions
- ~3 (sustained) Petaflop performance
- **IBM** iDataPlex and Intel Sandy Bridge
- ~150,000 cores
Mellanox Raanana office: 1 of 5 locations in Israel
Thank You

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