

ABEx[®] 2020

InfiniBand[®] Over Metro and Wide Area Networks



- ❑ Allows 4X InfiniBand SDR (10 Gbps) to be extended at line rate to virtually any point on the globe
- ❑ Pluggable optics provide flexible connectivity options to Optical Transport Networks (OTN) and Packet Switched Networks (PSN)
- ❑ Enables InfiniBand extension over 10G Ethernet, ATM, IP, SONET/SDH (OC-48/192), WDM, and dark fiber
- ❑ Supports up to two 1G Ethernet connections to be encapsulated over the WAN for site-to-site management traffic

Overview

Reducing Costs with Unified Fabrics

With storage and processing demands on the rise, scaling both your application and storage area networks can be costly as well as operationally challenging. One way to reduce data center infrastructure costs is to switch to a unified fabric for all your computing needs. There are numerous interconnect technology choices, so picking the right one that will scale with your business needs is critical.

Performance and Reliability

With its mature ecosystem and proven reliability, InfiniBand is recognized as the industry's leading standards-based interconnect technology in terms of performance and cost. Deployed in thousands of production environments throughout the world, InfiniBand delivers the lowest latency of any interconnect available and provides plenty of bandwidth to move even the largest data sets with ease. InfiniBand supports up to 120 Gigabit interfaces today with an industry backed roadmap to deliver higher bandwidths as future business demands. As a result, InfiniBand is quickly becoming the preferred fabric technology for high performance computing and mass-storage environments.

The InfiniBand Distance Challenge

While InfiniBand provides many benefits within the data center, InfiniBand's inherent distance limitations require close proximity for system and storage connectivity, making it unsuitable for deployment beyond a single site. The challenge has been how to link together geographically isolated data centers to form a single unified InfiniBand fabric for sharing compute and storage resources.

Bridging the Data Center Gap

Built around Bay Microsystems' own innovative network processor and traffic management integrated circuit technology, the ABEx 2020 Multiservice Transport Gateway enables administrators to overcome distance limitations using enhanced buffering and flow control to extend InfiniBand reliably over Metro and Wide Area Networks spanning from just a few kilometers to virtually any point on the globe.

The ABEx 2020 provides flexible connectivity options delivering line rate 4X InfiniBand SDR (10 Gbps) performance over Optical Transport Networks and Packet Switched Networks. This allows ABEx to transparently transport native InfiniBand over most Wide Area Network technologies including 10G Ethernet, ATM, IP, SONET/SDH OC-48/192, WDM and dark fiber.

In addition, the ABEx 2020 works with all InfiniBand protocol types providing a seamless application framework between data centers supporting disaster recovery, market data feeds, real-time database mirroring, high performance computing, storage virtualization, and much more.



Traffic Isolation

The ABEx 2020 even supports InfiniBand Virtual Lane functionality providing quality of service control for application and storage traffic by allowing packets to be isolated into separate queues. With support for up to 4 Operational and 1 Management Virtual Lanes, the ABEx 2020 is able to maintain Virtual Lane associations for all InfiniBand services across the Wide Area Network connection thus preserving end-to-end traffic flow queues.

Network Management and Monitoring

The ABEx 2020 incorporates management and monitoring capabilities right into the platform with an access controlled multi-user industry standard command-line interface, which can be securely accessed over the network using a secure shell (SSH) session. Additionally, remote monitoring can be obtained through an SNMP (V2/3) session, providing both port and device information and statistics.

The Wide Area Network connection can even be monitored through the InfiniBand fabric using a virtual InfiniBand ports representing each side of the physical WAN link.

Production Ready

The ABEx 2020 removes InfiniBand distance limitations and offers seamless Wide Area Network extension of your global data centers for High Performance/Cloud Computing, Oil and Gas, Financial, Research and Development, and Government applications in a compact, enterprise-class platform. Proven in real-world deployments of 15,000 km, ABEx is ready for production environments today.

Applications

Global Storage Architectures and Virtualization

Immediate access to information between sites is critical for global organizations. Even though there are a number of proven InfiniBand storage solutions that provide high-performance, high volume access to data, all of these solutions are limited to connectivity within a single data center. With the ABEx 2020, distributed InfiniBand storage architectures can now be achieved on a global scale with information being shared in real-time between geographically isolated sites. Entirely new benefits of storage virtualization can be realized, including the ability to provide site-wide disaster recovery within minutes rather than days in the event of local storage failures.

High Performance/Cloud Computing

InfiniBand is widely used in the High Performance/Cloud Computing industry for high bandwidth and low latency applications, but moving data between sites for postprocessing including visualization using non-native protocols can result in transfer delays and increased job-processing times. The ABEx 2020 offers native InfiniBand protocol bridging for applications and storage services at line rate performance between isolated systems increasing both productivity and work capacity.

Clustered Databases and Warehouses

The benefits of clustered databases across multiple data centers extends beyond data protection and disaster recovery with distributed multi-site local access, real-time data mirroring between sites, and data warehousing of local databases. With the ABEx 2020, InfiniBand-enabled database applications can be extended between data centers providing high-performance distributed multi-site database data protection.

Trading and Market Data Applications

The Financial Services industry has adopted InfiniBand for its low latency and high message rates. Providing faster transaction processing times and handling more transactions per second makes InfiniBand ideal for trading and market data applications. Using the ABEx 2020 platform to extend InfiniBand between sites further exploits the benefits of InfiniBand by enabling multi-site application failover and backup between data centers. In addition, ABEx also reduces infrastructure costs by eliminating the need to duplicate hardware environments at each site in order to provide a true disaster recovery solution for applications.

Specifications

Hardware

- ❑ Chassis: 19-inch 2U rack mount with 2 System Line Card (SLC) slots
- ❑ Dimensions: 3.5" x 17.3" x 22.0" (8.8 cm x 44.0 cm x 50.9 cm)
- ❑ Weight: Fully configured, 38.4 lbs. (17.4 kg)
- ❑ Hot-swappable fans and power supplies
- ❑ System Line Card (SLC) options:
 - 1 x 4X InfiniBand SDR Copper and 2 x Gigabit Ethernet (SFP)
 - 1 x OC-192/10GE LAN/WAN (XFP) and 2 x OC-3 (SFP)
 - 4 x OC-48 (SFP) and 2 x OC-3 (SFP)
- ❑ BITS timing module (optional)

Operating Environment

- ❑ Operating Temperature: 5°C to 40°C (32°F to 104°F)
- ❑ Input Power: Dual Redundant -48 VDC (-40 to -72 VDC) and 90-264 VAC (47-63 Hz)
- ❑ Power Consumption: < 350W per system
- ❑ Cooling: Speed Controlled Redundant Fans

Management and Monitoring

- ❑ Industry standard multi-user CLI
- ❑ Access Control Lists (ACLs)
- ❑ Management Ports:
 - Serial DB9 (RS-232)
 - Ethernet RJ45 (Full Duplex 10/100/1000Base-T with auto MDI-X)
- ❑ User Management: Telnet, Secure Shell (SSH)
- ❑ Remote Monitoring: SNMP (V2/3), Syslog
- ❑ Performance Monitoring: LAN & WAN Connections

InfiniBand Interface

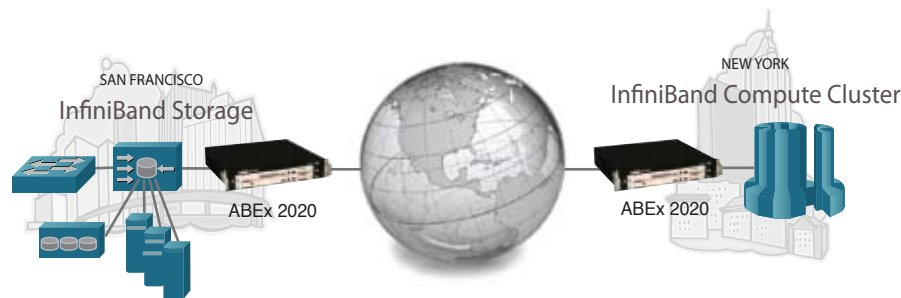
- ❑ Data Rate: 4X SDR (10 Gbps)
- ❑ Connector: 4X InfiniBand Copper (includes IBA 1.2 Powered Port Option)
- ❑ Node Type: 2-Port Switch
- ❑ Virtual Lanes: Up to 4 Operational (VL0-3) & 1 Management (VL15)
- ❑ WAN Interface Monitoring: Presented as virtual InfiniBand port
- ❑ IBA Specification: 1.2 (IBTA IL Certified)

WAN Interface

- ❑ Optical Transport Networks:
 - SONET/SDH (OC-48/192), WDM, dark fiber
- ❑ Packet Switched Networks:
 - 10G Ethernet LAN/WAN, IP (via L2TPv3 Pseudowires), ATM
- ❑ Pluggable optics: SFP (OC-48), XFP (OC-192, 10GE) form-factor
- ❑ Tunable traffic shapping based on available bandwidth

Gigabit Ethernet Interface

- ❑ Number of Ports: Up to 2 ports can be encapsulated over the WAN
- ❑ Jumbo Frames: Up to 9600-bytes MTUs
- ❑ Port Prioritization: Provides higher priority over InfiniBand traffic
- ❑ Pluggable optics: SFP form-factor



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About Bay Microsystems, Inc.

Bay Microsystems is a leading expert in the field of high-speed communications. The company develops cutting edge network solutions including scalable network architectures, systems, software and highly complex integrated circuits in support of commercial and government initiatives. The company leverages these innovations into products and services that fulfill a wide range of needs within the communications marketplace. Bay's standards-based solutions enable our customers to architect and deploy the most powerful and secure mission critical communications networks in the world.

Some features listed in the specifications may be under development.

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