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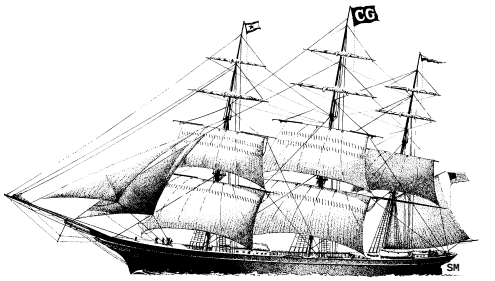

Navigating Information Technology Horizons℠

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NetApp Pushes the Envelope of Unified Storage

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On a Roll

You can't argue with results, and the storage vendor NetApp has been on a roll. Its recent sales growth has outpaced the market, with its most recent quarter increasing 28% year-over-year. This begs the question: **What is NetApp offering so that enterprises are giving it an increasing share of their business?**

NetApp calls it *unified storage*. This is not any single product because NetApp has many – both hardware and software. **Rather, it is a set of products for delivering simple solutions to store file and block data and to protect it from loss, corruption, and unavailability.** The simplicity arises from its ease of installation and management and commonality of design. NetApp offers a broad set of storage and data management features (e.g., *Snap*----) that run up and down its product line on a specialized operating system and file system (*DataONTAP* and *WAFL*). Enterprises want simplicity because it means they do not have to spend as much time and money on managing an otherwise complex infrastructure.

Unified describes NetApp's ability to do block and file storage in one place, independent of connectivity and protocol. A single NetApp storage system can provide file access over IP networks, block access over Fibre Channel and/or IP (the latter via iSCSI), plus advanced capabilities like clustering, data replication, disk-based backup and restore, and centralized management – all at the same time. This couples the economic benefits of SAN/NAS consolidation with better storage service qualities.

What's New

While more enterprises are turning a favorable eye to NetApp's all-in-one approach, it recently made several product and feature announcements that push the envelope of what its unified storage offering can deliver. There are also hints at what is to come.

FAS980 and FAS980c

If scale is a virtue, then NetApp's new high-end fabric-attached storage (FAS) system is good. The *FAS980* is the single controller version and the *FAS980c* contains two clustered controllers for high availability. The system tops out at 64 TB of capacity using Fibre Channel drives and 16 GB of cache. It is intended for more demanding, large-scale enterprise applications. And in case you associate an "appliance" with something about the size of a breadbox – a fully loaded FAS980c fills four cabinets that stand 7.5 feet high.

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gFiler

Think of the *gFiler* as a FAS storage system without disk drives. It is just the controller with the brains and connectivity – also known as a gateway. Therefore, it is free to connect to *other vendors' storage arrays* and provide file services (NAS) and iSCSI connectivity. It can also run NetApp software, including a new feature called *SnapMover* that non-disruptively migrates data among multiple gFilers for load balancing and performance optimization.

The original gFiler supported Hitachi *Lightning* and *Thunder* arrays and is sold exclusively by HDS. The new version supports IBM's *ESS*, also known as *Shark*, with support for additional storage arrays planned for the future. If you consider NetApp's new vision for a Storage Grid (more on this below) and the gFiler's ability to virtualize and layer storage services on top of existing/third-party storage arrays, you can start to see where NetApp is going. **Imagine a super-unified storage grid that spans multiple NetApp storage systems and third-party arrays via gFilers.**

NearStore R200

***NearStore* is a cargo ship of disk storage – low cost and large capacity.** It uses inexpensive ATA drives and delivers a price/performance tier in between high-end disk and tape. The new *NearStore R200* starts at 8 TB and scales to 96 TB in 8 TB increments behind a single controller. It supports 320 GB drives, and the price is less than a penny per MB. NearStore is useful for a variety of secondary storage applications that can improve data availability and/or reducing costs, such as disk-based backup and restore and online archiving.

SnapVault 2.0

In particular, backup to disk is gaining popularity because of its advantages over tape in speed and media reliability. The high bandwidth of storage arrays coupled with the ability to handle random, intermittent streams of data make them favorable for fast backups and restores. RAID stores data redundantly and recognizes disk failures immediately, but tape failures may not be recognized until they are needed for restore. However, tape is still the least expensive media, so many advocate a combination of disk and tape for backup. Initial backups are stored on disk for quick recovery, and tape is used for archiving and possibly remote storage.

SnapVault is a software tool for backing up NetApp storage systems and Unix and Windows servers to NearStore. It integrates with NetApp's SnapShot technology for frequent, automatic, incremental backups to disk. Users can restore files without administrator intervention. The solution is useful for backup consolidation, including the backup of remote sites, and remote vaulting for disaster protection. The latest SnapVault version 2.0 supports open file backup, incremental backup, tighter integration with Microsoft Windows, and expanded platform support for Windows 2003, Linux, AIX, IRIX, and Solaris 9.

RAID-DP

RAID is technique for protecting data from drive failures and errors by replicating it within a storage array. Most storage vendors use a standard scheme like RAID 1, 4, 5, and 10. Each has a particular level of protection, performance, and cost, and there are classic engineering tradeoffs between them. But **NetApp has developed and patented a unique double parity RAID, or *RAID-DP*, that protects against two drive failures in RAID group with negligible performance degradation.** That is, it delivers protection levels approaching RAID 1 with the cost effectiveness of parity RAID. This is a desirable capability in light of data exposures due to increasing drive capacities as well as the growing use of ATA drives, which are less robust than SCSI or Fibre Channel drives. Existing NetApp FAS and NearStore platforms can support RAID-DP with an upgrade to DataONTAP v6.5, and RAID 4 groups can be readily converted to RAID-DP.

Spinnaker Networks

NetApp is acquiring Spinnaker Networks, a startup that has developed and

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brought to market a sophisticated distributed file system. **Spinnaker's technology clusters multiple NAS controllers or gateways so they can effectively operate as a single virtual entity and namespace.** NetApp took pains to retain the company's engineering talent, suggesting that it will do more than add the Spinnaker NAS appliances to its product line. Rather, **expect NetApp to incorporate the distributed file system into its storage systems that are based on DataONTAP and WAFL.** This means they will be able to non-disruptively scale performance and capacity by adding systems in a modular fashion, while maintaining the management simplicity of a single cluster and namespace. This appears to be what NetApp is implying by its recent talk about delivering the Storage Grid.

Information Lifecycle Management

NetApp does not try to do everything. Its answer to storage resource management (SRM) was an open API for third-party software vendors to integrate and support NetApp storage systems. **While NetApp can manage its own products with FilerView and DataFabric Manager, its leaves some data and file management functions as well as heterogeneous storage management to the hands of others vendors.** This lets NetApp pursue its corporate philosophy of doing a few things well, while its customers can have their pick of best-of-breed SRM applications.

NetApp is taking a similar approach with information lifecycle management (ILM) – a concept so frequently discussed in the industry nowadays that it is tempting to call it a fad, though it is truly much more than that. The idea behind ILM is to take a cradle-to-the-grave view of information by moving data through different tiers of storage over time according to its business value and current price/performance requirements. It is a more precise, disciplined, and cost-effective way to store data, and it will be a major trend as technologies mature and enterprises adopt it in increasing quantities and degrees. **As for NetApp, its FAS and NearStore systems can deliver different storage tiers in support of ILM, and the WAFL file system provide contextual information about data that ILM applications can exploit.** Also known as *metadata*, this information is essential to properly classify, move, and manage the actual data. **NetApp will offer an API that third-party ILM application vendors leverage to support its systems.** Once again, this approach lets NetApp do what it does best while giving customers freedom of choice.

Conclusion

So what does NetApp do best? It excels at delivering a simple but capable storage infrastructure layer that includes block and file storage, data replication/movement and clustering software for high availability, and centralized management. This usually includes disks, but even those can come from another source with its gFiler. The enabling and unifying intelligence on top is NetApp's real sweet spot.

NetApp is not just for NAS appliances anymore. Its current unified storage offering is more than that, and the discussions around Storage Grid hint at yet more to follow. **So, if you are looking for a centralized solution for block and file storage (SAN and NAS) and data management, consider NetApp. It seems to be on a roll.**

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