

## Replicated Shared Memory with Dolphin Express



Dolphin Express improves performance of embedded and real time applications with critical performance requirements, such as simulation, virtual reality, and other real-time applications. A high speed flexible communication network, Dolphin Express features ultra-low-latency data transfers, high availability, and lower cost in a modern high speed data communications solution. With Dolphin Express, you can implement a replicated shared-memory architecture (reflective memory) in a modern switched architecture.

Dolphin Express provides a single high speed, low latency data link which combines both control and data networks in a single interconnect. Unlike other replicated shared-memory concepts, Dolphin Express implements a switch based solution. The implementation of a switched architecture improves system performance by implementing a data broadcast approach, which reduces the time each node updates data and reduces data delivery jitter. Once a data packet is transferred to a switch, it is simultaneously broadcasted. Data written to remote nodes is typically available in remote memory within less than 1.25 microseconds.

Dolphin Express implements hardware based uni- and multicast functionality that allows for very efficient low-cost distribution of data, outperforming serial reflective memory solutions. All bus protocol handshakes and protocols are performed by hardware, while data is always pipelined to the next level. Dolphin Express implements a reliable data delivery mechanism so there are no dropped packets. Data transfer features include PIO or RDMA transfer mechanisms with data rates up to 20 Gbit per second, and data throughput exceeding 1,300 MBytes per second.

Dolphin's solution uses cacheable main system memory to store data. The use of cacheable main memory provides a significant performance and cost benefit. Remote interrupts or polling can be used to signal the arrival of data from a remote node. Since the memory segments are normal cacheable main memory, polling is very fast and consumes no memory bandwidth. The CPU can poll for changes in its local cache. When new data arrives from the remote node, the cache will automatically be invalidated by the I/O system and the new value will be cached.

Replicated memory solutions are known for their simplicity, just read and write into a shared distributed memory. Our high-performance network is easy to install and operate. It is managed using Dolphin's SISCO Developers Kit (Software Infrastructure for Shared-memory Cluster Interconnect). It provides all the tools and flexibility to setup your reflected memory system. Once setup, your application simply reads and writes to remote memory.

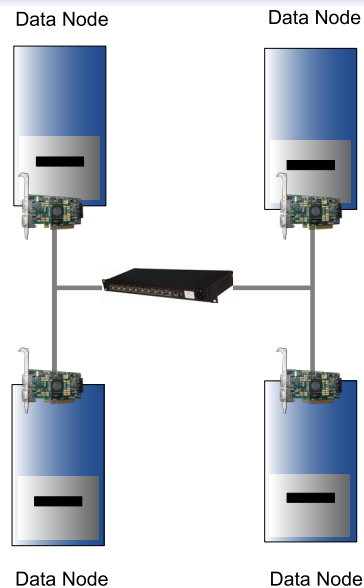
### Features

- High-performance, ultra low-latency switched 10-Gbps interconnect
- Up to 20 Gbps interconnect performance
- Hardware based multi-cast
- Configurable shared memory regions
- Fiber-Optic and Copper Cabling support
- Scalable switched architecture
- SISCO Developers Kit
- Built in CRC, 8b/10b encoding for data reliability
- PCI Express Host Adapters
- Expandable switch solutions

## Specifications

Link Speeds	10 Gbits/s duplex
Application Performance	1.33 Gbytes/s Communication Data Rate on Two channels 680 Mbytes/s communication data rate on single channel 1.25 microsecond latency (application to application)
Topology	Switched
Cable Connections	CX4 copper Cables -up to 10 meters Fiber-Optic cables- up to 300 meters
Error Handling	8b/10b encoding and CRC
Operating Systems	Windows 2000, Windows XP, Windows 2003, Windows 2008, Windows Vista, and Windows 7 Linux VxWorks
Part Numbers	Host Adapter - DXH510-A0 10 Port Switch - DXS410 -A0

## Sample configuration



## Look to Dolphin Express for:

- Aircraft Simulators
- Missile Simulators
- Video Information Distribution
- Power generation plant simulators
- Ship Simulators
- Land vehicle simulators
- Mission planning simulators
- Force-level training simulators
- Virtual reality systems
- location-based entertainment systems
- Range and telemetry systems
- Flight test
- MRI Scanners
- Engine test stands
- Robotics
- CT Scanners
- Industrial process control
- High fidelity video simulations
- Data Streaming sensor systems
- Distributed sensor-to-processor systems
- High speed video inspection