



# Mellanox Technologies' Partners to Demonstrate Breakthrough 10Gb/sec Clustered Computing Performance at SC2002 Conference

## **InfiniBand<sup>®</sup> Architecture Offers Record Performance for Server Clustering and High Performance Computing (HPC)**

SANTA CLARA, CALIFORNIA and YOKNEAM, ISRAEL, November 13, 2002 - Mellanox<sup>™</sup> Technologies, Ltd., the leader in InfiniBand silicon, announced today that multiple applications running the Message Passing Interface (MPI) protocol on 10Gb/sec InfiniBand clusters will be demonstrated at the upcoming SC2002 conference. These demonstrations feature breakthrough performance by taking advantage of the Mellanox InfiniHost<sup>™</sup> and InfiniScale<sup>™</sup> devices to deliver up to 8 times the bandwidth of gigabit Ethernet and up to three times the bandwidth of existing proprietary HPC interconnect technologies. For the first time InfiniBand technology combines the bandwidth, latency, and performance capabilities demanded by the HPC market, with an open, industry standard architecture supporting multiple application protocols for enterprise, storage, and data center computing. InfiniBand offers superior clustering performance while delivering the economies of scale that only an industry standard can provide.

### **At SC2002**

Mellanox silicon and hardware solutions are being featured in a wide range of exhibits at the upcoming SC2002 conference from November 18-21 in Baltimore Maryland. Exhibitors demonstrating InfiniBand technology include:

- Abba Technologies
- Ames Laboratory
- Appro International Inc.
- DivergeNet Inc.
- Intel Corporation
- JINI Corporation
- Lane 15 Software
- Los Alamos Laboratories
- MicroWay Inc.
- MPI Software Technology Inc. (MSTI)
- NCSA (National Center for Supercomputing Applications)
- Ohio State University
- Ohio Supercomputer Center (OSC)
- RackSaver Inc.
- Sandia National Laboratories
- Topspin Communications, Inc.

These partners and early adopters are demonstrating InfiniBand clusters featuring Mellanox InfiniHost Host Channel Adapters (HCAs), InfiniScale switch devices, and Nitro II server blades, leveraging several different InfiniBand MPI software solutions available to the commercial and open source communities.

### **New Performance Standard**

"In comparison to Ethernet or proprietary clustering interconnects, a 10 Gb/sec InfiniHost HCA can deliver up to 8 times the bandwidth while using as few as 1/5 of the processor cycles," said Diego Crupnicoff, senior architect for Mellanox Technologies. "Our demonstration partners are clearly showing the InfiniBand architecture is a generation ahead of other interconnect technologies in delivering a high bandwidth, low latency interconnect for server clustering in HPC applications."

At SC2002 bandwidth is king and the InfiniHost HCA is the clear leader. In running the industry standard Pallas benchmark, this device enables up to 3 TIMES the bandwidth of the proprietary competitors delivering up to 760 MB/sec of MPI data bandwidth.

"Ohio State University is recording up to 760 MBytes/sec point-to-point MPI-level communication bandwidth with our MVAPICH layer," said DK Panda, Professor of Computer and Information Science and head of the Network-Based Computing Laboratory at Ohio State University.

"We are extremely impressed with the initial benchmark results and fully expect to see them improve as OSU and Mellanox work together on tuning."

The InfiniHost device offers record high HCA bandwidth and record low processor utilization delivering InfiniBand native performance of over 6.5 Gb/sec of data bandwidth while consuming less than 2% of the host processor's cycles. This level of performance is enabled through integrated hardware transport support that is designed into InfiniBand silicon. Sophisticated hardware mechanisms enable InfiniBand HCAs to approach wire speed with very little support from the server processor. Hardware transport allows the vast majority of the host's processor cycles to be utilized by the application being run on the cluster and not by the clustering interconnect. By contrast gigabit Ethernet interconnects today provide only about 0.5 Gb/sec of bandwidth and often use well over 50% of the processor's cycles to run the TCP/IP stack.

### **Outstanding Software Support**

The leading commercial provider of complete MPI solutions, MPI Software Technology, is providing MPI/Pro for the Mellanox InfiniHost HCA. The MPI/Pro package for 10Gb/sec InfiniBand is demonstrating super computing performance now. (Read the details in complementary MTSI/Mellanox press release issued today.)

"MPI Software Technology is fully supporting Mellanox and the InfiniBand standard," said Dr. Anthony Skjellum, CTO of MSTI. "We foresee that MPI/Pro running over this standard will have an huge impact on the users ability to exploit InfiniBand for real applications."

Ohio State University/Ohio Supercomputer Center and National Center of Supercomputing Applications (NCSA) are also providing open source MPICH solutions that have been enabled for InfiniBand. These demonstrations will be complemented by partner demonstrations from Rack-Saver, Appro International, Lane15™ Software, Microway, JNI and others. In addition, Lane 15 Software announced support for MPI as part of their InfiniBand Management suite and will be the manager in a number of these demonstrations.

These InfiniBand demonstrations will show broad application software support within the HPC community. Applications being demonstrated will represent a variety of industries including:

- Oil & gas
- Biosciences
- Military
- Medical
- Industrial
- Astrophysics research

#### “HPC Cluster in a Box” a Vision for HPC Blade Computing

The Nitro II reference design provides a vision of the future; demonstrating high-bandwidth low-latency clustering with 10Gb/sec blades, backplane and switch - all in an efficient and easy to use compact blade design able to support a 48 node Pentium 4 cluster in less than half the space of traditional server form factors. All that is needed for a 12 node HPC cluster is contained in a single chassis that seamlessly scales to 48 nodes without external switches and well beyond 48 nodes with external switches. Mellanox Nitro II InfiniBand server blades are being demonstrated by Sandia Labs in the Ohio State University/Ohio Supercomputer Center booth, by MSTI and by MicroWay.

"Nitro II InfiniBand blade servers provide the right vision for the HPC market and Microway is today manufacturing and validating InfiniBand Xeon® blades which run MPI and work in conjunction with our 1U based clusters," said Stephen Fried, president of Microway. "An industry standard fabric with the ability to provide 10Gb/sec, low latency, low overhead clustering in an easy to use blade form factor will revolutionize this industry."

#### **About InfiniBand**

The InfiniBand Architecture is the only 10Gb/sec ultra low latency clustering, communication and storage interconnect in the market today. Based on an industry standard with reliability, availability, serviceability and manageability features designed in from the ground up, InfiniBand provides the most robust data center interconnect solution available. These attributes greatly improve TCO for the data center. Low cost InfiniBand silicon is shipping today that supports 10Gb/sec

RDMA transfers and with its approved specification for 30Gb/sec, InfiniBand is at least a generation ahead of competing fabric technologies today and for the foreseeable future.

## **About Mellanox**

Mellanox is the leading supplier of InfiniBand semiconductors, providing switches, Host Channel Adapters, and Target Channel Adapters to the server, communications and data storage markets. In January 2001, Mellanox Technologies delivered the InfiniBridge 10Gb/sec InfiniBand device to market, and is now shipping second-generation InfiniScale and InfiniHost silicon. The company has raised more than \$89 million to date and has strong corporate and venture backing from Bessemer Venture Partners, Dell Computer, Intel Capital, Raza Venture Management, Sequoia Capital, Sun Microsystems, US Venture Partners, Vitesse and others. Mellanox has been recognized with awards in 2001 and 2002 from Computerworld, Network Computing, Red Herring, and Upside magazines as a key emerging technology company. The company's business operations, sales, marketing and customer support are headquartered in Santa Clara, CA; with the design, engineering, software, system validation, and quality and reliability operations based in Israel.

For more information visit Mellanox website at [www.mellanox.com](http://www.mellanox.com)

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