Chelsio

Chelsio T4 vs Intel iSCSI

Chelsio T4 Unified Wire Network Adapters

Using Chelsio's 10Gb Ethernet Unified Wire Network Adapters with the T4 ASIC, Chelsio delivers superior iSCSI SAN performance vs Intel's competing product. In iSCSI initiator SAN benchmark tests, the Chelsio T422-CR Unified Wire Adapter went head to head against the Intel X520-DA2 iSCSI SAN adapter. The results show a dramatic performance boost with Chelsio.
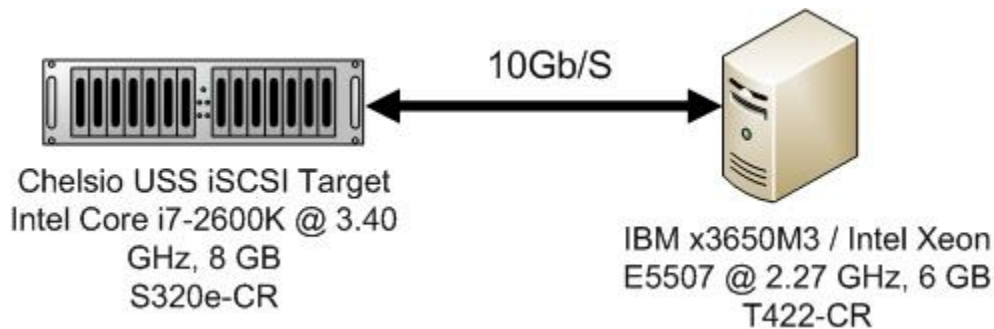
Performance highlights include:

- Chelsio's T4 Adapter has ~1.9X the performance of Intel X520-DA2 for Read IOPs with 4K IO size
- Chelsio's T4 Adapter has ~2.3X the performance of Intel X520-DA2 for Write IOPs with 4K IO size

Benchmark	Chelsio T4	Intel X520-DA2
4K Read IOPs	**91K**	48K
4K Write IOPs	**93K**	41K
4K Read Throughput (MB/s)	**356**	189
4KWrite Throughput (MB/s)	**366**	162

Setup & Data

The Topology

Chelsio USS iSCSI Target
Intel Core i7-2600K @ 3.40 GHz, 8 GB
S320e-CR

10Gb/S

IBM x3650M3 / Intel Xeon E5507 @ 2.27 GHz, 6 GB
T422-CR

Configuration

Target

Motherboard/CPU:	White box / Intel Core i7-2600K @ 3.40 GHz
Memory:	8 GB of RAM
10G Interface:	Chelsio S320e-CR (test uses only 1 port)
Target Software:	USS v2.0.0 build 122 running a 32 MB RAM disk

Chelsio Initiator

Motherboard/CPU:	IBM x3650M3 / Intel Xeon E5507 @ 2.27 GHz
Memory:	6 GB of RAM
OS:	RHEL 6.1
Initiator:	Open-iSCSI (RHEL 6.1 in-boxed) with Chelsio PDU offload enabled
Chelsio Card:	T422-CR (test uses only 1 port)
Chelsio Drivers:	cxgb4 and cxgb4i drivers from unified driver v1.1.0.10

Intel Initiator

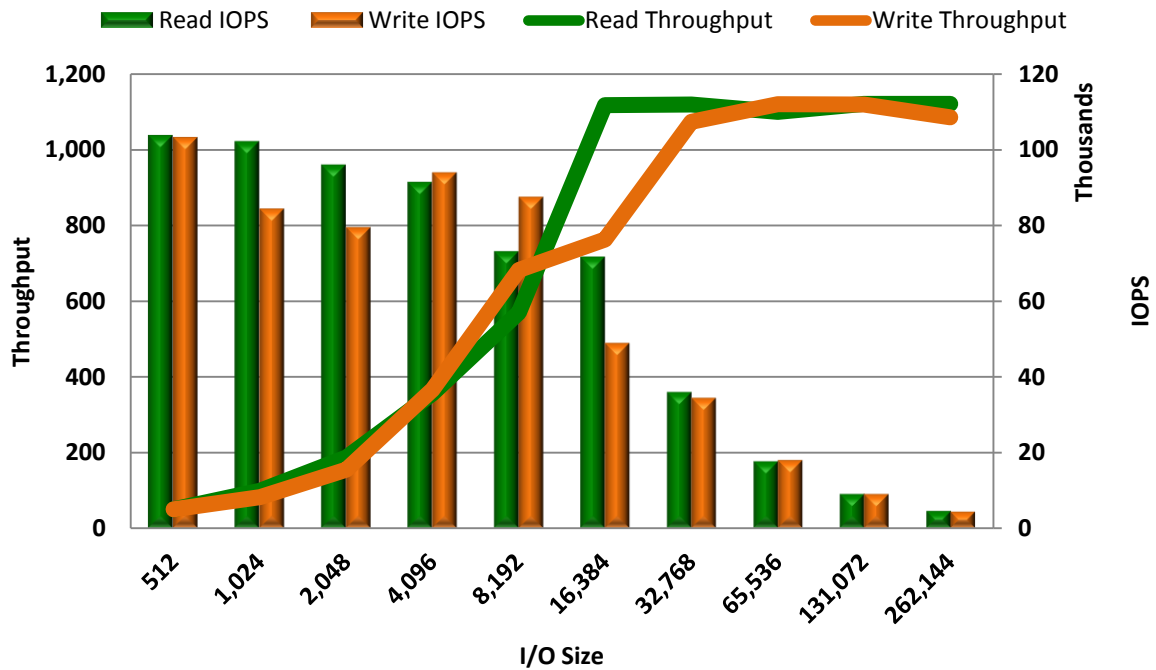|	
Motherboard/CPU:	IBM x3650M3 / Intel Xeon E5507 @ 2.27 GHz
Memory:	6 GB of RAM
OS:	RHEL 6.1
Initiator:	Open-iSCSI RHEL 6.1 In-box
Intel Card:	Intel X520-DA2
Intel Driver Version:	ixgbe.ko v3.0.12-k2

Benchmark Software

Software:	disktest version 1.1.12
Command line:	disktest -T 30 -K 8 -B XYZ -rw -f $RANDOM -I D -P A /dev/sdN
	where XYZ is the I/O size
	where rw: r is read; w is write
	where N is the device assigned to the iSCSI initiator

The I/O sizes used varied from 512 Bytes to 256 Kbytes with an I/O access pattern of sequential reads and sequential writes.
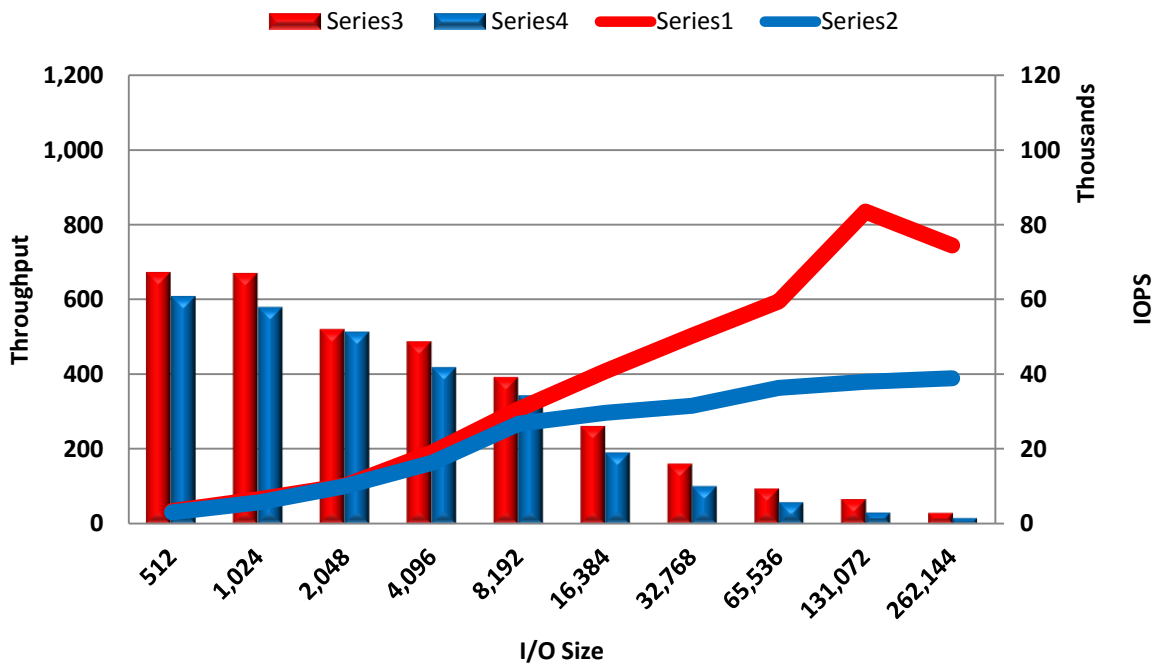

Performance

The graphs on the following page illustrate the benchmarking data obtained across various I/O sizes with both reads and writes.

iSCSI Initiator Performance – Chelsio T4

Legend: Read IOPS · Write IOPS · Read Throughput · Write Throughput

Y-axis (left): Throughput — 0, 200, 400, 600, 800, 1,000, 1,200
Y-axis (right): IOPS (Thousands) — 0, 20, 40, 60, 80, 100, 120
X-axis: I/O Size — 512, 1,024, 2,048, 4,096, 8,192, 16,384, 32,768, 65,536, 131,072, 262,144

iSCSI Initiator Performance – Intel X520-DA2

Legend: Series3 · Series4 · Series1 · Series2

Y-axis (left): Throughput — 0, 200, 400, 600, 800, 1,000, 1,200
Y-axis (right): IOPS (Thousands) — 0, 20, 40, 60, 80, 100, 120
X-axis: I/O Size — 512, 1,024, 2,048, 4,096, 8,192, 16,384, 32,768, 65,536, 131,072, 262,144

About Chelsio Communications

Chelsio is a leading technology company focused on providing high performance networking and storage solutions for virtualized enterprise data centers, cloud service installations, and cluster computing environments. Now shipping its fourth generation protocol acceleration technology, Chelsio is delivering hardware and software solutions including Unified Wire Ethernet network adapter cards, Unified Storage Server software, high performance storage gateways, unified management software, bypass cards, and other solutions focused on specialized

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