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EMC Reinforces Celerra as Multi-Functional Platform for Storage Consolidation

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Management Summary

EMC recently announced a major new set of enhancements for its Celerra family of IP and unified storage. There are four new models: the *Celerra NS-120*, *NS-480*, *NS-960*, and *NS-G8*. New features include data deduplication, greater scalability and connectivity, flash drives, low-power SATA drives, file-level retention for compliance, a provisioning wizard, and enhanced integration with VMware virtual environments.

Celerra is a popular product line. Its revenues grew around 40% year-over-year in 2008, which was significantly faster than the overall enterprise storage market's single-digit growth. What is driving this adoption, and does this announcement enhance its value to enterprises? Celerra has an abundance of features, and it is difficult to point to a single one as the driver of customer adoption. If you take a step back and look at it overall, Celerra is an efficient storage platform for consolidating a wide variety of environments and applications:

- NAS (CIFS, NFS), SAN (Fibre Channel, iSCSI), and Celerra Multi-path File System (MPFS) for file and block storage
- IP and Fibre Channel network connections
- *Window*, *Unix*, and *Linux* operating environments
- *Exchange*, *Oracle*, *SQL Server*, and many other applications
- *VMware*, Microsoft *Hyper-V*, and *Xen* virtual environments
- Primary storage, backup to disk, archiving, and disaster recovery
- High-performance and low-cost storage tiers

As such, **Celerra's main value proposition is that enterprises can deploy one platform for consolidating storage, as opposed to multiple, different platforms, and keep their options open regarding future requirements, because Celerra is flexible enough to cover all or most of them.** They can benefit from storage consolidation – lower costs, easier management, high availability, and less energy and floor space consumption – without committing to a particular storage protocol, network, server, application, or even drive type. It also has a strong set of capabilities for high performance, availability, ease of management, efficiency, and data protection. This combination of multi-function versatility and strong feature set is driving Celerra's adoption.

Read on for details about the new Celerra announcement and how it contributes to its value proposition to enterprise customers.

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Celerra Unified Storage Family

EMC added four new models to its Celerra family. (See *Figure 1: New Celerra Unified Storage and Gateway Platforms*, at the top of the next page.) If you add them to the existing *NS4* entry-level platform and *NS40G* gateway, the Celerra family now spans:

- NAS and SAN storage
- IP and Fibre Channel connections
- From a relatively small 6-drive configuration to a massive system just short of a petabyte
- From 1-to-8 *X-Blade* server nodes with failover for high availability
- Integrated and gateway configurations, and
- Drive options that include Fibre Channel, SATA, low-power SATA ,and flash

In addition, the announcement included several new Celerra capabilities that touch on consolidation, storage efficiency, performance, data protection, manageability, and compliance.

Greater Scalability and Connectivity

The largest of the new Celerra models, the NS-960, now scales to 960 disk drives. This is double the previous generation, and equivalent to 760 TB usable with 1 TB drives in a RAID 5 configuration. For enterprises with lesser capacity and performance requirements, the Celerra NS-480 and NS-120 scale to 480 and 120 drives, respectively. All are integrated with Clariion CX4 storage platforms of a similar model designation, for instance, the Clariion CX4 960.

The new NS-G8 is an IP storage gateway that adds NAS and iSCSI functionality to up to four EMC *Symmetrix* or Clariion platforms. It scales to as much as 898 TB usable.

Network connectivity is similarly scalable. The NS-960 can expand to 8 X-Blades[1] and 32 ports of 10GigE. It also supports up to 12 Fibre Channel ports.

As you can see, the new Celerra systems can meet substantial requirements capacity, bandwidth, and throughput.

File System Deduplication

Deduplication is a hot feature today because it enables more efficient data storage by shrinking it down to a smaller footprint. Most enterprise data is inherently redundant, whether due to redundant files themselves or repetitive segments within or among files. Eliminating duplication and compressing the data allows enterprises to purchase less storage capacity. Less capacity means less storage to manage, less of power and floor space consumption, less carbon emissions. It is all good.

EMC Celerra employs deduplication and compression to achieve around 30 to 40% reduction in capacity for typical unstructured file data. Its deduplication technique checks for redundant files and eliminates all but the original, while referring the others to it. Compression scans and eliminates redundant segments within a file.

Celerra applies deduplication on only inactive files, so it does not create performance issues for active data. Inactivity is based on last-modified or last-accessed date and is user definable. Deduplication occurs on a scheduled basis (i.e., asynchronous or post-processing). It applies to file systems, not across file systems and not to iSCSI LUNs. It can be used in conjunction with other Celerra software features, like *SnapSure, Replicator, NDMP Backup, File Mover, and the new File-Level Retention compliance edition.*

Celerra's deduplication approach is intended to balance performance and capacity savings, thus achieving a sizable reduction without undue consumption of processor and memory resources. There are other deduplication techniques available, like fixed and variable block deduplication, but EMC concluded their performance impact in this case was not worth the incremental savings.

Low-Power SATA Drives

Continuing with the theme of storage efficiency, Celerra added support for lower-power SATA drives that consume 32% less power than traditional SATA drives. These are appropriate for tier-two applications, like backup to disk, archiving, or file shares that are not performance sensitive. The benefit is savings on power and cooling over time as well as noise reduction in whirring data centers.

Flash Drives

Celerra's support for flash drives enables a blazing fast "tier zero" of IP storage. Flash drives are nearly 10 times faster than Fibre Channel disk drives and 98 more energy efficient on a per-IOPS basis because they employ solid state memory instead of spinning disks. It might make sense to use flash drives for all data if they were not so costly at present, though that could change some day. In the meantime, flash drives are most

[1] An X-Blade controls data movement between the network and the disk array. Adding X-Blades increases bandwidth and throughput to the storage system.

Figure 1: New Celerra Unified Storage and Gateway Platforms

	NS-120 (Unified)	NS-480 (Unified)	NS-960 (Unified)	NS-960 (Gateway)
Storage subsystem	Clariion CX4	Clariion CX4	Clariion CX4	Symmetrix or Clariion
Number of blades	1 or 2	2 or 4	2 to 8	2 to 8
IP connections	4 IP ports per blade	4 IP ports per blade	6 UltraFlex I/O slots per blade*	6 UltraFlex I/O slots per blade*
Fibre Channel connections	8 FC ports (for hosts)	8 FC ports (for hosts)	Up to 12 FC ports (for hosts)	Up to 4 storage arrays
Number of drives	6 to 120	6 to 480	6 to 960	
Drive types	FC, SATA, low-power SATA, Flash/SSD	FC, SATA, low-power SATA, Flash/SSD	FC, SATA, low-power SATA, Flash/SSD	FC, SATA, low-power SATA, Flash/SSD
Max raw capacity	120 TB	480 TB	960 TB	
Max capacity per blade per system	32 TB / 64 TB	64 TB / 192 TB	128 TB / 760 TB	128 TB / 896 TB

* Each slot can have either four 10/100/1000 Ethernet ports, two GigE optical and two 10/100/1000 Ethernet ports, or one 10GigE port

Source: EMC

appropriate for performance-sensitive data whose associated applications could deliver significantly more value to a business if they could do processing more quickly. Transaction processing in the financial services industry is an example.

File-Level Retention for Compliance

Celerra enhanced its file-level retention or WORM (write-once, read-many) feature to comply with the more stringent SEC 17a-4(f) requirement. This feature applies write protection to specific files so they cannot be modified or deleted for the duration of the retention period, as set by the administrator. Since this is software-based WORM, Celerra takes measures to ensure the integrity of locked files:

- The system clock is not spoofable,
- File systems containing locked files cannot be deleted, and
- Writes are validated to ensure data integrity.

File-level retention allows Celerra to store archived data in a way that meets stringent regulatory and litigation-hold requirements. Therefore, an enterprise utilizing unified storage would not need to buy separate storage platform specifically for that purpose.

Celerra Provisioning Wizard

EMC extended support for the *Celerra Provisioning Wizard* to the NS-120 and NS-480. This simplified, automated provisioning tool was originally developed for the entry-level NX4. It walks an administrator through the configuration process for both the front-end NAS/iSCSI server and back-end storage. There is also a Celerra configuration wizard for MPFS, EMC's facility for high-performance file sharing directly over a SAN.

Celerra Integration with VMware

EMC enhanced the integration between Celerra and VMware, the popular server virtualization solution. It now integrates with the *VMware View* virtual desktop, so enterprises can consolidate user desktop and application data on the Celerra platform. It also allows administrators to leverage Celerra SnapSure to quickly provision new virtual desktops. Furthermore, Celerra has a plug-in for automated failback using VMware Site Recovery Manager (SRM). In the event of a failover to a secondary disaster recovery system, Celerra simplifies and automates the process for bringing the primary virtual infrastructure back online.

Conclusion

This announcement represents a major enhancement to the Celerra product family. The new features all reinforce Celerra's story as a broad and multi-functional platform for storage consolidation over a network – any network. If you have an application requirement or possible requirement for IP storage (NAS, SAN, or MPFS), put Celerra on your shortlist for consideration.

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