Chelsio

Chelsio T4 vs Emulex 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 Emulex's competing product. In iSCSI initiator SAN benchmark tests, the Chelsio T422-CR Unified Wire Adapter went head to head against the Emulex OCe11102-FX iSCSI SAN adapter. The results show a dramatic performance boost with Chelsio.
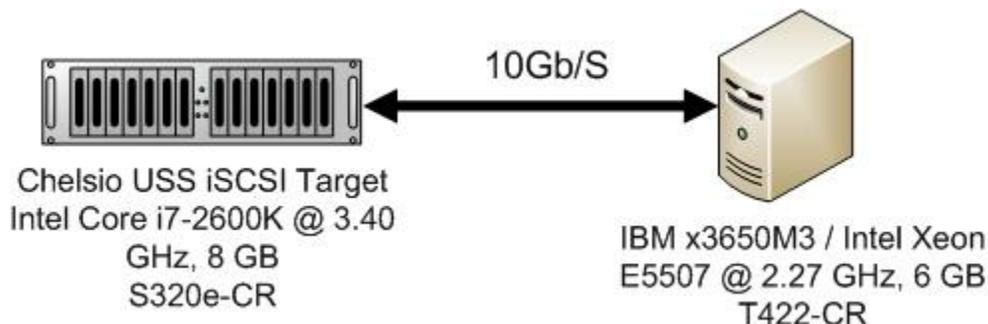
Performance highlights include:

- Chelsio's T4 Adapter has ~1.8X the performance of Emulex OCe11102-FX for Read IOPs with 4K IO size
- Chelsio's T4 Adapter has ~1.9X the performance of Emulex OCe11102-FX for Write IOPs with 4K IO size

Benchmark	Chelsio T4	Emulex OCe11102-FX
4K Read IOPs	**91K**	52K
4K Write IOPs	**93K**	49K
4K Read Throughput (MB/s)	**356**	205
4KWrite Throughput (MB/s)	**366**	193

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

Emulex Initiator
Motherboard/CPU:	IBM x3650M3 / Intel Xeon E5507 @ 2.27 GHz
Memory:	6 GB of RAM
OS:	RHEL 6.1
Initiator:	Emulex full offload
Emulex Card:	OCe11102-FX (test uses only 1 port)
Emulex Driver Version:	4.0.323.0
Emulex Firmware Version:	4.0.360.3
Emulex HW Version:	E3 A1

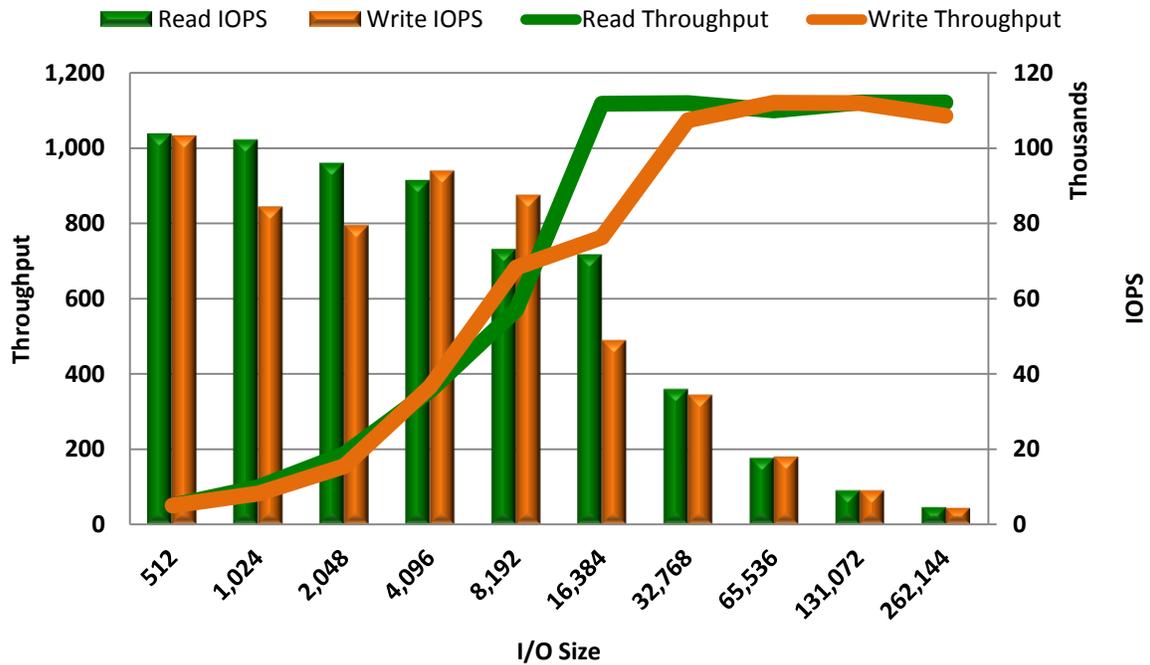### Benchmark Software
Software:	disktest version 1.1.12
Command line:	disktest -T 30 -K 8 -B XYZ -rw -f $RANDOM -I D -P A /dev/sdN
	where XYZ is the I/O size
	where rw: r is read; w is write
	where N is the device assigned to the iSCSI initiator

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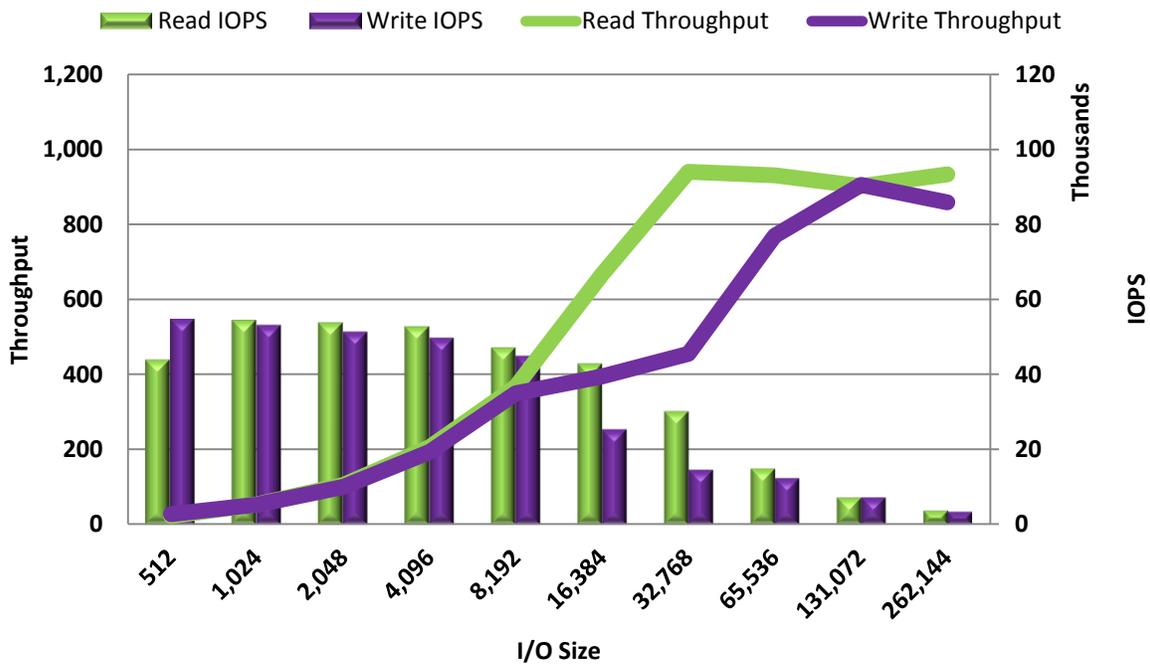

Performance

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

X-axis (I/O Size): 512, 1,024, 2,048, 4,096, 8,192, 16,384, 32,768, 65,536, 131,072, 262,144

Left Y-axis (Throughput): 0 – 1,200
Right Y-axis (IOPS, Thousands): 0 – 120

iSCSI Initiator Performance – Emulex OCe11102-FX

Legend: Read IOPS, Write IOPS, Read Throughput, Write Throughput

X-axis (I/O Size): 512, 1,024, 2,048, 4,096, 8,192, 16,384, 32,768, 65,536, 131,072, 262,144

Left Y-axis (Throughput): 0 – 1,200
Right Y-axis (IOPS, Thousands): 0 – 120

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