

Intel Squeezes 1 Million IOPS Over A Single Gigabit Ethernet Link

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(PhysOrg.com) -- Intel and Microsoft, last week, discussed their iSCSI performance results in achieving 1 million IOPS on a two-socket desktop tower. According to Rick Coulson of Intel Corp, the secret behind this is having SSDs tightly coupled to a host in a highly tuned setup.

Since SSDs are about 100 times faster in terms of <u>latency</u> than hard drives, there are some performance bottlenecks that need to be overcome. The physical interface along with the protocols, software driver, and the chipset interface all need to be optimized for performance.





Microsoft and Intel passed a million IOPS with small blocks. Larger size blocks still delivered solid performance.

According to Coulson, by optimizing some parameters like, interrupts, driver software and the physical interface between the SSDs and the system we can expect to see gains in power and performance.

The test setup consisted of a quad-core 3.2 GHz Xeon 5580 server running Windows Server 2008 R2. It was connected with an Intel X520-2 10 gigabyte Ethernet Server Adapter using the 82599EB controller. A Cisco switch fanned this out to 10 servers running iSCSI target software.

A second configuration running Microsoft's Hyper-V server <u>virtualization</u> hypervisor was also benchmarked. Intel's VMDq and Microsoft's VMQ allowed guest operating systems to achieve these performance levels. Ten iSCSI targets were routed to ten guest instances over virtual network links.





Hyper-V performance matched the native number at higher block sizes.



A Xeon server fanned out through a Cisco Nexus switch to 10 iSCSI targets in the lab.

According to Rick Coulson, 1 million IOPS achieved in this test is equivalent to about 4 gigabytes per second of storage bandwidth. To put this in perspective, this is about 5,000 disk drives worth of random



performance. Coulson admits that this setup, in Intel's lab, had everything tweaked for performance but 1 million IOPS is a lot of desktop I/O.

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