Overview
With ever-increasing automation of trading, firms in the financial services industry consider the building of low-latency, high-capacity infrastructures to be critical to stay competitive in capital markets. Under increasing pressure, financial markets must improve operating efficiency to stay competitive, control costs, and manage risk. These challenges, in addition to the rapid increase in electronic trading, have created a need for high-performance computing (HPC) environments in financial services. As the industry leader in networking, Cisco delivers an unmatched HPC solution to address customer needs. The broad Cisco solution portfolio delivers high speeds, low latencies, open standards, and high system availability, allowing financial services customers to deploy the right infrastructure for their applications.

Challenges
The primary challenges in financial service are:
• Low-latency requirements
• High message rate and throughput requirements
• Predictability; avoiding jitter and spikes
• Building large computing grids in a cost-effective manner

Business Benefits
The main business benefits for financial services are:
• Increased competitiveness
• Increased revenue
• Increased productivity

Solution
A typical HPC cluster is a set of server nodes interconnected by a low-latency, high-performance interconnect such as InfiniBand for interprocess communication. The cluster is almost always interconnected with a scalable Gigabit Ethernet network to provide the management and I/O networks. Cisco offers a full portfolio of HPC networking products for HPC clustering. The Cisco Server Fabric Switches (SFS) InfiniBand switching family can be used for ultra-low-latency server-to-server and server-to-storage communication, and the Cisco Catalyst® Ethernet switches can provide a scalable management network and I/O network.

Applications of the Cisco SFS InfiniBand solution include automated trading and computing grid applications (Tables 1 and 2). Cisco InfiniBand is a high-performance networking fabric and is designed to offer best-in-class performance and availability. Cisco has a comprehensive double-data-rate (DDR) switching portfolio that includes host channel adapters (HCAs), DDR edge switches, and large core switches. Cisco InfiniBand Subnet Manager has been proven to scale to manage the largest clusters in the world today. Cisco is an active contributor to the open source community, with leading efforts in the OpenFabric and Open Message Passing Interface (OpenMPI) communities.
High-Performance Trading:
Cisco High-Performance Computing Solution for Financial Services
Cisco InfiniBand and Ethernet Solutions for High-Performance Computing Clusters to Provide Low Latency in Financial Services

Why Cisco HPC?
Cisco offers a full portfolio of HPC networking products for HPC clustering. The Cisco SFS InfiniBand switching family can be used for low-latency interprocess communication networking, and the Cisco Catalyst Ethernet switches can provide a scalable management network. Cisco MDS 9000 family storage switches can be used to access block storage for parallel file systems. Customers can choose the most appropriate solution and mix of fabrics for their applications. By standardizing on the Cisco HPC solution, organizations can use Cisco technology leadership to simplify their HPC operations and reduce time to deployment for new application infrastructure, without compromising the availability, security, and predictable application performance needed in today’s business environment.

- Reliability
  - Highly reliable DDR products, proven by large deployments in critical environments
  - Robust, enterprise-class, end-to-end solution with proven performance and security
  - Rigorous hardware testing with all cable lengths and switches to help ensure high-quality products

- Scalability
  - Easy to scale the HPC infrastructure with Cisco products; choosing Cisco products provides investment protection
  - Broadest portfolio of technologies for all networking needs
  - Proven solution in the largest HPC and enterprise clusters in production

- Manageability
  - End-to-end management solution over multiple fabrics
  - Unified management capabilities for Ethernet and InfiniBand

- Comprehensive ecosystem
  - Integrated HPC solution, through partnering with server vendors and ISVs
  - Mature processor, server, storage, OS, and ISV qualifications
  - Proven interoperability with server and storage solutions
  - Integrated switching and HCA cards with all major blade system switching chassis

- Service and support
  - Cisco support for complete networking solutions, including drivers and MPI
  - Cisco 24/7 services and support, available worldwide
  - Experience
    - Cisco HPC implemented with customers in multiple industries
    - Cisco leadership in OpenFabric and OpenMPI standards efforts

For More Information