T62100-SO-CR

High Performance, Low Profile, Dual Port 40/50/100GbE Server Offload Adapter

Enables TCP, UDP, iSCSI, iWARP, FCoE, TLS/SSL, DTLS, IPsec, SMB 3.X crypto, and SDN Offload over Single Unified Wire with SR-IOV, EVB/VNTag and DCB

Overview

Chelsio’s T62100-SO-CR is a dual port 40/50/100Gb Ethernet Server Offload Adapter, with a PCI Express 3.0 x16 host bus interface, optimized for storage, cloud computing, HPC, virtualization and other datacenter networking applications.

T62100-SO-CR runs all the host software of its predecessor, T5, as-is, thus enabling leveraging of all the prior software investment. It offers all the features of T5, and in addition adds support for integrated offload of IPsec, TLS/SSL, DTLS and SMB 3.X crypto.

T62100-SO-CR provides sub micro-second end-to-end latency, while offloading the host CPU from a variety of typical storage, networking, and cloud related protocols. This will enable savings in host CPU acquisition costs, power and operational costs, and dramatically increases system performance.

A large portion of offloads enabled by T62100-SO-CR are based on standard TCP, IP, UDP protocols (such as iSCSI and iWARP), and thus can operate with a software peer, or be replaced with a software solution at lower performance, thus providing the requisite reliability for enterprise customers, and allowing incremental installs in the datacenter. It will work with any legacy switch infrastructure and does not rely on new features such as DCB, PFC, ETS, etc.

T62100-SO-CR supports IEEE standards-based link aggregation/failover features, as well as inter-adapter failover techniques that make it ideal for critical network applications requiring redundancy and high-availability capabilities.

T62100-SO-CR also includes an integrated Traffic Manager for robust and flexible flow control, traffic management and QoS.

FCoE and iSCSI support in T62100-SO-CR benefit from high reliability features that include memory ECC, data path CRC and T10-DIX offload, in addition to the checksums and CRC available at different protocols layers. High performance iSCSI and FCoE provide a drop-in replacement upgrade from legacy SANs to converged networks.

The Unified Wire Solution

T62100-SO-CR enables a unified wire for LAN, SAN and cluster applications, built upon a high bandwidth and low latency architecture along with a complete set of storage and cluster protocols operating over Ethernet (iSCSI, NVMe-oF, FCoE and iWARP). A unified wire means having the ability to utilize all offload or non-offload protocols at the same time, over the same link, using the exact same firmware, host software, and adapter. Thus, a given system using T62100-SO-CR can be easily targeted at different vertical markets and a variety of useful functions enabled (i.e. dial the bandwidth to a given application and assign access control, while offloading only part of the traffic). The Ethernet-only networking thus reduces the infrastructure costs in network adapters, cables, switches, rack space, power, equipment spaces, management tools, planning, networking staff and installation.

Specifications

Host Interface
- PCI-E Gen3 x16
- MSI-X, MSI and support for legacy pin interrupts

Security
- AES 128/256 and SHA1/SHA2 offload
- TLS/SSL, DTLS, IPsec and SMB 3.X crypto support
- Full offload and lookaside co-processor modes

Applications

Datacenter Networking
- Scale out servers and NAS systems
- Consolidate LAN, SAN and cluster networks
- Enhanced network and server security

Cloud Computing
- Virtualization features to maximize cloud scaling and utilization
- Runs InfiniBand, FibreChannel applications unmodified over Ethernet
- Cloud-ready functional and management features
- Secure Sockets offload
- QoS and Traffic Management

Networked Storage
- Enable high performance NAS systems and Ethernet-based SANs
- Develop shared-storage systems providing both file and block level services
- Build high performance storage backend fabrics using Ethernet
- Encrypt all communication and data at rest

High Performance Computing
- Very low latency Ethernet
- High performance RDMA support
- Increase cluster fabric bandwidth
- Deploy Ethernet-only networking for cluster fabric, LAN and SAN
Sixth-Generation Protocol Offload Engine
T6 is Chelsio’s sixth-generation TCP offload (TOE) design, fifth-generation iSCSI design, and fourth-generation iWARP (RDMA) implementation. With support for the 8 Gbps PCIe Gen3 data rate, it provides 128Gbps of raw bandwidth. Also provides support for PCIe SR-IOV virtualization with embedded virtual switch.

Complete and Flexible TCP Offload
The T62100-50-CR transport engine executes programmable firmware and is configurable with hundreds of registers for protocol parameters, RFC compliance and offload control. It can offload protocol processing per connection, per-server, per-interface, while simultaneously providing complete stateless offload for non-offloaded connections (processed by operating systems stack running on host CPU). It also provides a flexible direct data placement capability for regular TCP sockets, with all the benefits of zero-copy and kernel bypass without rewriting the applications.

High Performance Security Offload
T62100-50-CR introduces ground breaking TLS/SSL performance with inline cryptographic functions leveraging Chelsio’s proprietary TCP/IP offload engine. Chelsio’s full offload TLS/SSL is uniquely capable of 100Gb line rate performance. In addition, T6 can be used with inline mode for DTLS and in a traditional co-processor lookaside mode to accelerate IPsec, TLS/SSL with AES, SHA1 and SHA2 processing and SMB 3.x crypto.

Packet Switching and Routing
T62100-50-CR integrates a 140-port high performance L2-L3 packet switch with integrated access control and flow control support, which allows switching traffic from any of the ports or host queues or physical or virtual functions to each other. The switch can further provide multicast and replication functions in ingress or egress direction. Typical use is for very high performance OVS offload.

Robust, Proven Solution
Subjected to thousands of hours of compatibility testing, over a decade of stress testing by several OEM test suites and 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.

Software Drivers
Chelsio offers a full suite of protocol software drivers with the T6. See www.chelsio.com/support for the latest information.

Ordering Information
Model: T62100-50-CR
Physical Interface: 100GBASE-CR4/SR4*
Connector: QSFP28
Medusa: MMF or SMF or Twinax

Accessories
SM40G-SR/LR: 40G short/long reach QSFP optical module
SM100G-SR/LR: 100G short/long reach QSFP28 optical module
QTAPCable-1M/3M/5M: Twinax/DAC passive cable for 40Gb, 1M/3M/5M
QTAPCable28-1M/2M/3M: Twinax/DAC passive cable for 100Gb, 1M/2M/3M
QSCABLE10M: Fiber Optic cable for 40Gb and 100Gb, 10M

* QSFP28 optics sold separately. Only Chelsio-supplied modules may be used.

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