

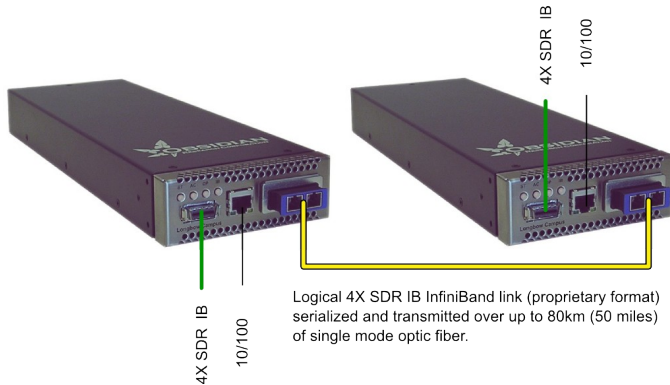
InfiniBand Range-Extending Switch - Dark Fiber



Longbow C100 series by Obsidian

Operation

A pair of Longbow C100 series devices share a point-to-point light path connection of up to 80km in length. Each 4X SDR InfiniBand port connects to local InfiniBand (IB) infrastructure.



The Longbow C100 series devices report as two-port IB switches to the subnet manager – the IB fabrics at the two end-point locations unify into a single subnet.

The devices perform buffer credit extension at the link level, allowing InfiniBand to reach much farther than any other technology when combined with the 10Gbits/s serialized optical data stream physical layer solution.

Longbow C100 series devices are managed through out-of-band 10/100 Ethernet ports.

Designed as a small-footprint solution, C100 series may be deployed in a desktop environment, or in a 19" rack, in which up to four units may be installed into an optional 1U shelf.

Since C100 series devices use a proprietary optical encoding, they must be deployed in pairs, connected by direct lightpaths.

Applications

Longbow C100 series devices have the effect of promoting InfiniBand from just a cluster area network to a high performance technology option for local, campus or even Metro Area Network (MAN) applications.

Storage Area Networks: With the introduction of Longbow C100 series, InfiniBand becomes a viable alternative to Fibre Channel and iSCSI over Ethernet for high performance Storage Area Networks (SANs). IB SANs offer the highest possible performance per port of any commercially available network technology. At the same time, (iSCSI with RDMA Extensions) iSER and SRP (SCSI RDMA Protocol) confer benefits by offloading the processors during data transfers. IB's intrinsic scalability and low-latency switches allow IB SANs to scale to extremely large storage capacities and throughputs, with best-in-class latency performance.

The devices enable inter-building SANs over robust, inexpensive and easy to install single mode fiber cables. Aggregating data and storage networking over a single IB fabric consolidates infrastructure and represents a significant cost savings compared to overlaying multiple fabric types.

An 80km maximum range addresses MAN applications, suitable for extremely fast file sharing between sites for routine user-level access as well as for efficient off-site backup strategies.

Cluster aggregation: In many campus environments, numerous compute clusters are distributed over several kilometers. The C100 series' low latency enables a new class of applications; the clustering of clusters over a campus area network to assemble larger aggregate clusters. Installed at customer sites, it has been shown that such a technique is highly efficient, and goes a long way to improving the use rate of smaller clusters within a large organization or institution.

The key to the success of this approach is the network transparency of the C100 series devices (no coding changes are necessary to adapt locally connected InfiniBand applications to use the range-extended links). Coupled with the low port-to-port latency of the range extenders (840 ns), this feature makes it feasible for schedulers to dynamically provision activity across the links.

Remote Visualization: Smaller clusters are frequently used to assist in the interpretation of science data by offering responsive and high-fidelity interactive visualization experiences. Large-scale display walls are generally located in close proximity to the render cluster due to cable length restrictions of the cluster network. The devices offer campus-wide access to high-quality visualization.

This application allows more users to share a visualization resource, and encourages the consolidation of visualization clusters into a central location, from which many points on a campus can be served. This approach provides a higher performance/ cost ratio than provisioning numerous smaller clusters at each point-of-use.

Specifications

Chassis

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|------------------------|--|
| Mounting (Desktop) | Fitted with rubber feet |
| Mounting (Single Unit) | 19" rack-mount, front mounting no-rail system |
| Mounting (Quad Pack) | 19" rack-mount shelf, front mounting no-rail system |
| Physical | 1.5"x4.25"x13" |
| Max system power | 18W |
| Input power | 90-264 VAC at 50-60 Hz |
| Environmental | 10-45 degrees C (32-113 degrees F) ambient |
| Airflow | Rear to front flow |
| External Ports | 1 AC input, 1 management 10/100 ethernet, 4X copper IB SDR, 1 X2 module port |
| Acoustics | Intelligent fan speed control for quiet operation |

Management

| | |
|---------------------------|---|
| Ethernet Protocol Support | Full duplex 10/100 Base-T Ethernet with auto MDI-X IPv4, IPv6, HTTP/HTTPS, SNMP, DNS, ZeroConf and DHCP |
| GUI | Web based interactive management |
| User Management | Single user account |
| HTTP | SSL v2/v3 and TLS with HTTP digest challenge/response password exchange |
| Configuration | Through Web GUI or via a text configuration file |
| Firmware | Web upgradeable. Primary/Secondary high-availability FLASH storage with scrubbing. |

Optics Module

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|-------------|-------------------------------|
| Type | X2 module |
| Connector | Duplex-SC |
| Wavelength | (model dependent – see below) |
| Raw Bitrate | 10.3125 gigabits/second |

Optical Interface

| | |
|-------------------|--------------------------------|
| Node Type | Two-port switch |
| Physical Layer | X2 specification |
| Payload | IB link - proprietary encoding |
| Payload Bandwidth | 10.0 gigabits/second |
| Buffer Capacity | 128KiB for 1 data VL |

InfiniBand Interface

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|----------------------|--|
| Connector | IB 4x Copper, SDR at 10Gbit/sec |
| Node Type | Two-port switch |
| Physical Layer | InfiniBand Architecture v1.1, with powered port option as per v1.2 |
| Subnet Manager Agent | Integrated InfiniBand Architecture v1.2 |
| VLS | 1 data, 1 management |
| Port-to-port latency | 840 ns (small packet store-and-forward) |

Longbow C100 series models

| | | |
|----------------|------------|----------------|
| C100-SR | 300m range | (MMF – 850nm) |
| C100-LR | 10km range | (SMF – 1310nm) |
| C100-ER | 40km range | (SMF – 1550nm) |
| C100-ZR | 80km range | (SMF – 1550nm) |

Contacts

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