CHELSIO COLLABORATES WITH MICROSOFT TO SHOWCASE iWARP RDMA OVER 40G METRO ETHERNET WITH WINDOWS SERVER 2016 STORAGE REPLICA

Industry's First Demonstration of Windows Server 2016 Storage Replica using RDMA over Ethernet

SUNNYVALE, CA – September 27, 2016 – Chelsio Communications, Inc., a leading provider of high performance (10Gb/25Gb/40Gb/50Gb/100Gb) Ethernet Unified Wire Adapters and ASICs for storage networking, virtualized enterprise datacenters, cloud service installations, and cluster computing environments, today announced the showcasing of its iWARP RDMA adapters with the Windows Server 2016 Storage Replica across a long haul connection. The results shown at the Microsoft Ignite 2016 conference in Atlanta, demonstrate Windows Server 2016 Storage Replica (SR) operating at 40Gbps using SMB3.1.1 over Chelsio's T580-LP-CR RDMA enabled NICs, with consistent performance levels. The demonstration validates iWARP's ability to sustain SR's unique load pattern, and thanks to its TCP/IP underpinnings, natively operate beyond a cluster environment to extend the RDMA transport over long distance.

Disaster protection is a critical requirement for business continuity, and remote replication offers geographic redundancy in the face of catastrophic events. Windows Server 2016 Storage Replica enables block-level replication between clusters or individual servers. SR provides two modes of operation: synchronous replication enables mirroring of data with zero data loss at the file system level, while asynchronous replication allows local completion of I/O operations. Storage Replica over iWARP RDMA combines high performance with the high efficiency provided by the zero copy and CPU bypass operation of the RDMA transport, without requiring any metro extension equipment, unlike other RDMA transports. The Microsoft Ignite

presentation shows SR operating in synchronous mode over a 50Km fiber loop, connecting two storage servers. Long distance replication is shown to provide near local access performance levels, with negligible impact on I/O rates and near zero additional latency. In addition, the iWARP RDMA transport provides remarkably stable and consistent operation.

"The demonstration of Windows Server 2016 Storage Replica over RDMA in metro scale conditions is a milestone for both SR and iWARP," said Kianoosh Naghshineh, CEO at Chelsio Communications. "The combination of SR capabilities and performance, and iWARP's efficiency, ease of deployment and Cloud reach is hard to beat. This demo confirms iWARP's long distance operation capabilities and cements its position as the correct RDMA transport for storage, with robustness and performance that scale from clusters to Internet-wide environments."

Erin Chapple, Partner Director, Program Management for Windows Server, Microsoft said, "Windows Server 2016 and System Center 2016 offer our most cloud-ready server operating system ever, with exciting new innovation to help you transform your applications for the cloud, build a software-defined datacenter with cloud efficiencies, and keep your IT safer than ever. The complementary solutions and services from our partners are what truly brings the innovation to life for our customers as they transform their IT solutions for the cloud-first world."

The T580-LP-CR adapters are based upon Chelsio's proprietary T5 ASIC. Designed for high performance, unified clustering, storage and data networking, the T5 ASIC enables fabric consolidation by simultaneously offloading iSCSI, FCoE, TCP/UDP/IP sockets, and RDMA traffic in hardware at 40Gbps wire speed. With native iWARP RDMA support, it is particularly well suited for high availability storage applications, thanks to iWARP's ability to operate over long distances and heterogeneous networks. These attributes make T5 the preferred solution for all storage networking fabrics: frontend, backend and high availability.

By allowing InfiniBand and FibreChannel applications to run unmodified over standard Ethernet networks, without imposing a DCB tax, T5 enables true convergence and eliminates the need for esoteric adapters, cabling, switches and gateways, with tremendous CAPEX and OPEX savings as a result.

Additional information regarding the demonstration is available in a Chelsio **Technical Brief**.

About Chelsio iWARP

Chelsio's Terminator 5 ASIC offers a high performance, robust third generation implementation of RDMA (Remote Direct Memory Access) over 40Gb Ethernet – iWARP. T5 delivers end-to-end RDMA latency that is comparable to InfiniBand, using standard Ethernet infrastructure. Chelsio's iWARP is in production today in GPU applications, in storage applications as a fabric for clustered storage, for Lustre and other storage applications, for HPC applications, and for remote replication and disaster recovery. It is a high performance, robust, reliable, and mature protocol that enables direct data placement, CPU savings, and RDMA functionality over TCP/IP and legacy Ethernet switches and internet with no performance penalties.

About Chelsio Communications

Chelsio is a recognized leader in high performance (10Gb/25Gb/40Gb/50Gb/100Gb) Ethernet adapters for networking and storage within virtualized enterprise datacenters, public and private hyperscale clouds, and cluster computing environments. With a clear emphasis on performance and delivering the only robust offload solution, as opposed to simple speeds and feeds, Chelsio has set itself apart from the competition. The Chelsio Unified Wire fully offloads all protocol traffic, providing no-compromise performance with high packet processing capacity, sub-microsecond hardware latency and high bandwidth. Visit the company at www.chelsio.com, and follow the company on Twitter and Facebook.

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