



**N320E**  
**N320E-CXA\***  
**N320E-BT**

**\*Active cable  
capable**

## **Best Price/Performance** **10GbE Server Adapter**

**TCP/IP • Storage • Computing Applications**

### **Highlights**

- PCI Express 8x host bus interface
- Line-rate 10Gbps full-duplex performance
- Extensive stateless offload capability
- Efficient DMA software architecture to boost performance
- Large Receive Offload (LRO)
- Large Send Offload (LSO)
- Checksum offload for TCP, UDP IP and Ethernet
- Minimized interrupts for device management
- Minimized programmed I/O read access
- Turn-key drivers for major server operating systems

### **Applications**

#### **Link Consolidation**

- Upgrade a server's multiple Gigabit Ethernet connections to improve bandwidth and simplify cabling

#### **Server Consolidation**

- Replace a group of servers with fewer higher-performance systems and higher bandwidth to reduce rack congestion, cabling, power consumption, and simplify maintenance

CHELSIO'S N320E Server Adapter is a dual-port 10 Gigabit Ethernet adapter with PCI Express host bus interface for servers and storage systems. The cost-effective N320E provides higher bandwidth for end nodes for organizations using 10 Gigabit Ethernet in the data center with advanced stateless offload. The N320E represents the third generation of Chelsio's server adapters. Easy to deploy, it comes complete with turn-key drivers for major server operating systems.

Chelsio's 10 Gigabit Ethernet adapters have been subjected to thousands of hours of compatibility testing and over two years of stress testing by various OEM test suites, with different operating systems. The robust N320E delivers the most reliable performance and best value for 10GbE connectivity in the industry.

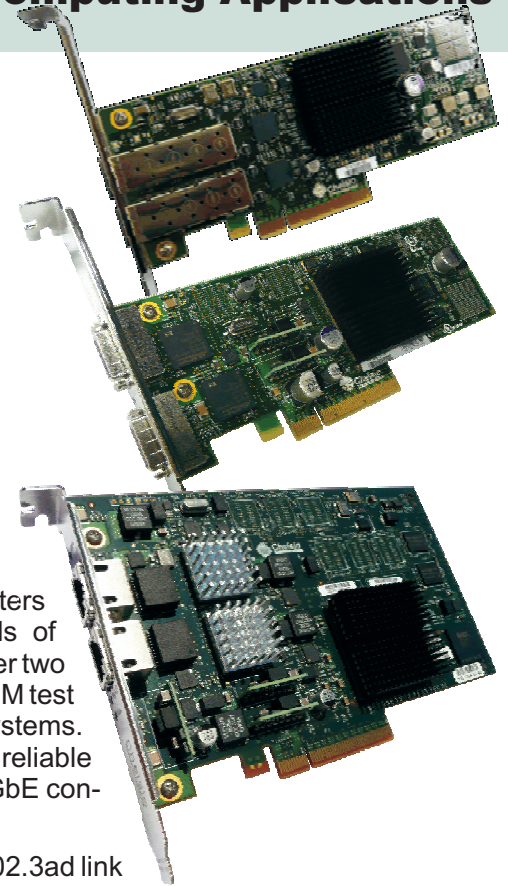
The adapter's two ports and IEEE 802.3ad link aggregation/failover features are ideal for critical network applications that require redundancy and high-availability capabilities.

### **Benefits**

By using Chelsio's N320E, enterprises can cost-effectively connect servers and storage systems directly to the 10GbE backbone switching infrastructure over multi-mode fiber, single-mode fiber, twinax, CX4 copper, or CX4 active optical, or Cat-6a cabling.

As an upgrade or an alternative to aggregated Gigabit Ethernet links, 10GbE boosts connection bandwidth and simplifies cabling, installation, and maintenance. The N320E also provides additional bandwidth needed to consolidate server functions on fewer, more powerful systems – simplifying management and reducing costs for servers, rackspace, power consumption, and maintenance.

Applications with large data sets benefit from a high-speed distributed platform, including video rendering and distribution, data visualization such as remote medical imaging and climatic modeling, and bioinformatics applications such as DNA sequencing.



## Fully Featured Server Adapter

The dual-port N320E offers best-of-class performance and features, including IP/UDP/TCP checksum and large send offload, rate control and QoS, virtualization, and rule-based traffic steering and filtering.

## Third-Generation Protocol Offload Engine

The N320E employs Chelsio's unique third-generation Terminator 3 ASIC, a high-performance, programmable protocol processor. Terminator 3 processes all connections in a single datapath to deliver line-rate 10Gbps performance with one connection, up to thousands of connections. In contrast, competitive multi-RISC offload engines, which rely on having enough connections to distribute their processing among parallel processors to achieve full performance, are ultimately limited by the performance of each processor.

## Robust, Proven Solution

Subjected to thousands of hours of compatibility testing, over two years of stress testing by several OEM test suites and production deployments in servers, storage systems and cluster computing, Chelsio's robust, stable protocol offload technology delivers proven performance in a wide range of environments. The N320E is generations ahead of competing products.

## Software Drivers

Chelsio offers a full suite of protocol software and drivers with the N320E adapter. See [www.chelsio.com/support](http://www.chelsio.com/support) for latest info.

## Product Models

<i>Model:</i>	<b>N320E</b>	<b>N320E-CXA</b>	<b>N320E-BT</b>
<b>Physical interface:</b>	10GBASE-SR or LR <sup>†</sup>	10GBASE-CX4	RJ-45
<b>Distance:</b>	300m or 10km	15m	30m
<b>Connector:</b>	LC Duplex	CX4	Cat-6a
<b>Media:</b>	MMF or SMF	CX4 copper*	Twisted Pair

\*Supports active optical cables with distances up to 100 meters

<sup>†</sup>SFP+ optics sold separately. Only Chelsio-supplied modules may be used:

- SM10G-SR 10G short-reach SFP+ optic module
- SM10G-LR 10G long-reach SFP+ optic module
- CX4CABLE3M CX4 copper cable, 10GBASE-CX4, 3-meter
- CX4CABLE15M CX4 copper cable, 10GBASE-CX4, 15-meter
- SRCABLE3M Fiber optic cable, 10GBASE-SR, 3-meter
- LRCABLE3M Fiber optic cable, 10GBASE-LR, 3-meter
- TAPCABLE1M Twinax passive cable, 1-meter
- TAPCABLE3M Twinax passive cable, 3-meter
- TAPCABLE5M Twinax passive cable, 5-meter

## Specifications

### Host Interface

- PCI Express 1.1 x8, x4, x2, x1
- MSI-X, MSI and support for legacy pin interrupts

### Network Interfaces

- 10GBASE-SR short-reach optics (850nm)
- 10GBASE-LR long-reach optics (1310nm)
- 10GBASE-CX4 short-reach copper

### Ethernet

- IEEE 802.3ae (10GbE)
- IEEE 802.1p Priority and 802.1Q VLAN tagging
- IEEE 802.3x flow control
- IEEE 802.3ad link aggregation
- Ether II and 802.3 encapsulated frames
- Multiple MAC addresses per interface
- Jumbo Frames up to 9.6Kbytes

### Stateless Offloads

- TCP checksum offload for IPv4 & IPv6
- TCP Segmentation Offload (TSO) for IPv4 & IPv6
- Large Receive Offload (LRO) for IPv4 & IPv6
- Large Send Offload (LSO) for IPv4 & IPv6
- UDP checksum offload for IPv4 & IPv6
- Receive Side Scaling and packet steering
- Attack protection

### Physical and Environmental

- Dimensions without bracket:
  - N320E & N320E-CXA: 6.6 in. x 2.5 in. or 16.8 cm x 6.4 cm
  - N320E-BT: 6.7 in. x 4.3 in. or 17.0 cm x 10.9 cm
- Operating Temp: 0 to 55°C or 32 to 131°F
- Operating Humidity: 5 to 95%
- Airflow: 200 lf/m
- Typical power consumption:
  - N320E: 14W
  - N320E-CXA: 13W
  - N320E-BT: <25W

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