

SilverStorm Host Channel Adapter 7000

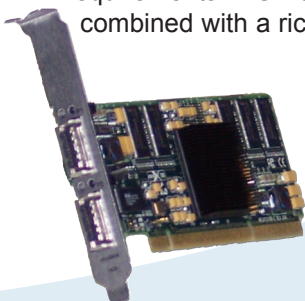
Host Channel Adapter

An integral member of the SilverStorm family of virtual I/O and clustering offerings, the SilverStorm Host Channel Adapter (HCA) 7000 is a low profile, dual port 4X (10Gb) host channel adapter (HCA) that enables the widest variety of current and next-generation servers to realize the full benefits of InfiniBand.

The SilverStorm HCA 7000 creates an expressway between the server and the InfiniBand fabric, allowing information transfer at 10Gb/s, up to 10 times the bandwidth of current server interfaces—with up to 90% reduction in internal latency. A comprehensive host environment of high performance Upper Level Protocols (ULPs) contained within the QuickSilver software family, including MPI, Virtual Ethernet NIC, SRP (Fibre Channel), IBoIP, and uDAPL, enables the SilverStorm HCA 7000 to supercharge core business applications that are supported by DBMS clustering, High Performance Business Computing (HPBC), and High Availability Clustering. Like all offerings from SilverStorm Technologies, the SilverStorm ULPs seamlessly integrate with existing server environments requiring no changes to the operating system or application code.

SILVERSTORM HCA IN THE ENTERPRISE

Combined with its ULPs, SilverStorm HCA is the channel by which today's complex and costly enterprise environments can quickly evolve to feed ever-growing processing requirements. A SilverStorm HCA combined with a rich suite of



standards-based ULPs can replace physical Ethernet NICs and HBAs with virtual Ethernet and Fibre Channel connections serviced by a SilverStorm HCA utilizing InfiniBand to Fibre Channel and InfiniBand to Ethernet gateways, which enable physical Ethernet and Fibre Channel ports to be shared by many virtual connections. A SilverStorm key is that unlike other approaches, the virtual Ethernet NIC connection supports all Ethernet protocols, not just IP. This includes IPX, SNA, and any custom protocol designed to use Ethernet as its transport.

SilverStorm leaves no application behind. These virtual connections enable an enhanced, less complex environment that provides equal or better throughput and availability while reducing cable clutter, human error created by complexity, and cost through reduction in the number of server interface cards, cables, cluster switches, and first level Ethernet and Fibre Channel switches. Clustering, Ethernet, and Fibre Channel are all concurrently supported via a single 10Gb fat pipe. The net effect is a significantly reduced level of infrastructure complexity and improved business responsiveness, with a lower total cost of ownership.

The HCA 7000, used in conjunction with SilverStorm's family of InfiniBand clustering switches and virtual I/O systems, is part of a complete end-to-end InfiniBand solution package ready to enable today's servers to handle tomorrow's processing requirements.

DATA SHEET

SilverStorm HCA 7000 Strategic Benefits

- Seamless InfiniBand enabling of PCI and PCI-X servers
 - no operating system or application changes required
- Improved server CPU utilization with RDMA protocols
- Economical 10Gb/s technology today for clustering
 - DBMS clustering
 - High Performance Business Computing (HPBC)
 - High Performance Technical Computing
 - High Availability Computing
- Server connectivity to InfiniBand based intelligent virtual I/O and clustering fabrics

Key Design Features

- Comprehensive suite of high performance Upper Level Protocols (ULPs)
 - Ethernet (Virtual Ethernet NIC)
 - SRP (Virtual Fibre Channel HBA)
 - IPoIB
 - uDAPL
 - MPI
 - SDP
 - WSD
- Dual 4X (10Gb) InfiniBand ports
- Fully PCI/PCI-X compliant
- Low profile design
 - supports greatest variety of servers
- No HCA fan required
 - High MTBF design
 - MTBF = 1,000,000 hours
- Supports up to 130K queue parts and 130K completion queues
- Permits non-disruptive growth

SilverStorm Host Channel Adapter 7000

SilverStorm HCA 7000 Specifications

PCI Interface

PCI v2.2 compliant

- Low profile design
- PCI-X Addendum v1.0a compliant
- PCI/PCI-X interface at 33, 66, 100, and 133 MHz
- 3.3 V interface
- 32- and 64-bit data and address buses
- Supports for four outstanding split transactions in PCI-X mode
- Zero wait states on both master and slave data phases

Management Support

- BMA, PMA, SMA, CM
- Fabric and device discovery
- Generates SMA traps

Operating Environments

- Linux
- Mac OS X
- Solaris
- Windows 200x

Connectivity

- Dual 4X (10Gb) or 1X (2.5Gb) port - copper HSSD

SilverStorm Host Driver/Upper Level Protocol (ULP) Support

- **QuickSilver VirtualNIC** - Ethernet ULP and advanced functionality (port sharing, load balancing, Ethernet IB switching)
- **SRP** - Fibre Channel ULP and advanced functionality (port sharing, LUN management, SCSI Remote DMA Protocol (SRP))
- **IPoIB** - ULP to allow Internet Protocol (IP) using InfiniBand (IB) as a link layer
- **uDAPL** - ULP RDMA server-to-server access utilizing User Direct Access Program Library (uDAPL) APIs
- **MPI** - ULP for HPC clusters utilizing Message Passing Interface (MPI) function calls
- **SDP** - Sockets Direct Protocol (SDP) support for high-performance zero-copy data transfers
- **WSD** - Windows Sockets Direct Protocol (SDP) support for high-performance zero-copy data transfers

InfiniBand Interfaces & Specifications

Transport Types

- Unreliable Datagram (UD)
- Reliable Connection (RC)

Transport Services

- RDMA read request
- RDMA write request and atomic operations

Kernel Bypass

InfiniBand Specifications

- 8 virtual lanes plus management lane
- Configurable up to 130K queue pairs[§] and 130K completion queues[§]
- Configurable up to 256K memory regions[§]/520K Windows regions[§]
- Auto-configurable MTU 256 to 2048 bytes (2048 default)
- Support for 64 configurable P_Keys per port
- Up to 8 RDMA read requests as target per queue pair
- Maximum message size 2GB
- 1 constant and 31 configurable Global IDs (GUIDs)
- Supports acknowledge (ACK) coalescing
- Memory, work queue, and completion queue, access protection
- InfiniBand v1.1 compliant

[§] Current memory option is 128 MB. Larger memory sizes are available by special order.

Physical Specifications

PCI-X low profile form factor 6.60 in x 2.536 in (167.64 mm x 64.41 mm)

Environmental

Maximum power consumption	14 Watts
Typical power consumption	10 Watts
Operating temperature	10° to 45° C at sea level 0–3 km (10,000 feet) -30° to 60° C (non-operating)
Humidity (non-condensing)	20% to 80% (operating) 5% to 90% (non-operating)

Regulatory Compliance

Safety

- | | |
|----------------------|------------------------------|
| • United States | UL 60950
Listed accessory |
| • European Community | EN 60950
Listed accessory |

EMC

- | | |
|----------------------|--|
| • United States | FCC Part 15 Class A |
| • European Community | EN55022 level A
EN55024
EN61000-3-2,-3 |



780 Fifth Avenue, Suite 140
King of Prussia, PA 19406

Phone: 610-233-4747
Fax: 610-233-4777
www.silverstorm.com