T580-LP-CR
High Performance, Dual Port
40 GbE Unified Wire Adapter

Enables TCP, UDP, iSCSI, iWARP, and FCoE Offload over Single Unified Wire with SR-IOV, EVB/VNTag, DCB

Overview
Chelsio’s T580-LP-CR is a dual port 40 Gigabit Ethernet Unified Wire adapter with PCI Express 3 host bus interface, optimized for cloud computing, HPC, virtualization, storage, and other data center applications.

The fifth-generation (T5) technology from Chelsio provides the highest 40GbE 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 T580-LP-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 T580-LP-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 T580-LP-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.

T580-LP-CR integrates a full-fledged hardware Traffic Manager for robust flow control, traffic management, and predictable QoS.

Applications

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

Cloud Computing
- Virtualization features to maximize cloud scaling and utilization
- Runs InfiniBand, Fibre Channel apps unmodified over Ethernet
- Cloud-ready functional and management features
- QoS and Traffic Management

Networked Storage
- Enable high performance NAS systems and Ethernet-based IP SANs
- 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

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

T580-LP-CR

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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 T580-LP-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 T580-LP-CR provides a flexible zero-copy capability for regular TCP connections, requiring no changes to the application and delivers line rate performance at minimal CPU and memory subsystem utilization.

Packet Switching and Routing
T580-LP-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 T580-LP-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 T580-LP-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: T580-LP-CR
Physical Interface: 40GBASE-SR4*
Connector: QSFP+

Accessories
SM40G-SR: 40G short-reach QSFP+ optical module
OCFTTAPCABLE3M: QSFP+-to-4xQSFP+ Twinax Passive Cable
QSRCABLE10M: 10m QSFP+-to-QSFP+ SR Optical Cable
QTAPCABLE1M: 1m QSFP+-to-QSFP+ Twinax Passive Cable
QTAPCABLE3M: 3m QSFP+-to-QSFP+ Twinax Passive Cable
QTAPCABLE5M: 5m QSFP+-to-QSFP+ Twinax Passive Cable

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