

NetEffect NE020BCH

10Gb Accelerated Ethernet Mezzanine Adapter for the IBM BladeCenter H

The leading 10Gb accelerated Ethernet mezzanine adapter for the IBM BladeCenter H, the NetEffect® NE020BCH gives blades simultaneous high-performance access to data, scale-out (clustering), and storage networks. Exceptional integration and ultra-low power consumption enable the NE020BCH to achieve unmatched latency and throughput while meeting the tight space, power and connectivity constraints of BladeCenter H environments.

Reduced complexity and connectivity requirements

A single NE020BCH provides simultaneous access to data, clustering, and storage networks, greatly simplifying deployment and ongoing network management. Unlike other accelerated Ethernet NICs, the NE020BCH requires only a single firmware and OS driver image. Applications are supported transparently through a wide variety of industry-standard APIs.

Highly flexible, the NE020BCH can operate as a standard NIC and integrates a transport offload engine, RDMA and user-level direct access capabilities. Working together, these features

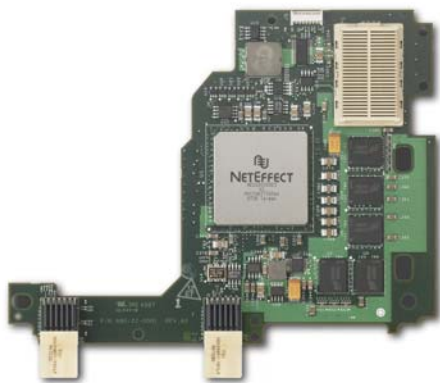
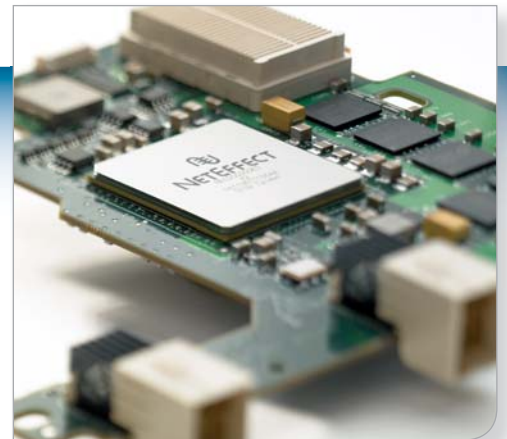
dramatically lower latency, achieve bi-directional bandwidth over 18 Gbps, and offload blade CPUs of nearly all overhead associated with networking. Freed to handle more applications and operating system functions, blade CPUs can accomplish almost twice the productive work. The NE020BCH architecture includes features to sustain exceptional performance in virtualized environments.

Lower power, higher rack densities

Consuming less than 6.5 W (typical), the NE020BCH requires half the power of other 10GbE adapters. Critical in high-density blade environments, the power savings can be used to more fully populate BladeCenter H racks, increasing processing per square foot and speeding return on hardware investment.

Sustained high performance, maximum blade productivity

Like all NetEffect adapters, the NE020BCH leverages a unique Virtual Pipeline Architecture to scale performance and sustain low-latency connectivity in all applications, even in heavily loaded, multiple-connection environments such as multi-core processors and virtualized blade implementations.



Highlights

- > Industry-leading latency (less than 6 μ sec) sustains high performance under load
- > Exceptional bandwidth (over 18 Gbps per port, bi-directional)
- > Ultra-low power consumption (less than 6.5 W typical) for higher computing densities
- > Supports connectivity to all data center networks: scale-out (clustering), data, and storage
- > CFFh form factor
- > Architected for predictable, high performance in virtualized environments

Applications

- > Demanding applications in financial services, Oil & Gas, CAD/CAE and other industries
 - market data streaming
 - computational fluid dynamics
 - finite element analysis and simulation
 - reservoir simulation and visualization
- > High-performance database, web servers, research clusters, online (MMO) gaming
- > Virtualized server environments
- > Applications reliant on fast network access or low latency

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Specifications

Performance

- > Latency: less than 6 μ sec
- > Bandwidth: over 18 Gbps bi-directional

Ethernet interface

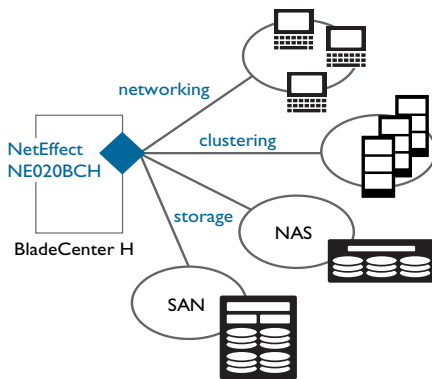
- > Full bandwidth dual-port 10Gb Ethernet
- > Multiple port support for active/active operation
- > Interface support for 10GBASE-KX4

Layer 2 network interface

- > Checksum offload (TCP, UDP, IP)
- > Large send offload
- > Jumbo frame (9000 B)
- > Receive side scaling (RSS)

TCP/IP offload

- > Pipeline accelerated TCP/IP
- > Accelerated receive window size: 512 KB
- > Jumbo frame (9000 B)
- > Up to 10,000 accelerated connections (standard configuration)



A single NE020BCH connects to all three data center subnets, simplifying deployment and infrastructure.

iWARP (RDMA over Ethernet)

- > RDMAC v1.0 and IETF specification support
- > User-level and kernel-level direct access support
- > Direct placement of payloads into application memory
- > Up to 32 independent accelerated IP addresses
- > Up to 64,000 simultaneous iWARP connections (standard configuration)

Block and file storage

- > iSCSI connectivity using Linux Open-iSCSI initiator and Microsoft iSCSI initiator
- > iSCSI boot via option ROM
- > NFS, CIFS
- > Up to 10,000 accelerated iSCSI connections (standard configuration)

Virtualization support

- > Multiple virtual NICs
- > Multiple PCI functions
- > Multiple MAC and IP addresses
- > VLAN support
- > Support for virtual operating environments

Memory

- > ECC protected industry-standard DDR2
- > Standard configuration: 256 MB on-board memory

Host interface

- > PCI Express x8 v1.1

Standards

- > IEEE 802.3-2005, notably, 10GbE, link aggregation, link pause, management
- > IEEE 802.3ap 10GBASE-KX4 and 1000BASE-KX
- > IEEE 802.1P Priority Encoding
- > IEEE 802.1Q VLAN Tagging with support for 4096 VLANs
- > IPv4 (all connections), IPv6 (unaccelerated connections)
- > IETF TCP RFCs, notably, 793, 1323, 2581, 3782

Management

- > IETF MIBs supported (including required statistics hardware counters for every virtual NIC): Ethernet, Interfaces, IP, UDP, TCP, TCP MIB II
- > ACPI 2.0c and PCI Power Management 1.2 compliant
- > Configuration and diagnostic tools
- > PXE boot support

APIs/Middleware

- > Sockets and standard NIC
- > Winsock Direct
- > OpenFabrics and NetEffect iWARP Verbs
- > uDAPL
- > HP-MPI, Intel MPI, ScaL MPI, MVAPICH2

Operating systems

- > Microsoft Windows® Server 2003 (32 bit and 64 bit), sp1, sp2
- > Protocol software supporting Linux Novell and Red Hat, kernels 2.6.9 and higher

Physical and Environmental

- > Power: 6.5 Watts (typical); 8.5 W (maximum)
- > Operating temperature: 0 to 65°C
- > Form factor: CFFh (4.92 in. x 6.26 in.)
- > No fan or heat sink required

Certifications

- > RoHS compliant
- > PCIe 1.1 compliant

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