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Network Appliance Extends Unified Storage with iSCSI

Analyst: Michael Fisch

Management Summary

Do you remember the old college stunt of seeing many people could cram into a phone booth? The record is supposedly 25 – who knows how they did it! While that fad has passed away, a more purposeful packing effort called storage consolidation is now flourishing. Enterprises are turning to it to keep their rising data requirements and costs under control. The storage company NetApp has its own approach to storage consolidation called *unified storage*, which it recently enhanced with iSCSI support. This new addition actually increases its ability to consolidate storage. Read on for details.

NetApp's Unified Storage

NetApp's unified storage is fundamentally about achieving *economies of scale* in storage.[1] Scale is good because it leads to lower per-unit costs, such as a large factory producing widgets less expensively than a small, specialized shop. In terms of storage consolidation, it means trading many, direct-attach storage "islands" for a few, larger, typically networked, storage platforms. This "scaled-up" storage is simpler to manage, achieves higher utilization, and leads to a lower total cost of ownership (TCO). Furthermore, **the more applications and users that can connect to a consolidated platform, the greater the benefit.** This is where NetApp's approach is unique.

Unified storage basically allows you to connect to it with your preferred connectivity methods; that is, you can natively attach to the same platform and take advantage of its integrated performance, availability, and management software. **It's an all-in-one approach.** For instance, the NetApp *FAS900* series supports:

- **Block access over Fibre Channel SANs**,
- **File access over IP networks (i.e., NAS)**, and now
- **Block access over IP networks with the iSCSI standard.**

iSCSI provides one more way to connect to and leverage the scale of the storage solution. Though all of the methods of access listed above overlap to a degree, there is in fact a separate and distinct role for each one. Many enterprises will deploy all of them to optimize their overall data access requirements.

[1] See *Unifies SAN and NAS – Simpler Is Better* in **The Clipper Group Navigator** dated October 21, 2002, at http://www.clipper.com/research/TCG2002041.pdf.

The Role of iSCSI

Too often new technologies are portrayed as more or less than they really are. iSCSI is no exception. Zealots have proclaimed it as the great harbinger of simpler, lower-cost SANs that will push Fibre Channel to the fringes. At the other extreme are nay-sayers that have mostly written off iSCSI after a slow initial pace of adoption. The truth lies in between. **While Fibre Channel is the de facto standard interconnect for data-center SANs and will be for the foreseeable future[2], iSCSI can provide a less-expensive method of connectivity suitable for many environments, such as:**

- **Departmental and workgroup applications,**
- **Distributed and remote applications,**
- **Blade servers, and**
- **Smaller Windows, Linux, and NetWare servers.**

iSCSI is attractive because it runs on IP (TCP/IP over Ethernet, more specifically). IP is ubiquitous. It is the de facto LAN standard, and servers already connect to IP networks. Technical administrative skills and tools for IP are common, helping to lower operating costs. It is also less expensive than the more specialized, high-performance FC networks, especially if 10/100 Ethernet connections are sufficient, helping to lower acquisition costs. **In short, IP can offer convenient and cost-effective SAN access.**

The tradeoff – and there are always tradeoffs – is less performance than with a full FC SAN. At 1 Gigabit/second, IP's wire speed is half that of FC, though both will eventually converge at 10 Gigabit/s. The iSCSI and TCP protocols also require more overhead processing that can affect latency and host server performance. Host bus adapters are now available that accelerate this processing via dedicated hardware – at an incremental cost – such as the Intel *PRO/1000 T IP Storage Adapter* that NetApp includes in its iSCSI host-attach kits.

Enterprises must look at their particular price/performance requirements and evaluate the alternatives for network storage connectivity. The value of iSCSI is simple and more affordable SAN connectivity with performance that is quite acceptable for certain servers and applications. From NetApp's perspective, whichever way an enterprise wants to go is fine, because its unified storage supports it.

Conclusion

NetApp now offers iSCSI support for its 800 series of NAS appliances and FAS900 series of unified storage platforms. It is free with the purchase of any other protocol. Large enterprises are likely to use iSCSI for connecting distributed and workgroup servers to centralized storage, while using NAS for file sharing and FC SANs for data-center applications. Small and mid-sized enterprises may elect to deploy a less-expensive, IP-only SAN that leverages iSCSI, while using NAS for file sharing. In all cases, the objective is better economics through storage consolidation, while meeting business requirements for performance and availability.

They say all roads lead to Rome. But NetApp has put a new twist on this ancient proverb. **Its motto now appears to be*: All paths lead to unified storage.***

[2] See *Fibre Channel – The Defending Champion Has Staying Power* in **The Clipper Group Explorer** dated December 14, 2001, at http://www.clipper.com/research/TCG2001012.pdf.

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- ***The Clipper Group can be reached at 781-235-0085 and found on the web at www.clipper.com.***

About the Author

Michael Fisch **is Director of Storage and Networking for The Clipper Group.** He brings over eight years of experience in the computer industry working in sales, market analysis and positioning, and engineering. Mr. Fisch worked at EMC Corporation as a marketing program manager focused on service providers and as a competitive market analyst. Before that, he worked in international channel development, manufacturing, and technical support at Extended Systems, Inc. Mr. Fisch earned an MBA from Babson College and a Bachelor's degree in electrical engineering from the University of Idaho.

- ***Reach Michael Fisch via e-mail at Mike.Fisch@clipper.com or at 781-235-0085 Ext. 25 (dial "1-25" when you hear the automated attendant).***

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