Overview

InfiniBand

High-performance application clusters require extreme performance from the cluster fabric in order to deliver breakthrough application performance. Fabric bandwidth, latency, and RDMA-based network and storage protocols have become critical enablers for leading application performance.

InfiniBand, which today delivers 40 Gigabit per second connectivity with application-to-application latency as low as 1 microsecond, has become a dominant fabric for high performance enterprise clusters. Its ultra-low latency and near zero CPU utilization for remote data transfers make InfiniBand ideal for high performance clustered applications.

RDMA and Application Latency

Moving data between applications over a traditional network can be time consuming and drain precious server resources. With traditional network technologies, data exchanges traverse the operating systems on both the source and destination servers, resulting in excessive application latency due to operating system calls, buffer copies, and interrupts.

InfiniBand provides a direct channel from the source application to the destination application, bypassing the operating systems on both servers. This channel architecture doesn’t just yield ultra-low application latency, but it also preserves server resources for application processing. The InfiniBand Host Channel Adapter and not the CPU is responsible for moving data from application to application.

Fabric Convergence

In addition to providing unrivaled access to remote application data, InfiniBand’s industry leading bandwidth enables fabric convergence, allowing all network, storage, and inter-process communication traffic to be carried over a single fabric. Converged fabrics aggregate the functions of dedicated, sole-purposed, networks and alleviate the associated expense of building and operating multiple networks.

Customer Benefits

Highest bandwidth and lowest latency fabric available

InfiniBand provides industry leading performance, delivering over three times the throughput of 10 Gigabit Ethernet with one-tenth of the application latency.

Preserving server resources for application processing

InfiniBand’s channel architecture eliminates the need for OS intervention in network and storage communication. This frees server memory bandwidth and CPU cycles for application processing.

Simplification of IT infrastructure and Management

InfiniBand’s bandwidth and rich set of supported network and storage protocols make it an ideal fabric for delivering converged network services to high performance clusters. Fabric convergence eliminates the need to have servers provisioned with multiple network interfaces, eliminates the requirement for multiple leaf switches at the cluster level and reduces the number of expensive switch ports consumed in the data center core.

Frequently Asked Questions

Is InfiniBand an open technology?

InfiniBand is an industry standard technology. The standard was developed by and is maintained by the InfiniBand Trade Association. Further information on the InfiniBand standards can be found at www.infinibandta.org.

What is QDR?

QDR stands for Quad Data Rate. QDR InfiniBand delivers 40 Gigabits of raw bandwidth. The InfiniBand base rate is 10
Gigabits per second. QDR capable products deliver four times the base rate.

**What workloads is InfiniBand best suited for?**

Workloads, which require low-latency, high storage bandwidth or those that leverage RDMA to preserve server resources for application processing.

**What applications require InfiniBand's performance?**

Network intensive enterprise clusters requiring InfiniBand:

- Clustered databases
- Real-time data applications
- Technical computing

**What operating systems and hypervisors are supported with the InfiniBand HCAs?**

In general, the Sun InfiniBand HCAs are supported with Oracle Solaris and Oracle Enterprise Linux. Sun PCIe IB HCAs are components of the Sun server module in which they are installed. See the list of supported option cards for the applicable server to determine the relevant operating system support for the server module and HCA combination.

**What InfiniBand switches are the adapters supported with?**

The Sun InfiniBand HCAs are supported when connected to Oracle’s portfolio of Quad Data Rate InfiniBand switches. The HCAs will generally interoperate with IBTA 1.2 compliant switches.

**What connectors are on the InfiniBand HCAs?**

Sun QDR InfiniBand HCAs have two QSFP connectors on the HCA. QSFP is the industry standard connector for QDR InfiniBand.

**What cables can be used with the InfiniBand HCAs?**

Cables must accommodate connectors on both the HCA and switch. Oracle offers cables for connecting the HCA to both QSFP switch ports (4x InfiniBand) and CXP switch ports (12x InfiniBand)

**What Upper Layer Protocols (ULP) are supported with the InfiniBand HCAs?**

ULP support is not hardware dependent, but rather operating system dependent. See operating system documentation to determine what ULP support is provided by the operating system being used.


Oracle Enterprise Linux information can be found at [http://www.oracle.com/us/technologies/linux/025994.htm](http://www.oracle.com/us/technologies/linux/025994.htm)

Where do I find firmware for the Sun InfiniBand Host Channel Adapters?

Firmware updates for the Sun InfiniBand Host Channel Adapters can be found at: [http://www.mellanox.com/support/firmware_table_Sun.php](http://www.mellanox.com/support/firmware_table_Sun.php)

**What servers do the Sun InfiniBand Host Channel Adapters support?**

The Sun InfiniBand Host Channel Adapters are supported in most of Sun’s rack mount and blade servers. See the list of supported option cards for the applicable server to determine the relevant operating system support for the server module and HCA combination.

For SPARC systems, see: [http://wikis.sun.com/display/PlatformIoSupport/MenuOfServices](http://wikis.sun.com/display/PlatformIoSupport/MenuOfServices)

For x86 systems, see: [http://wikis.sun.com/display/SystemsComm/Systems+Options+and+Downloads](http://wikis.sun.com/display/SystemsComm/Systems+Options+and+Downloads)
What kind of service and warranty is offered on the Sun Network InfiniBand HCAs?
The Sun InfiniBand HCAs are covered by the warranty of the server in which they are installed.

Where can I find more information about Oracle’s InfiniBand products portfolio?
Sun InfiniBand Dual Port 4x QDR PCIe ExpressModule
and Low Profile Host Channel Adapters M2
Frequently Asked Questions
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