High Performance, Quad Port 10 GbE Unified Wire Adapter

Highlights
- PCI Express Gen3 x8
- Ultra Low Latency
- Supports Up to 1M Connections
- Full TCP and UDP offload
- Full iSCSI, FCoE offload
- Full iWARP RDMA offload
- Full NAT offload
- EVB, Flex10, VNTag
- PCI-SIG SR-IOV
- Integrated media streaming offload
- HW based firewall in the cloud
- Traffic filtering & management
- Software Compatible with T4

Overview
Chelsio’s T540-CR is a quad port 10 Gigabit Ethernet Unified Wire adapter with a PCI Express 3.0 host bus interface, optimized for cloud computing, HPC virtualization, storage, and other data center applications. Since the Host Bus Interface is PCI Express 3.0, this card can support all 4 10G ports running at line-rate.

The fifth-generation (T5) technology from Chelsio provides the highest 10GbE performance in the industry and dramatically lowers host-system CPU communications overhead with on-board hardware that offloads TCP/IP, iSCSI, FCoE and iWARP RDMA processing from the host system and frees up host CPU cycles for other applications. As a result, the system benefits from higher bandwidth, lower latency, and reduced power consumption.

The Unified Wire Solution
The T540-CR enables a unified wire for LAN, SAN, and cluster traffic, made possible by the high bandwidth and low latency characteristics, combined with storage and cluster protocols operating over Ethernet (iSCSI, FCoE, and iWARP). T5 based adapters such as the T540-CR support both file and block based storage protocols and are ideal for building high performance SAN and NAS solutions. With both iSCSI and FCoE offload, FC applications can run natively over Ethernet, while taking advantage of its performance benefits and economies of scale. T5 also offers an ultra-low latency RDMA over Ethernet (iWARP) interface, making the T540-CR a competitive drop-in replacement for InfiniBand in high performance computing applications. It is supported in the same standard software distributions and allows running IB applications unmodified.

T540-CR integrates a full-fledged hardware Traffic Manager for robust flow control, traffic management, and predictable QoS.

The adapter’s four ports and IEEE 802.3ad link aggregation, and port-to-port and adapter-to-adapter failover features are ideal for critical network applications that require redundancy and high-availability capabilities.

T540-CR Ethernet-only unified networking reduces the data center’s cost in adapters, cables, switches, rack space, power, equipment spares, management tools, planning, installation and operation.
T5 - Fifth-Generation Protocol Offload Engine

The T5 is Chelsio's fifth-generation TCP offload (TOE), fourth-generation iSCSI, and third-generation iWARP (RDMA) design. T5 builds upon the T4 feature set and improves performance across the board. On the host bus side, the T5 exposes a PCI Express v3.0 x8 host bus interface, with up to 64 Gbps raw bandwidth to the server. T5 also provides support for PCIe I/O virtualization and integrated VM-to-VM switching.

Complete and Flexible TCP Offload

The T5 has hundreds of programmable registers for protocol configurations, RFCS, and offload control. The T540-CR can offload processing per connection, per-server, or per-interface, and simultaneously tunnel traffic from non-offloaded connections to the host processor for the native TCP/IP stack to process. The T540-CR provides a flexible zero-copy capability for regular TCP connections, requiring no changes to the applications, and delivers line rate performance at minimal CPU utilization and memory subsystem utilization.

Packet Switching and Routing

T540-CR integrates a high performance packet switch, which allows switching traffic from any of the input ports to any if the output ports (wire-to-wire) and from any of the output ports to any of the input ports (host-to-host), with header rewrite and NAT offload.

Robust, Proven Solution

Subjected to compatibility and stress testing over multiple years by several OEM test suites, and with production deployment in servers, storage systems, and cluster computing, Chelsio's robust, stable protocol offload technology delivers proven performance in a wide range of environments. The T540-CR is generations ahead of competing products in robustness and implementation maturity.

Software Drivers

Chelsio offers a full suite of protocol software drivers with the T540-CR adapters. See www.chelsio.com/support for the latest information. The software supports operation in both protocol-offload and non-offload modes.

Ordering Information

Model: T540-CR
Physical Interface: 10GBASE-SR or LR*
Connector: LC Duplex
Media: MMF or SMF

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Accessories

SM10G-SR: 10G short-reach SFP+ optic module
SM10G-LR: 10G long-reach SFP+ optic module
SMRCABLE3M: Fibre optic cable, 10GBASE-SR, 3M
TAPCABLE1M: Twinax passive cable, 1M
TAPCABLE3M: Twinax passive cable, 3M
TAPCABLE5M: Twinax passive cable, 5M
TAPCABLE3M: Twinax passive cable, 3M

*SFP+ optics sold separately. Only Chelsio-supplied modules may be used.