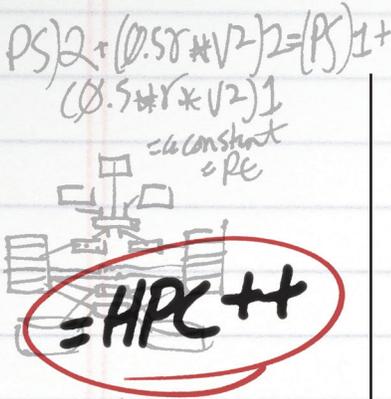


LY PRODUCTIVE HIGH PERFORMANCE COMPUTING



PARTNER PROFILE

Mellanox™ Technologies, Ltd. is a leading supplier of semiconductor-based, high-performance, InfiniBand and Ethernet connectivity products that facilitate data transmission between servers, communications infrastructure equipment, and storage systems.

Mellanox ConnectX IB InfiniBand adapter devices deliver low-latency and high-bandwidth for performance-driven server and storage clustering applications in enterprise data centers, high-performance computing, and embedded environments.

Mellanox InfiniBand devices have been deployed in clusters scaling to thousands of nodes and are being deployed end-to-end in data centers and Top500 systems around the world.

SUPERIOR PERFORMANCE FOR LOW-LATENCY, HIGH-THROUGHPUT CLUSTERS RUNNING WINDOWS® HPC SERVER 2008

Windows HPC Server 2008 and Mellanox InfiniBand interconnect adapters deliver maximum performance and scalability for HPC networks.

OVERVIEW

High-performance computing (HPC) has become a fundamental resource for innovative researchers, scientists, analysts and engineers in industries spanning manufacturing, computational science, life sciences, financial services, aerospace, oil and gas, and more. These experts require dedicated HPC capacity to run HPC performance-sensitive applications that demand vast amounts of computing power to solve complex simulations, and long-running calculations. Meeting this requirement allows professionals to accomplish more in less time, and thereby to improve their productivity.

HPC applications require the highest throughput and lowest possible latency. HPC server clusters require high-performance interconnect technology to provide high-throughput with low-latency, and direct data transfer (CPU offload) between compute nodes.

The InfiniBand interconnect architecture is the only industry standard technology that advances I/O connectivity for HPC clusters.

These HPC requirements demand an HPC platform that helps ensure compatibility, seamless integration, optimal performance, and scalability.

Windows HPC Server 2008 combined with Mellanox InfiniBand interconnect adapters delivers computing performance that addresses the productivity and scalability needs of current and future HPC computing platforms.

WINDOWS HPC SERVER 2008

Windows HPC Server 2008 is built on proven Windows Server® 2008 x64-bit technology, and can efficiently scale to thousands of processing cores. Windows HPC Server 2008 is simple to deploy, manage, and use with existing infrastructure, and enables a solution that delivers high-performance and stability.

MS-MPI SIMPLIFIES NETWORK DRIVER MANAGEMENT

Windows HPC Server 2008 simplifies network driver management by supporting the Microsoft Message Passing Interface (MS-MPI) which is based on the Argonne National Labs implementation (MPIH2) of the MPI2 standard. MS MPI can utilize any interconnect (such as InfiniBand) that is supported on Windows Server 2008.

NetDirect ENSURES HIGH-SPEED INTERCONNECTS

Windows HPC Server 2008 is designed to ensure high-speed interconnects by using NetDirect— Microsoft's new Remote Direct Memory Access (RDMA) interface for high-speed, low-latency networks such as those running on InfiniBand. By using an architecture that directly bypasses operating system (OS) and TCP/IP overhead, NetDirect takes advantage of the advanced InfiniBand capabilities and achieves better performance for massively parallel programs that utilize low-latency, high-bandwidth networks, see Figure 1.

HPC++

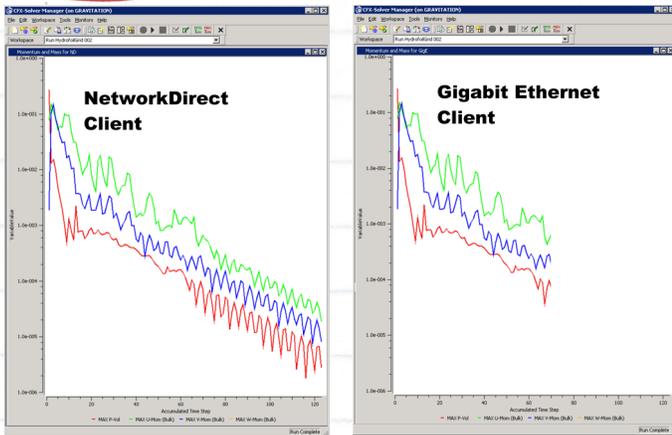


Figure 1: ANSYS CFX Solver Manager, running identical jobs on two different cluster groups— InfiniBand enabled cluster (left), and a Gigabit Ethernet enabled cluster (right). Given equal time, the InfiniBand enabled cluster converges faster than on GigE compute nodes.

"We are excited to partner with Microsoft to bring a high-performance computing experience that offers industry-leading performance, while maintaining simplicity and ease of use for end users. Mellanox 10, 20 and 40Gb/s InfiniBand end-to-end solutions running on Windows HPC Server 2008 provide the stringent productivity requirements of current and future scientific and engineering simulations to reduce time to market, and to enable safer and more reliable products."

Gilad Shainer, Mellanox

INFINIBAND INTERCONNECT ADAPTERS

Clusters linked with the high-speed, industry standard InfiniBand interconnect, deliver maximum performance, scalability, flexibility and ease of management. HPC applications achieve maximum performance over InfiniBand networks because CPU cycles are available to focus on critical application processing instead of networking functions. Node-to-node latency of less than 2µs and almost 3GByte/sec uni-directional bandwidth has been demonstrated on Mellanox InfiniBand clusters using the Microsoft MS-MPI protocol.

With InfiniBand's proven scalability and efficiency, small and large clusters easily scale up to tens-of-thousands of nodes. InfiniBand drivers for Windows HPC Server 2008 are based on the OpenFabrics Alliance Windows driver set (WinOF), ensuring that certified, high-performance networking drivers like InfiniBand, are available to both end users and to major original equipment manufacturers (OEMs) creating HPC offerings.

BENEFITS

The combination of Windows HPC Server 2008 and Mellanox InfiniBand adapters increases:

- **Performance**
Supports native InfiniBand performance for HPC applications.
- **Productivity**
Accomplish more in less time than before.
- **Scalability**
Small and large clusters easily scale up to thousands of nodes.

WINDOWS HPC SERVER 2008 ARCHITECTURE

The Windows HPC Server 2008 architecture is shown in Figure 2.

The Windows HPC Server 2008 head node:

- Controls and mediates all access to the cluster resources.
- Is the single point of management, deployment, and job scheduling for the cluster.
- Can failover to a backup head node.

Windows HPC Server 2008 uses the existing corporate infrastructure and Microsoft Active Directory® for security, account management, and operations management.

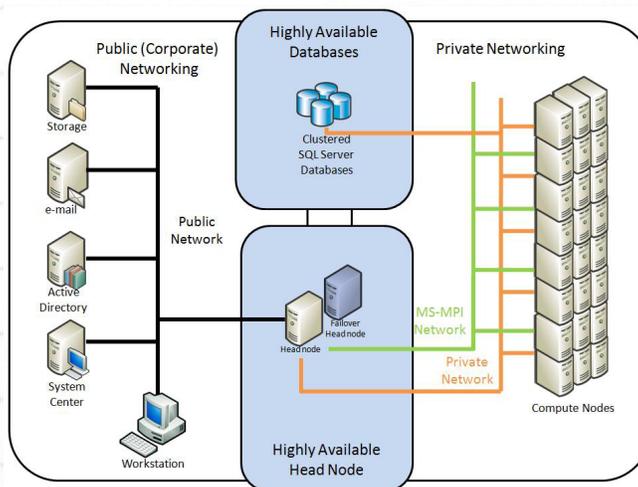


Figure 2: Windows HPC Server 2008 architecture.

FURTHER INFORMATION

For more information about Windows HPC Server 2008 and HPC please visit:
<http://www.microsoft.com/hpc>

For more information about Mellanox Technologies please visit:
<http://www.mellanox.com>