

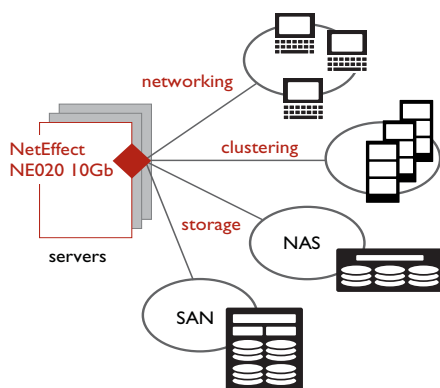
# NetEffect NE020 10Gb

## 10Gb Accelerated Ethernet Adapters

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

### Sustained, predictable performance under load

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

### One adapter, one firmware image

A single low-power NE020 10Gb 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, network protocols and any number of ports. This one adapter model dramatically simplifies both deployment and ongoing maintenance.

### Lower power, higher processing densities

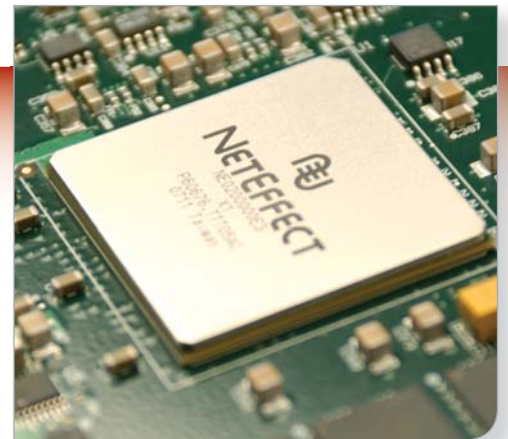
At 6.5 W (typical), NE020 10Gb adapters consume only one third of the power required by some competitive adapters. Critical in power-constrained data centers, power savings support higher computing densities within the existing power envelopes, increasing processing per square foot.

### Transparent application support

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



### Highlights

- > Sustained performance
  - Latency under 6  $\mu$ sec, even heavily loaded
  - Over 18 Gbps bandwidth (bi-directional)
- > Lowest power consumption, less than 6.5 W (typical)
- > Single adapter supports simultaneous connectivity to scaleout (clustering), data, and storage networks
- > Single firmware image supports all program interfaces, network protocols, and any number of ports
- > Patented architecture implements hardware TOE, RDMA (iWARP over Ethernet), user-level direct access
- > Single and dual port options
- > Standard copper and optical media interfaces

### Applications

- > Compute and IO intensive 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
- > Virtualized server environments

# NetEffect NE020 10Gb

## Specifications

### Performance

- > Latency: less than 6  $\mu$ sec
- > Bandwidth: over 18 Gbps (bi-directional)

### 10Gb Ethernet interface

- > Multiple port support for active/active operation
- > Copper
  - CX4 and powered CX4: single and dual port
  - direct attached copper cable (SFP+)
- > Optical
  - SR: single port (XFP or SFP+) and dual port (SFP+)
  - LR: single port (XFP or SFP+) and dual port (SFP+)

### 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 of 512 KB
- > Jumbo frame (9000 B)
- > Up to 10,000 accelerated connections standard

### iWARP (RDMA over Ethernet)

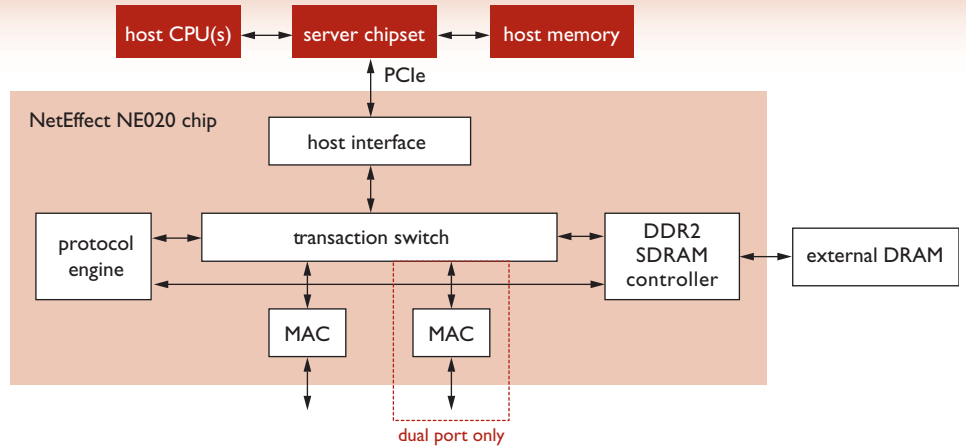
- > RDMAC v1.0 and IETF specification support
- > User-level and kernel-level direct access support
- > Direct placement of payloads into application memory
- > Up to 32 independent accelerated IP addresses
- > Concurrent support for up to 64,000 simultaneous iWARP connections

### Block and file storage

- > iSCSI connectivity using Linux Open-iSCSI initiator and Microsoft iSCSI initiator
- > NFS and CIFS
- > Up to 10,000 accelerated iSCSI connections

### Memory

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



### Virtualization support

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

### Host interface

- > PCI Express x8 v1.1

### 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 with support for 4096 VLANs
- > IPv4 (all connections), IPv6 (unaccelerated connections)
- > IETF RFCs: 793, 1323, 2581, 3782

### Management

- > IETF MIBs supported (including required statistics hardware counters): 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 v1.2, v1.3
- > HP-MPI, Intel MPI, ScaL MPI, MVAPICH2

### 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

### Power (typical)

- > Copper: 6.2 W (single port), 6.5 W (dual port)
- > Optical
  - 8 W (no module)
  - 9 W (single port SFP+)
  - 10 W (single port XFP or dual port SFP+)

### Physical and Environmental

- > Operating temperature: 0 to 65°C
- > PCI low-profile card form factor
- > Dimensions: 2.5 x 6.6 in. (without bracket)

### Certifications

- > RoHS compliant
- > PCIe® 1.1 compliant

	media	ports	interface	host bus	form factor(s)
Copper	CX4, Powered CX4	single, dual	CX4	PCIe	PCI low-profile
	direct attached copper	single, dual	SFP+	PCIe	PCI low-profile
Optical	SR or LR	single	XFP or SFP+	PCIe	PCI low-profile
	SR or LR	dual	SFP+	PCIe	PCI low-profile

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