S310E-SR+

NEW!

Chelsio Communications
Accelerate

High Performance
10GbE Storage Accelerator

Unified Wire • TCP/IP • Storage

Highlights

- 'Unified Wire' interconnect solution for server networking, storage networking, and clustering on a single platform
- Full TCP offload, iSCSI, and iWARP RDMA plus direct data placement (DDP)
- Reduces host CPU utilization by up to 90% compared to NICs without full offload capabilities
- PCI Express 8x host bus interface
- Line-rate 10Gbps full-duplex performance
- Integrated traffic manager, QoS, and virtualization capabilities
- TCP sockets, SCSI, RNIC-PI, kDAPL, and OpenFabrics 1.3 software interfaces
- Powerful per-connection, per-server, and per-interface configuration and control

Applications

Data-Center Networking

- Scale up servers and NAS systems
- Link servers in multiple facilities to synchronize data centers
- Consolidate LAN, SAN, and cluster networks

Networked Storage

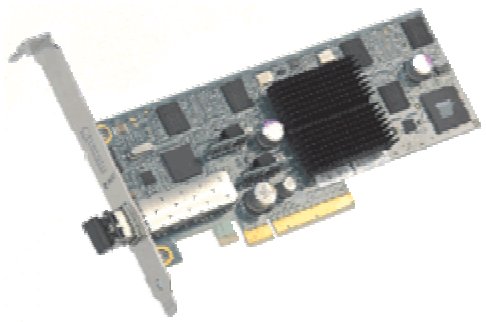
- Enable high performance NAS systems and Ethernet-based IP SANs
- Deploy Ethernet-only IP SANs throughout the enterprise beyond the data center
- Develop shared-storage systems providing both file- and block-level services

High Performance Computing

- Very low latency Ethernet
- Increase cluster fabric bandwidth
- Deploy Ethernet-only networking for cluster fabric, LAN, and SAN
- Routable infrastructure

CHELSIO'S S310E 10GbE Storage Accelerator is a 10 Gigabit Ethernet adapter with PCI Express host bus interface optimized for storage applications. The third-generation technology from Chelsio provides the highest 10GbE performance available and dramatically lowers host-system CPU communications overhead.

With on-board hardware that offloads TCP/IP, iSCSI, and iWARP RDMA processing from its host system, the S310E frees up host CPU cycles for useful applications. The system achieves increased bandwidth, lower latency, and lower power.



This combination makes it practical to converge other networks that traditionally used niche technologies onto 10GbE. High bandwidth and extremely low latency make 10GbE with protocol offload the best technology for high-performance cluster computing (HPCC) fabrics.

The S310E also accelerates the iSCSI protocol for block-level storage traffic between servers and storage systems. With high-speed iSCSI, 10GbE is now the best technology for storage area networks. For more info on Chelsio's iSCSI solution, please go to our website at www.chelsio.com.

S310E-SR+ is a new version of the S310E-SR adapter supporting the small form factor pluggable (SFP+) optical module. SFP+ is the next-generation transceiver package for 10GbE, offering a more compact form factor and lower power consumption. By removing clock and data recovery (CDR) and electronic dispersion compensation (EDC) from the transceiver, the SFP+ package achieves the same size as the industry-standard SFP form, while offering higher mounting densities.

The 'Unified Wire' Solution

With the S310E, Chelsio is delivering on the promise of the 'unified wire,' enabling the convergence of server networking, storage networking, and cluster computing interconnects onto a single platform and a single fabric.

10Gb Ethernet-only networking reduces the data center's cost in network adapters, cables, switches, rack space, power, equipment spares, management tools, planning, networking skills, and installation.

You can get a white paper on Chelsio's Unified Wire solution at our website, www.chelsio.com.

Fully Featured Server Adapter

The S310E 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 S310E 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.

Complete and Flexible TCP Offload

The Terminator 3 ASIC has hundreds of programmable registers for protocol configuration, RFCs, and offload control. The S310E can offload TCP processing per-connection, per-server, per-interface, and globally and simultaneously tunnel traffic from non-offloaded connections to the host processor for the native TCP/IP stack to process. The S310E provides a flexible zero copy capability for regular TCP connections, requiring no changes to the sender, to deliver line rate performance at minimal CPU utilization.

Upper Layer Protocols

The S310E offloads the expensive byte touching iSCSI operations and payload placement to greatly accelerate iSCSI performance for IP SAN applications while maintaining flexibility. The iSCSI protocol itself can be implemented by vendors to provide product differentiation. The S310E also implements a high-capacity, low-latency, high-bandwidth iWARP RDMA/RDDP, which adheres to the IETF standards.

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 S310E is generations ahead of competing products.

Software Drivers

Chelsio offers a full suite of protocol software and drivers for Linux and Windows with the S310E adapter. The software supports operation in both protocol-offload and non-offload modes.

Product Models

Model:	**S310E-SR+**
Physical interface:	10GBASE-SR
Distance:	300m
Connector:	LC Duplex
Media:	MMF – 850nm

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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)

Ethernet
- IEEE 802.3ae (10GbE)
- IEEE 802.1p Priority and 802.1Q VLAN tagging
- IEEE 802.3x flow control
- IEEE 802.3ad load-balancing and failover
- 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 Send Offload (LSO) for IPv4 & IPv6
- UDP checksum offload for IPv4 & IPv6
- Receive Side Scaling and packet steering
- Line rate packet filtering and attack protection

TCP/IP Full Offload
- Full TCP implementation including exceptions
- High performance even in presence of packet loss
- Extensive RFC compliance, fully featured stack
- Direct Data Placement (DDP)
- Up to 64K simultaneous connections capacity

Integrated Traffic Manager
- Multiple Tx & Rx queues with QoS
- Two separate channels for simultaneous low latency & high bandwidth
- Per-connection and per-class rate control
- Packet loss avoidance

Virtualization and Firewall
- Rule-based packet steering and filtering capability

iSCSI Acceleration
- Full iSCSI initiator and target mode stack
- Header & Data Digest (CRC) generation & checking
- PDU recovery
- Direct Data Placement (DDP)

High Performance RDMA
- Ultra-low latency, line rate bandwidth
- IETF RDDP and RDMAC iWARP compliance
- APIs: RNIC-PI, kDAPL and OpenFabrics 1.3

Physical and Environmental
- Dimensions without bracket: 6.6 in. x 2.5 in. or 16.8 cm x 6.4 cm
- Operating Temp: 0 to 55ºC or 32 to 131ºF
- Operating Humidity: 5 to 95%
- Airflow: 200 lf/m
- Typical power consumption: 17W

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MMVIII-0424