SilverStorm™ 9000 Fabric Directors

10 Gb/s (SDR) and 20 Gb/s (DDR) Switching With Integrated Virtual I/O Controllers (VIC)

Benefits

- Significantly improve cluster computing application performance
- Eliminate the need for separate physical server connections to storage and network resources
- Scale servers and I/O independently
- Pool and share I/O between servers
- Simplify data center design and reduce operating costs
- Requires up to 1/3 less power and space than competitive solutions

Key Features

- Up to 11.52 Terabits of switching capacity in a single system
- Common set of spine, leaf, and Virtual I/O Controller modules across all chassis sizes
- 4x SDR/DDR InfiniBand, 1/2/4 Gb/s Fibre Channel and 10Gb/s Ethernet Virtual I/O interface options
- Fully redundant power, cooling, and logic components
- Up to 288 InfiniBand ports in a single chassis
- Supports both copper and Fiber Optic InfiniBand cables
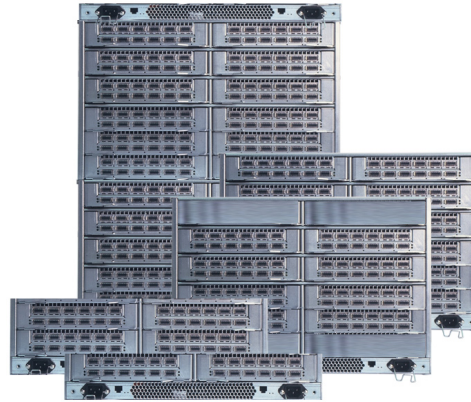
Integrated Cluster Computing Interconnect Solution. The SilverStorm 9000 Multi-Protocol Fabric Directors support High Performance Computing (HPC), database clustering, and grid utility computing applications; they maximize cluster and grid computing interconnect performance while simplifying and reducing data center costs. The 9000 Fabric Director systems leverage the latest InfiniBand-based technologies to provide industry leading port densities, throughput performance, and ultra-low latency.

Virtual I/O Integration. The 9000 family incorporates the innovative Virtual I/O Controller (VIC) technology. VIC modules installed in a 9000 system enable hosts on InfiniBand fabrics to transparently access either Fibre Channel or Ethernet networks or both. VIC modules utilize Virtual HBA and Virtual NIC technology creating a virtual pool of network and storage resource connectivity. VIC technology eliminates the cost and complexity of running multiple server physical connections for storage, network, and inter-processor communications, and allows each virtual network type to scale independently over a "single wire" connection.

Fabric Scalability. The 9000 series Fabric Directors economically support most any cluster interconnect requirement. The family scales to support small networks with as few as 12 nodes using a single 2U chassis to multi-thousand node networks using multiple Fabric Director systems working in concert as a single high performance virtual fabric.

To maximize fabric scalability, all 9000 systems use the same spine switching, leaf switching, and VIC option modules. All chassis types are slot-independent, which enable flexible switching capacity and port density depending on the number and type of option modules installed.

Advanced Features. All major components are field replaceable and hot pluggable. Advanced features are supported, such as non-disruptive firmware upgrade, port-to-port and module-to-module failover, component level diagnostics and alarming, and both in-band and out-of-band remote management. When combined with the QuickSilver suite of fabric software solutions, the 9000 family of Fabric Directors supports the most demanding cluster computing interconnect requirements.

SilverStorm 9000 Multi-Protocol Fabric Director

Switch Specifications

Chassis System Model Options
- 9240: up to 288 IB ports, 11.52 Tb/s capacity
- 9120: up to 144 IB ports, 5.76 Tb/s capacity
- 9080: up to 96 IB ports, 3.84 Tb/s capacity
- 9040: up to 48 IB ports, 1.92 Tb/s capacity
- 9020: up to 22 IB ports, 880 Gb/s capacity

Leaf Module Options
- 4x SDR IB: 12 4x IB ports
- 4x DDR IB: 12 4x IB ports
- 1/2/4 Gb/s FC VIC: 10 4x IB ports, 8 VIC ports
- 10 Gb/s Ethernet VIC: 10 4x IB ports, 2 VIC ports

InfiniBand Switch Modules
- Virtual Lanes: 8 plus 1 management
- MTU size: up to 4096
- Unicast table: 48K entries
- Multicast table: 1024 entries
- Switching latency: < 140 ns to < 420 ns

Fiber Channel VIC Module
- Supports up to 128 Virtual HBA ports per module
- Automatic sensing of port type: 1/2/4 Gb/s
- Automatic port and module fail-over
- Supports load balancing
- LUN mapping and masking features
- SCSI-SRP, SCSI-FCP, and FC-PH-3 compliant

Ethernet VIC Module
- Supports up to 250 Virtual NIC ports per module
- Automatic port and module fail-over
- Port aggregation
- TCP/UDP and IP header checksum offload
- Jumbo frames supported
- 802.1Q VLAN support
- 802.1p Priority Queuing/Scheduling (802.1p)

Interoperability
- IBTA 1.0a, 1.1 and 1.2

Physical Specifications

Model H x W x D + Weight
- 9240: 24.5 in x 17.32 in x 25.5 in 180 lbs
- 9120: 12.25 in x 17.32 in x 25.5 in 100 lbs
- 9080: 12.25 in x 17.32 in x 25.5 in 90 lbs
- 9040: 5.25 in x 17.32 in x 25.5 in 55 lbs
- 9020: 3.5 in x 17.32 in x 25.5 in 32 lbs

Environment and Equipment Specifications

Power consumption
- 85 to 264 VAC (47-63 Hz), IEC 320 power connectors

Temperature
- 5° to 45°C (operating)
- -35° to 65°C (non-operating)

Humidity
- 5 to 85% (operating)
- 5 to 90% (non-operating)

Agency Approvals

Safety
- UL/CSA/EN

EMI
- FCC/VCCI/EN

Marking
- UL/GS/VCCI/CE /RoHS

Tools and Utilities

Management
- Optional redundant chassis management processor
- Optional embedded Fabric Management (SM, PM, and BM)
- Optional server-based InfiniBand compliant Subnet Manager
- SNMP management support

Ordering Information

9000 Multi-Protocol Fabric Director
- Each switch ships in an individually-packed box per specific customer configuration.