# Chelsio T5 Packet Rate Performance Report

T5 Line Rate Performance for the Highest RFC2544 Packet Rate for 2x10GE Adapter for Cyber Security and Data Analytics

10GE Line Rate RFC2544 Performance

In the time of increasing Ethernet networking speeds (1GE->40GE), customers need line rate network adapters for cyber security and data analytics that can handle packet line rate at minimum packet sizes. Network security and firewall appliances need line rate performance to achieve highest network appliance performance. Analyzers and traffic generators need line rate performance to capture all packets on the wire and completely fill the pipe.

Chelsio now delivers line rate performance at minimum packet size. In recent tests with Chelsio partners, the T520-LL-CR 10GbE dual port adapter was found to deliver line rate IP forwarding rate of 29.76Mpps (Million Packets per Second) using the minimum 64 byte Ethernet frame size. This is 14.88Mpps for RX and TX of each port, for a total of 59.52Mpps handled by the Chelsio adapter.
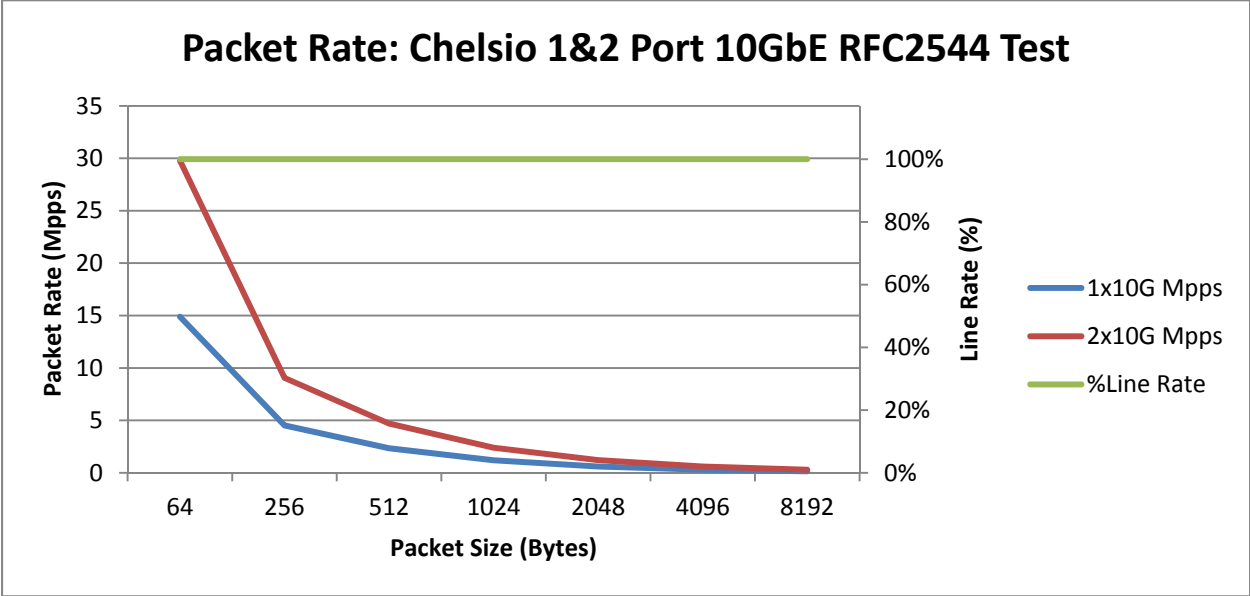
WireDirect WD-Sniffer and WD-Trace

Chelsio's *WD-Sniffer* and *WD-Trace* allow bi-directional (egress + ingress) direct on-the-wire packet tracing, packet capture and packet filtering at line rates up to 20Gbps by bypassing the host OS kernel and I/O stack and going directly to user space that packet capture applications like tcpdump, wireshark, ethereal, snort, and suricata can use. This includes hardware packet timestamp capabilities with an ultra-precise 1.5ns (nanosecond) resolution. Additionally, *WD-Trace* allows concurrent low-latency WD-UDP operation, i.e. when required, the trace traffic travels on a separate path through the NIC, and goes to a different DMA queue that's handled by a dedicated core (thereby not disrupting the regular ingress traffic).

Competitive Analysis: Chelsio, Solarflare, Intel, Napatech and Endace

Chelsio's T520-LL-CR is the lowest cost adapter that is able to achieve line packet rate performance for cyber security and data analytics market segment with hardware timestamping capabilities that leads the industry with 1.5ns resolution.

Metric	Chelsio	Solarflare	Intel X520	Napatech	Endace
Max 10G Packet Rate (Mpps)	14.88	11.43	4	14.88	14.88
Cost Range ($)	$1,500	$1,500	$500	$10,000	$10,000
Timestamp Resolution (ns)	1.5	200	8	4	7

Conclusion

Chelsio's T520-LL-CR network interface card achieves all the requirements to make it ideal for line packet rate performance for cyber security and data analytics. Chelsio adapters can achieve highest performance for bandwidth, latency and packet rate while enabling high performance features of WireDirect, TOE, iSCSI & FCoE offloading and iWARP RDMA concurrently. This performance and features make the Chelsio adapter ideal for network appliance, cyber security, data analytics, low latency, storage, clustering, cloud, data center and virtualization environments.

T520-LL-CR offers high performance in any deployment scenario using a unified wire solution.