10GbE-Enabled Fabric Convergence for Virtualized Data Centers

Chelsio Communications
Accelerate

Solution Brief

Net-Net

CHELSIO IS PIONEERING the future of high-performance network I/O for virtualized data centers with its T3 Unified Wire technology, enabling tremendous cost savings and performance. Chelsio's unique, patented hardware architecture increases bandwidth, reduces latency, and dramatically lowers host-system CPU utilization for the range of applications leveraging server virtualization. Chelsio offers the broadest range of 10Gb Ethernet adapters in the industry with three separate product lines based on its third-generation Terminator 3 ASIC.

Overview

Enterprise data center environments have fully adopted the scale-out model server deployment mode. As a result, IT managers have seen their data centers expand from hundreds to thousands of servers running different operating systems and applications. As the number of servers has grown, so have operational costs, which include people, space, power, and cooling.

In response, IT organizations are increasingly shifting to server virtualization, using VMware ESX, OracleVM, Citrix XenServer, and Microsoft Virtual Server technologies, to change static data center server resources into agile, shared computing assets, which consist of uniform, stateless components that can be dynamically aggregated, tiered, provisioned, and accessed.

Chelsio Communications
370 San Aleso Avenue
Sunnyvale, CA 94085
U.S.A.

+1-408-962-3600
+1-408-962-3661 Fax

www.chelsio.com
sales@chelsio.com

Solution Brief

Taken together, virtualization solutions can dramatically increase performance levels, maximize return on investment, and allow enterprises to rapidly deploy and scale IT resources on demand.

Fundamental to server virtualization is the deployment of data center environments with hundreds to thousands of virtual servers running tightly-coupled applications that are highly sensitive to client/server and server-to-storage communications bandwidth, as well as to inter-process message latency.

While a number of specialized interconnect technologies, such Fibre Channel and InfiniBand, are available for building commercial data center networks, the continued evolution towards 10 Gigabit Ethernet (10GbE) networking makes it the obvious choice as the preferred networking fabric for unifying network, clustering, and storage communications for emerging virtualized data center environments.

Chelsio 10GbE Unified Wire Solutions

Chelsio Communications, the leading provider of 10GbE server adapter solutions, offers a family of 'unified wire' adapters for data center applications, including server virtualization applications. Powered by its third-generation Terminator 3 (T3) ASIC, Chelsio's 10GbE adapters products constitute the industry's broadest and highest-performance 10Gb Ethernet adapter portfolio.

The N310E Server Adapters are stateless offload NICs that deliver the highest throughput for virtual server applications at the industry's lowest price point. The N310E offers best-of-class performance and stateless-offload features, including IP/UDP/TCP checksum and large send offload, receive-side scaling (RSS) for distributing protocol processing overhead among multiple processors/cores, rate control and QoS, virtualization, and rule-based traffic steering and filtering.

Chelsio's S310E and S320E Storage Accelerators are single and dual-port PCI-E 10GbE adapters with on-board hardware that offloads TCP/IP, iSCSI, and iWARP RDMA processing from its host system, and concurrently support networking (either using stateless or stateful TCP/IP processing modes), high-performance iSCSI, and network-attached storage (NAS) communications, as well as RDMA/TCP protocols for low-latency IPC. S310E/S320E adapters are the highest-performance 10GbE adapters available and feature robust, high-availability functionality, including advanced traffic management support.

The R310E iWARP Adapters are RDMA-enabled NICs (R-NICs) targeted to replace InfiniBand in low-latency clustering applications. Chelsio's RNICs run standards-compliant iWARP RDMA and can run existing unmodified InfiniBand RDMA applications with similar latency and higher bandwidth.

Chelsio's overarching focus is on delivering the promise of the unified networking fabric for enterprise data center environments, thus enabling the convergence of server networking, storage networking, and cluster computing interconnect onto a single 10GbE fabric.