

NetEffect NE020BSC

10Gb Accelerated Ethernet Mezzanine Adapter for the HP BladeSystem c-Class

The NetEffect® NE020BSC 10Gb Ethernet mezzanine adapter gives HP BladeSystem c-Class blades simultaneous high-performance access to data, scale-out (clustering), and storage networks. This highly integrated, dual-port NetEffect adapter makes ultra-low latency, 10Gb wire speeds available in the smallest Type I c-Class form factor. It offers the most configuration flexibility and best power efficiency possible in c-Class BladeSystem adapters.

Lower power, higher blade densities

At 6.5 watts (typical), the NE020BSC consumes less than half the 15-watt power limit set for Type I cards and one third the power required by most 10Gb c-Class adapters. Critical in high-density blade environments, lower adapter power achieves enclosure-level power savings that enable administrators to increase rack densities and thus processing per square foot.

Reduced complexity, simplified deployment

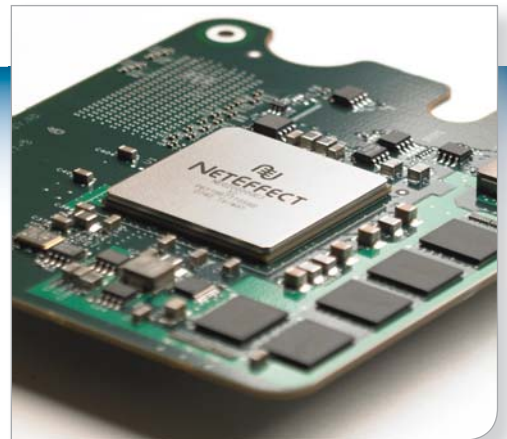
A single NE020BSC supports simultaneous networking, clustering, and storage traffic using only a single firmware and OS driver image, greatly simplifying deployment and ongoing network management. All applications are supported transparently through a broad range of industry-standard APIs. Existing applications using these APIs require no modification, re-compilation or porting.



Sustained performance, maximum productivity

Like all NetEffect adapters, the multifunction NE020BSC leverages a unique Virtual Pipeline Architecture (VPA) to maintain exceptional performance under real-world data center loads. Performance scales effortlessly; low-latency, high-performance connectivity is sustained even in heavily loaded, multiple-connection environments such as multi-core, multi-processor configurations and virtualized server implementations.

The VPA strikes the perfect balance between hardware state machines and embedded CPU cores, accelerating all Ethernet traffic through techniques including TCP offload, iWARP (RDMA over Ethernet), and User-level Direct Access. Working together, these features dramatically lower latency, achieve unmatched bandwidth, and offload CPUs of nearly all overhead associated with networking. Freed to handle more applications and OS functions, blade CPUs can accomplish nearly twice the productive work per blade. The NE020BSC architecture also incorporates features to accelerate performance in virtualized environments.



Highlights

- > Type-I 10GbE mezzanine adapter
- > 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 6.5W typical) for higher computing densities
- > Single adapter supports connectivity to scale-out (clustering), data, and storage networks:
- > Architected for predictable high performance in virtualized environments

Applications

- > Financial services
- > Oil & Gas
- > Finite element analysis, computational fluid dynamics and other CAD/CAE applications
- > High-performance databases
- > Simulation
- > Research clusters
- > Web servers
- > Online gaming
- > Any data-center application reliant on low-latency or high-throughput networking

NetEffect NE020BSC

Specifications

Performance

- > Latency: less than 6 μ sec
- > Bandwidth: over 18 Gbps bi-directional (per port)

Ethernet interface

- > Full bandwidth dual-port 10Gb Ethernet
- > Multiple port support for active/active operation
- > Interface support for 10GBASE-KX4
- > Supports all 10GbE HP BladeSystem c-Class switch modules

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)

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)
- > PXE boot support

Virtualization support

- > Multiple virtual NICs
- > Multiple PCI functions and MAC 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, x4 v1.1
- > Supported on HP ProLiant c-Class servers
- > Compatible with all Type I and Type II mezzanine slots

Standards

- > IEEE 802.3-2005, notably, 10GbE, link aggregation, link pause, management
- > IEEE 802.3ap 10GBASE-KX4
- > 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

APIs/Middleware

- > Sockets and standard NIC
- > Winsock Direct
- > OpenFabrics and NetEffect iWARP Verbs
- > uDAPL
- > HP-MPI, Intel MPI, ScalI MPI, MVARPICH2

Operating systems

- > Microsoft Windows[®] Server 2003 (32 bit and 64 bit), sp1, sp2
- > Linux 64-bit and 32-bit support for v2.6-based kernels including: RHEL4u4, RHEL4u5, RHEL5, RHEL5u1, FC6, SLES10, SLES10 sp1, SLERT5

Physical and Environmental

- > Power: 6.5 W (typical); 8.5 W (maximum)
- > Operating temperature: 0 to 65°C
- > Form factor: Type I
- > Dimensions: 3.97 in. x 4.46 in.
- > No fan or heat sink required
- > Supported in c3000 and c7000 enclosures

Compliance

- > RoHS compliant
- > PCIe 1.1 compliant
- > HP BladeSystem c-Class Compatible



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