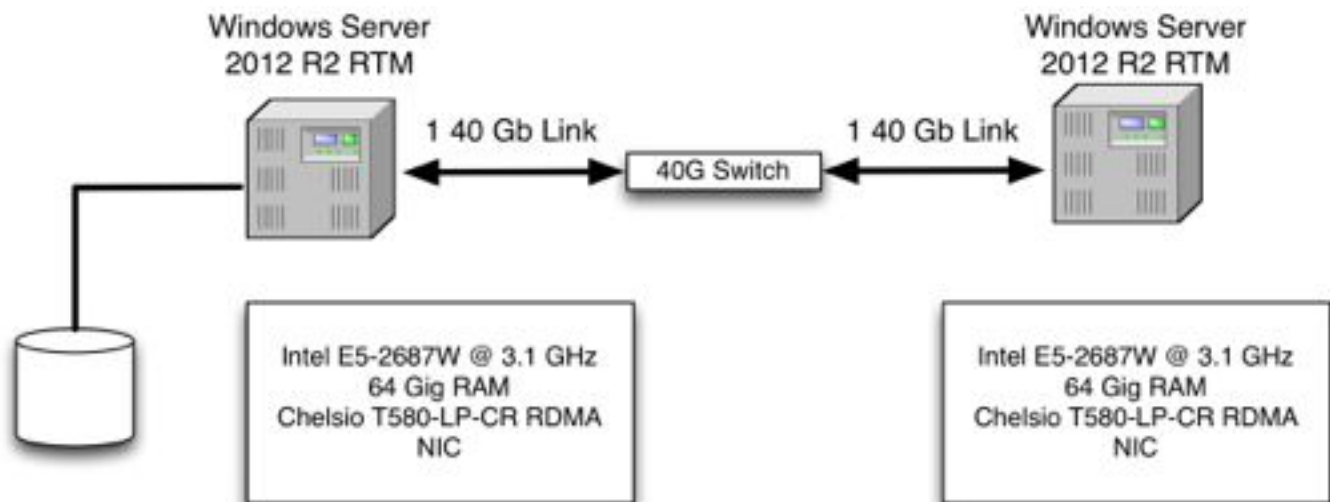## Chelsio

Delivering superior performance with SMBDirect over Ethernet using iWARP on Windows Server 2012 R2

Chelsio T5 40 Gb/sec Unified Wire Network Adapters

Using Chelsio T5 Unified Wire Network Adapters with industry leading RDMA over Ethernet (iWARP) Chelsio enables Microsoft Windows Server 2012 R2 to deliver superior performance over the range of I/O sizes rivaling that of competing technologies. Using a Chelsio T580-LP-CR 2 port 40 Gb Unified Wire Network adapter, Windows Server 2012 R2 can move data in excess of **4.9** Gigabytes per second with very little CPU intervention.
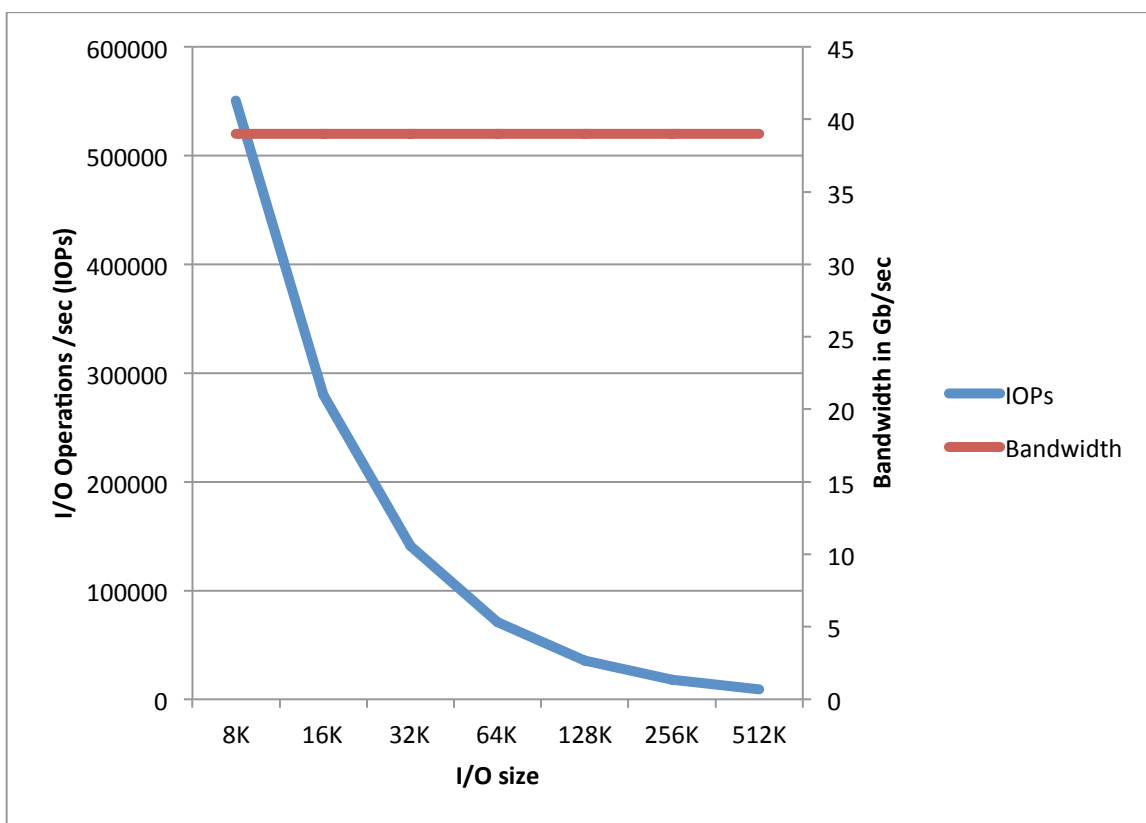
The Topology

Network configuration: Two Microsoft Windows Server 2012 R2 machines connected through a 40Gb switch using a pair of Chelsio T580-LP-CR Unified Wire Adapters.

Software configuration: Each server is running a copy of Microsoft Windows Server 2012 R2 RTM. The benchmarking tool in use is sqlio2 from Microsoft. This tool is available from go.microsoft.com. The Chelsio network driver used is a pre-release version from Chelsio.

I/O benchmarking configuration: Sqlio is used to determine the I/O capacity of a configuration. For this demonstration, we use 4 sample blocksizes, 8 Kbytes, 32 Kbytes, 128Kbytes, and 512 Kbytes. Buffering is set to none, and the I/O access pattern is random.

Server configuration: In order to demonstrate the full capacity of the Chelsio interface as well as the Windows operating environment, the target disk for this activity is a essentially a null disk where all data is discarded. Four RDMA connections are used.

Block Size	IOs per second	Transfer Rate Gb/sec	% CPU on server	Cycles per byte
8k	552148	39	70%	7.7
32k	141271	39	21%	2.3
128k	35481	39	9%	.99
512k	8866	39	7%	.77

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 applications.

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