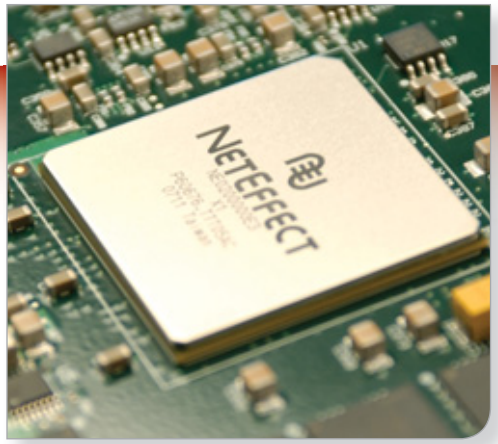
NetEffect™ NE020 10 Gb

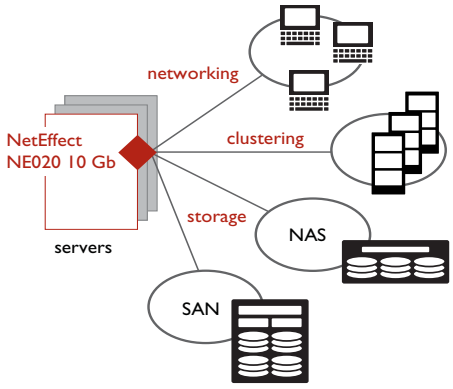
10 Gb PCI Express* Accelerated Ethernet Adapters



In diverse applications and industries, NetEffect™ 10 Gb accelerated Ethernet adapters are helping data centers overcome today's most demanding networking challenges. Offering full-function 10 Gb Ethernet NIC capabilities plus acceleration of networking, storage and clustering protocols in an ultra-low-power package, NetEffect NE020 10 Gb adapters are setting new standards in application support, networking performance, power efficiency, and configuration simplicity.

Sustained, predictable performance under load

NE020 10 Gb adapters' patented Virtual Pipeline Architecture strikes the optimal balance between high performance, low power consumption and small BOM. Unmatched low latency, high bandwidth and power efficiency are the result of seamlessly coordinated transport offload, RDMA and user-level direct access (ULDA) techniques used in combination to accelerate various networking protocols. Scalable, deterministic performance is sustained in heavily loaded multiple-connection environments such as multi-core, multi-processor nodes, high-performance computing, and the dense, compute and I/O-intensive configurations that characterize virtualized environments.



A single NE020 10 Gb adapter connects a server to all three data center subnets, simplifying deployment and infrastructure.

One adapter, one firmware image

A single low-power NE020 10 Gb PCIe* adapter seamlessly replaces separate adapters for networking, storage and clustering — reducing power, cost, complexity and management. A single firmware and OS driver image supports different program interfaces and network protocols, simplifying both deployment and ongoing maintenance.

Lower power, higher processing densities

At 6.2 W (typical), NE020 10 Gb adapters consume only one third of the power required by some competitive adapters. Critical in power-constrained data centers, such power savings support higher computing densities within the existing power envelopes, increasing processing per square foot.

Transparent application support

NE020 10 Gb adapters support a broad range of industry-standard APIs. Existing applications using these APIs require no modification, re-compilation or porting.

Standard media interfaces

NE020 10 Gb PCIe low-profile adapters are available in single-port models supporting standard copper and optical media interfaces.

Highlights

> Sustained performance
  – Latency under 6 µsec, even heavily loaded
  – Over 18 Gbps bandwidth (bi-directional)
> Low power consumption, less than 6.2 W (typical)
> Single adapter supports simultaneous connectivity to scaleout (clustering), data, and storage networks
> Single firmware image supports all program interfaces and network protocols
> Patented architecture implements hardware TOE, iWARP (RDMA over Ethernet), ULDA
> Single-port models supporting standard copper and optical media interfaces

Applications

> Compute and IO intensive applications in financial services, Oil and 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

intel®

NetEffect NE020 10 Gb

Specifications

Performance
> Latency: less than 6 µsec
> Bandwidth: over 18 Gbps (bi-directional)

10Gb Ethernet interface
> Single-port CX4 or powered CX4
> Single-port SPF+ (optical SR or pluggable)

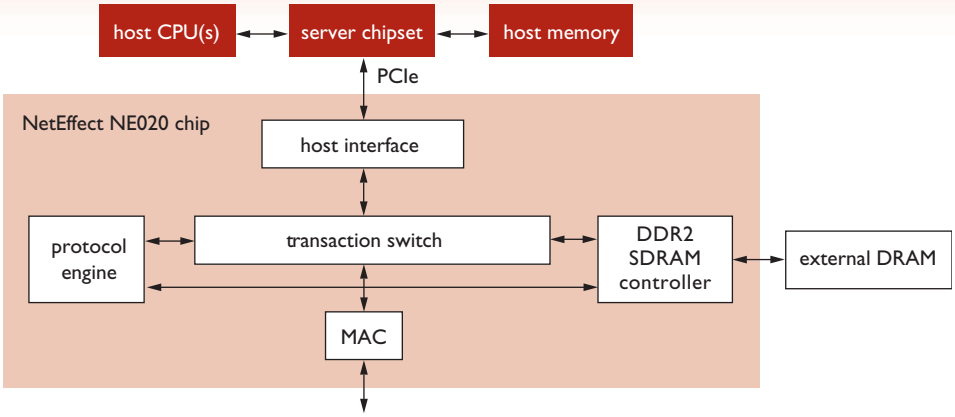
Layer 2 network interface
> Checksum offload (TCP, UDP, IP)
> Large send offload (LSO)
> Jumbo frame (9000 B)

iWARP (RDMA over Ethernet)
> RDMAC v1.0 and IETF specification support
> User-level and kernel-level direct access support
> Direct payload placement into application memory
> Up to 32 independent accelerated IP addresses
> Concurrent support for up to 8000 simultaneous iWARP connections

Block and file storage
> iSCSI connectivity using Linux* Open-iSCSI initiator and Microsoft* iSCSI initiator
> NFS and CIFS

Memory
> ECC protected industry-standard DDR2
> 256 MB standard on-board

Standards
> IEEE 802.3-2005: 10GbE, link aggregation, link pause, management
> IEEE 802.3ae 10Gb Ethernet over fibre
> IEEE 802.3ak CX4
> IEEE 802.1p Priority Encoding
> IEEE 802.1Q VLAN tagging, support for 4096 VLANs
> IPv4 (all connections), IPv6 (unaccelerated connections)
> IETF RFCs: 793, 1323, 2581, 3782



Host interface
> PCI Express x8 v1.1

Management
> ACPI 2.0c and PCI Power Management 1.2 compliant
> PXE boot support

APIs/Middleware
> Sockets and standard NIC
> OpenFabrics iWARP Verbs
> uDAPL
> Intel® MPI, HP*-MPI, Scali* MPI, MVAPICH2

Operating systems
> Microsoft Windows* Server 2003 (layer 2 only)
> Protocol software supporting Linux Novell* and Red Hat*, kernels 2.6.9 and higher

Power (typical)
> CX4 single-port: 6.2 W
> SFP+ single-port:
  - pluggable (no module): 8.5 W
  - SR optical module: 9 W

Physical and Environmental
> Operating temperature: 0 to 65°C
> Dimensions
  - Length: 6.6 in
  - Width: 2.5 in
  - Full-height end bracket: 4.725 in
  - Low-profile end bracket: 3.12 in
  - Ships with full-height bracket installed, low-profile bracket added in package
> No fan or heat sink required

Certifications
> RoHS compliant
> PCI Express 1.1 compliant
> FCC Class A

NetEffect 10GbE PCIe adapters for standard servers	product code	form factor	connector/media/distance	ports	power (typ)
NetEffect Ethernet Server Cluster Adapter CX4 [1]	E10G81GTCX4	PCIe low profile	CX4/twinax copper/15 m	1	6.2 W
NetEffect Ethernet Server Cluster Adapter SFP+ SR	E10G81GFSR	PCIe low profile	LC/MMF-850nm/300 m	1	9 W
NetEffect Ethernet Server Cluster Adapter DA (SFP+ pluggable)	E10G81GP	PCIe low profile	SFP+/connector	1	8.5 W

[1] Supports powered CX4 with active optical cable up to distance of 100 m.

Printed in USA 0309/TAR/EO/XX/PDF Please Recycle 321634-002US