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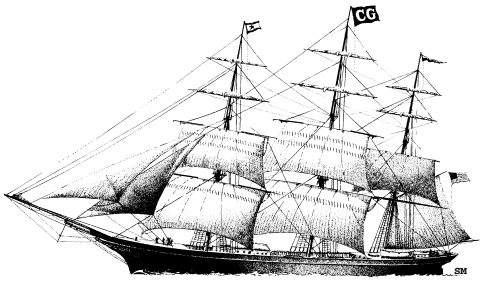

Navigating Information Technology Horizons℠

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EMC *Celerra* Plus *Centera* Equals File Server Consolidation and Archiving

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Management Summary

File server *consolidation* and *archiving* are like salt and pepper – they are complementary technologies that work together to benefit an enterprise. Consolidation provides simplified file storage with higher availability and lower total cost of ownership. Archiving offloads data from primary storage, which speeds up the file system and data protection processes like backup, restore, and replication. It also facilitates long-term data retention and reduces overall hardware costs. **Enterprises increasingly want to deploy both capabilities to deal effectively with common information management challenges:**

- **Continuous data growth** – Enterprises must work to keep up with fast and continuous data growth.
- **Limited storage budgets** – Enterprises have limited resources to buy and manage additional storage capacity.
- **Expanding backup windows** – More data takes longer to back up and restore, which negatively affects availability and recovery time.
- **Regulatory compliance** – Enterprises must comply with regulations like Sarbanes-Oxley and HIPAA that require long-term data retention and accessibility.

In response to this need, EMC has developed a unique set of technologies for file consolidation and archiving:

- ***Celerra* (NAS) platform** as a primary tier of consolidated storage,
- ***Centera* (CAS) platform** as a consolidated, online archive with special capabilities like guaranteed data authenticity, single-instance storage, and self-management, and
- **Celerra *FileMover* and Centera *File Archiver* software** for automatic, policy-based file migration without disrupting user access, even after a file has been archived.

EMC delivers this technology set in two ways. For mid-sized environments, it offers an integrated package consisting of a Celerra *NS500*, a 4-node Centera, and the data movement software – all configurable and all in one rack. For large-scale and more complex environments, configurations of larger Celerra and Centera models are available. Read on for the details.

IN THIS ISSUE

Consolidation and Archiving

File server consolidation is the main reason for deploying enterprise network-attached storage (NAS) solutions, like the EMC *Celerra NS* and *NSX* family of systems. These platforms solve problems inherent with many smaller, distributed file servers, or NAS appliances. Such fragmented environments are usually the unintentional result of scaling storage over time as data requirements grow. Unfortunately, it becomes cumbersome to manage activities like backup and restore, updating client share mappings, and workload balancing across file servers. Capacity utilization is generally low because it is dedicated per server and cannot be shared among file servers. Availability also suffers.

NAS consolidation addresses these problems by providing one or few highly available system(s) for file serving. Management is easier and more consistent because it is concentrated on far fewer platforms. Utilization is higher for the same reason – even more so if the NAS systems involved are gateways that share storage on a SAN with other application servers (i.e., SAN/NAS consolidation). In other words, **consolidation makes the file storage environment more efficient and cost-effective**.

Archiving raises efficiency even more by offloading primary storage and providing a means for long-term data retention. When files become inactive and no longer require fast access, moving them to a more cost-effective storage tier will lower overall storage costs without affecting business productivity, because users maintain transparent access to the data after it has been archived (through pointers or "stubs"). Reducing the amount of data in primary storage also increases its performance for data access, backup, restore, and replication. Backup windows shrink and recovery is faster. Finally, a well-managed data retention policy is a good practice and even a necessary aspect of corporate governance and regulatory compliance. So, archiving has many benefits.

Policy-based data movement and deep storage management capabilities are key enabling technologies for archiving, as they automate the many tasks associated with storage and data management in a multi-tiered environment. In contrast, manual efforts to archive files would be too time-consuming and imprecise to be practical on a wide scale. Another important technology component is ATA drives, which have become essential for building a secondary, *online* storage tier. They provide higher capacity at significantly lower costs than high-performance Fibre Channel or SCSI drives.

Both consolidation and archiving improve the economics and service levels of file storage. Employing both is a smart way to meet rising requirements for information management.

EMC Celerra at a Glance

EMC's Celerra line includes the NS Series (Integrated and Gateway) and NSX. The NS Series/Integrated is a mid-range NAS device with up to four *Data Movers* and scales to 96 TB raw. The Data Movers are specialized file servers, two of which are needed for a high-availability failover configuration. The integrated version comes packaged with *CLARiiON CX* storage, while the NS Series/Gateway connects to either CLARiiON CX or *Symmetrix DMX* via a SAN.

The NSX is a high-end NAS gateway that connects to both Symmetrix DMX and CLARiiON CX arrays. It has four to eight X-Blade 60 Data Movers and scales to a much larger 224 TB.

All Celerra products support software features for point-in-time copy, data movement, and anti-virus protection. Celerra FileMover enables a separate data movement and policy engine, such as Centera File Archiver, to transparently archive files from a Celerra NAS platform.

Celerra Plus Centera

EMC offers a set of complementary and closely-linked product technologies for file server consolidation and archiving. They subdivide into the following components:

- **Primary storage tier** – This is the primary file repository and top tier of storage in terms of performance and availability. In this case, we are talking about the Celerra NAS platform, which is connected to either EMC *Symmetrix DMX* high-end or *CLARiiON CX* midrange disk arrays.
- **Secondary storage tier** – This is where data is archived. The secondary tier has a lower cost and performance profile than the primary, since it stores infrequently accessed data. Here, EMC offers the *Centera* content-addressed storage (CAS) platform for online archiving[1]. Centera has a number of special characteristics that are useful for archive management.
  - **Scales beyond the limitations of traditional file systems** by storing data as objects, with associated meta-data.
  - **Computes a unique digital identifier** for each data object, guaranteeing its authenticity.
  - **Employs single-instance storage**, which eliminates redundant files and lowers capacity requirements.
  - **Executes retention and disposition policies based on content and meta-data**, not just file attributes. It has a variety of governance and compliance features, with WORM (write-once, read-many) functionality.
  - **Automatically mirrors data**, reducing the need for backups.
  - **Self-heals from node and disk failures and self-configures when capacity is added**, further lowering operational costs.
  - **Employs SATA drives** for lower costs.
- **Policy and data movement engine** – This is the intelligent software that classifies and migrates files based on policy. In this case, it is the result of a close working relationship between Celerra *FileMover* and Centera *File Archiver*. FileMover allows an independent application to transparently archive files from a Celerra. File Archiver integrates with FileMover and performs automatic, policy-based file migration to the Centera. These two – together – form a complete policy and data movement engine.

EMC can deploy this set of technologies set in two ways, depending on customer requirements. For mid-scale environments, it offers an all-in-one, integrated solution that includes a Celerra NS500 with CLARiiON storage, a 4-node, rack-mountable Centera, and the FileMover and File Archiver software. Its scale, pricing, and ease of deployment are suitable for mid-sized enterprises and branch offices of large enterprises.

For larger-scale and more sophisticated environments, a customized configuration can be designed and deployed. For instance, it might include more and larger Celerra and Centera models or integration with a SAN.

Conclusion

In either case, EMC Celerra plus Centera equals a full solution for enterprises that want to address today's file storage challenges through consolidation and archiving. They are solid platforms in their own right – Celerra NAS for file server consolidation and Centera CAS for online archiving. However, the synergy and greater value comes from the close integration between the Celerra FileMover and Centera File Archiver software. This enables transparent, automated, policy-based archiving in a consolidated environment. **It also achieves greater service levels and cost-effectiveness in file storage – or as EMC puts it - getting the maximum value from your information at the lowest total cost, at every point in the information lifecycle.**[2]

[1] As opposed to offline or nearline storage, which has a significantly longer retrieval time and may require manual intervention by an IT administrator.

[2] See *The Top 10 Things You Should Know About Information Lifecycle Management* in **The Clipper Group Explorer** dated May 11, 2004, at http://www.clipper.com/research/TCG2004021R.pdf.

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