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Media Contact:
media@chelsio.com
Chelsio Communications
1-408-962-3600

CHELSIO WELCOMES INTEGRATION OF SOFTIWARP INTO UPSTREAM LINUX KERNEL 5.3

Milestone Represents Strong Validation of iWARP/RDMA for Enterprise and Cloud Datacenter Deployment

SUNNYVALE, Calif. – September 5, 2019 – Chelsio Communications, Inc., a leading provider of high performance (1Gb/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 full support of SoftiWarp component of upstream Linux kernel 5.3 by its latest T5 and T6 ASIC based products, as well as support for interoperability between SoftiWarp and Chelsio hardware offloaded iWARP-capable cards.

Recent testing of SoftiWarp with Chelsio T6 100GbE Server Offload Adapter (T62100-SO-CR) running SoftiWarp, connected to a T62100-LP-CR Unified Wire card with hardware offloaded iWARP, show that SoftiWarp delivers line-rate throughput and more than 1 Million IOPS at 4K I/O size, at 69% CPU. In addition, with only 12 μ s delta latency between remote and local storage, SoftiWarp is shown to be an ideal solution for providing cost-effective, scalable storage connectivity over industry-standard Ethernet infrastructure. This performance improves to 4.5 μ s delta latency between remote and local storage, and over 2 Million IOPS at 4K I/O size at 44% CPU with enabling hardware offload on both ends of the wire.

“iWARP is the perfect cost-effective, high-performance, easily managed, interoperable solution that enables today’s datacenters to non-disruptively deploy RDMA enabled Ethernet networks, with management under a single unified network infrastructure. Using SoftiWarp, data



centers now have a built-in software-only second source to any hardware offloaded RDMA approach, a migration path for any RDMA dependent application from the appliance to any existing cloud that uses any NIC solution, and a client side solution for storage appliances that is ubiquitous,” said Kianoosh Naghshineh, CEO, Chelsio Communications. “SoftiWarp is expected to do for iWARP-based RDMA market, what the software iSCSI initiator did for the iSCSI market, significantly expanding the market due to the low cost on the client side and the inherent ease of use and deployment of TCP based protocols. NVMe-oF (iWARP) storage based JBODs and appliances will significantly benefit from SoftiWarp.”

"Upstreaming SoftiWarp into the mainline kernel provides significant benefits including rapid support and deployment for a broad range of applications requiring high-performance Ethernet RDMA" said Bernard Metzler, Technical Leader, High-Performance I/O, IBM Research - Zurich. "Furthermore, SoftiWarp is a perfect vehicle for RDMA applications development and testing, since it enables the RDMA technology on any legacy system without dedicated hardware."

“We are pleased to see the initial SoftiWarp integration into the Linux kernel and look forward to additional integration in the future,” said Denise Dumas, Vice President, Engineering, Operating Systems Platform at Red Hat. “The ability to use the SoftiWarp capability across Ethernet adapters adds more open choices to how users address networking needs, especially in complex hybrid cloud deployments.”

The SoftiWarp open source software provides enterprise and cloud datacenters with the following key advantages:

- Any L2 NIC can now run the iWARP protocol and leverage Ethernet RDMA networking.
- It provides a simple path for transition of RDMA applications to the cloud platform.
- It enables client/initiator side applications like iSER, NVMe-oF, NFSRDMA, LustreRDMA etc. to cost-effectively connect to hardware offload-based iWARP versions on the target side.



- It supports the ability to work with any type of switch infrastructure, including non-DCBX switches, wireless links, existing routers, enabling a decoupled server and switch upgrade cycle, without requiring special gateways.
- It scales effectively when connecting multiple racks together with multiple tiers of switches due to the inherent scalability of the underlying TCP protocol.

Additional Resources

SoftiWarp Performance with Chelsio 100GbE [Technical Brief](#)

About SoftiWarp

SoftiWarp is an open source software implementation of the iWARP protocol suite, developed by IBM Zurich Research. It comprises two main building blocks: a kernel module, which implements the iWARP protocols on top of TCP kernel sockets, and a user level library. SoftiWarp integrates with the industry standard Linux RDMA host stack and thus exports the Linux RDMA verbs API to both user space and kernel space applications. Due to close integration with the Linux kernel socket layer, SoftiWarp allows for efficient data transfer operations. Since the implementation conforms to the iWARP protocol specification, it is wire compatible with any peer network adapter (RNIC) implementing iWARP in hardware. SoftiWarp started as an open source project to aid in RDMA application development and testing. It recently reached a level of maturity and widespread usage, which made its inclusion into the Linux kernel desirable. IBM Research – Zurich donated the driver for inclusion with Linux kernel version 5.3 and provides further code maintenance.

About Chelsio Communications

Chelsio is a recognized leader in high performance (1Gb/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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