Chelsio T5 High Frequency Trading Report

T5 WireDirect UDP & TCP (WD-UDP, WD-TOE) for the Lowest Latency 1GE/10GE/40GE Adapter for the Financial Services Industry

LOW LATENCY MARKET DATA MESSAGING

High Frequency Trading (HFT) has transformed the investment landscape, accounting for over two thirds of current trading volume. However, as traffic volumes and complexity grow, so do the consequences of inefficiencies in the network. When a microsecond can make the difference between success and failure for a trade, there is a risk to profitability by choosing slower network interface cards for the trading infrastructure.

Chelsio now delivers UDP socket connectivity with the shortest delay available in a network interface card. In recent tests, the T520-LL-CR 10GbE dual port adapter was found to deliver 1.6 µsec latency for unicast/multicast UDP and 1.9 µsec latency for TCP, beating the competition by as much as 600ns. Moreover, the Chelsio dual-port 10GbE adapter can handle full wire message rate with minimum size Ethernet frames, guaranteeing no update or trade is lost.
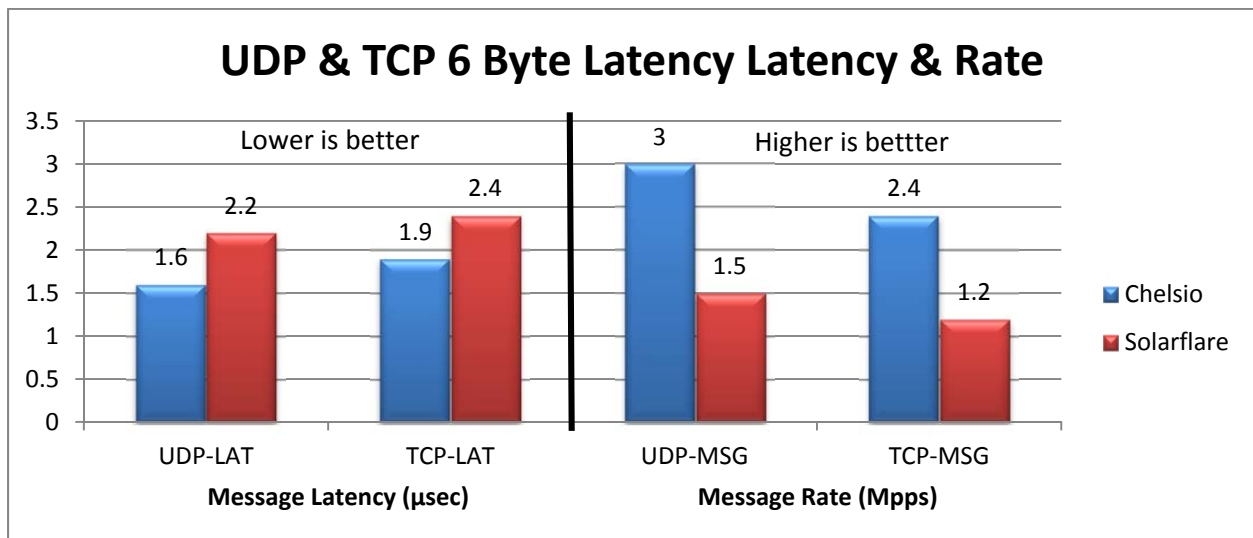

Figure 1 – T5 performance (preliminary, tuning continues)

Features and Capabilities Combined for the Best Overall Performance

Chelsio's T5 based adapters offer a variety of other feature in addition to low latency user-mode UDP & TCP API's described above. Some are:

1. user-mode queue-pairs to enable arbitrary user mode access directly to the wire
2. Ethernet iWARP RDMA – robust, high performance Infiniband replacement
3. iSCSI and FCoE Offloads – the only 40Gb unified storage solution
4. TCP Offload – accelerating stock TCP applications at 40Gb with minimum CPU
5. Precision Time Stamping capability (IEEE 1588)
6. Tracing, sniffing, packet capture
7. Classification, filtering, steering
8. Traffic Management (shaping, pacing, rate control)
9. vSwitch offload functionality for virtualized applications
10. T10-DIX data integrity offload
11. Complete suite of stateless offloads (LSO, LRO, etc.), as well as DCBX support

Rich Software Suite

T5 adapters are inboxed with Windows 2012 with iWARP-based SMB-Direct. Support for TOE, and iWARP are already inboxed with FreeBSD. All the silicon features are supported with Linux.

Conclusion

Chelsio's T520-LL-CR network interface card achieves all the requirements to make it ideal for low latency High Frequency Trading operations. At the same time, given the variety of other features, T5 adapaters make for an ideal adapter, enabling usage in a variety of applications/verticals. This will enable savings in terms of smaller number of vendor qualifications, economies of scale, unified and standard support. T520-LL-CR offers high performance in any deployment scenario using a unified wire solution**.**

NOTE: the results are preliminary and the T5's performance is expected to further improve in the coming weeks as the performance tuning continues