EMC Reinforces Mid-Tier Positioning and Extends CLARiiON Capabilities for ILM

Analyst: David Reine

Management Summary

In at least one area, the automotive industry has it right. *Choices.* Provide your prospects with the right car, at the right price, and with the right performance and they will become customers. However, the needs of the individual change over time. The newly-minted college graduate may not have the resources for that high-performance sports car, so he settles for the less stylish coupe with high mileage and low-cost. After working for a few years, our car buyer can now go after that two-seat convertible that goes from 0 to 60 in nothing flat. Cost is not as relative, mileage not a concern. Style is key. A few years later, married, with children, capacity is more important than style, economy and cost are critical elements. Later in life, the empty nester, no longer needing the capacity of the family van, not interested in the high-performance offered by a sports car that he can no longer get into, is simply looking for comfortable transportation. Cost is no longer an issue. The car buyer continues to evolve; we seek the car that fits our needs of the moment.

The Information Technology (IT) industry is now offering such choices in the storage arena. IT providers recognize that the information that the enterprise amasses may have a different value to the enterprise over time and, therefore, require different storage platforms. The information may carry one value upon initial input, but, 30 days later, that value may change. The frequency of access may change. The time required to retrieve it may become less urgent.   The volume of this secondary tier information may rise in response to government and industry regulations.   The enterprise may need to consolidate multiple devices into a single platform. The need for scalable disk arrays, capable of satisfying these diverse requirements, has never been greater.

In the past, EMC has responded to these needs by improving its mid-tier CLARiiON line of storage arrays.   In 2004, they continue to upgrade this family to meet its customer mid-tier storage need and their Information Lifecycle Management platform requirements.   To learn more about the *CLARiiON CX300*, *CX500,* and *CX700*, please read on.

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EMC Product Offering

Information Lifecycle Management (ILM) is the driving force for the introduction of new storage platforms and the management protocols required to migrate data between platforms today. **With** *CLARiiON***, EMC has as product family that does not have to be revised. All that it requires is a refresh**.

Originally introduced over a decade ago by Data General, the CLARiiON family has evolved through six generations into a mid-tier storage product capable of scaling from 180 GB to 58TB. We can refer to a storage array that supports 58TB as mid-tier because the CLARiiON family sits alongside the high-performance *Symmetrix* family of *DMX* storage arrays with a capacity of 84TB for the top of the line *DMX3000*. The last major announcement for CLARiiON occurred in late 2002 with the introduction of the *CX* series, although ATA drives were added to the CX series in 2003.

Bills such as The Health Insurance Portability and Accountability Act (HIPAA) and the Sarbanes-Oxley Act have changed storage requirements. They have imposed very long periods for the retention of electronic data. This has placed a huge strain on the capacity of high-performance storage engines and the respective budgets. For enterprises that use the CX family as their primary storage medium, the platform scales in terms of capacity, performance, and functionality, with both Fibre Channel and ATA drives available. This provides multiple cost alternatives. (See Exhibit 1.)

In a further attempt to help consolidate

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storage, EMC is introducing the *CX300, CX500, and CX700* to extend the ability to assign multiple service levels within a single platform and enable the automatic assignment of policy-based rules to manage data throughout its lifecycle. In other words, **to put the right data on the right platform at the right time.**

CLARiiON Family Refresh

The three new models of the CX family have been designed to satisfy the specific needs of the various IT environments, i.e., workgroup (CX300), department (CX500), and datacenter (CX700). Further, EMC has ensured the protection of the investment made in the original CX family by providing an upgrade path for the 200, 400, and 600 to the new series. The new models are extending the breadth of the CX family to include all six models and provide the enterprise with more processing power, more functionality, and greater consolidation capability. One unique capability of the CX family is to mix both Fibre Channel and ATA drives within the same array. This improves the capability of the array to support multiple tiers of storage within a single consolidated array, lowering the total cost of ownership. As a complement to the DMX family, the *CX200, 400, and 600* provide EMC's DMX customers a lower cost alternative to the storage dilemma created by the recent passage of new government laws. All of the models support the same high level of resiliency that has been characteristic of EMC across their entire product set (See Exhibit 2, on the next page.). In addition, the CX family supports advanced information replication for both local and remote architectures, and an enriched storage management with *Navisphere* available to manage, discover, monitor and configure CLARiiON platforms from a Web browser.

CLARiiON *CX300*

The CX300 provides significant extensions to the capabilities of the CX200. With twice as many host Fibre Channel ports (4) the CX300 can support 64 high-availability hosts and 512 LUNs as compared to 15 and 256 with the CX200. Combined with a

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Exhibit 1. The Economics of ATA

- Enables Backup to Disk for Enhanced Restore Capability
- Provides Low-Cost Data Replication via *SnapView* and *MirrorView*
- Enables Faster Processing at Lower Cost for Applications with very large data sets

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Exhibit 2 – High Availability Features

- No Single Point of Failure
- Active-Active Architecture for Load Balancing and Failover
- Multi-path Data Access
- Mirrored Cache
- Battery Backup
- Automated System Diagnostics
- Non-disruptive Upgrades for Hardware, Operating Environment, or Storage Application
- Global Hot-Spare Technology
- Data-in-Place Upgrades

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doubling of disk capacity from 30 drives to 60, the CX300 is better positioned to perform as a consolidation platform. Moreover, the CX300 has the performance enhancements that the data center would demand for the improved capacity: 360MB/s for disk reads (from 200 MB/s) and 680 MB/s for cached reads (from 200 MB/s).

With enhanced speeds and feeds, EMC has been able to extend support to UNIX servers, exempted from the CX200. With support for UNIX, Windows, Linux and NetWare, the CX300 can finally support all of the database and distributed application services required by the workgroup. The new model will also support CLARiiON's SnapView pointer-based replication.

CLARiiON *CX500*

Designed to support the multi-tier storage requirements of the department, the CX500 has also undergone a significant face-lift from the CX400, which preceded it. With the need for more processing power at the storage array level, EMC upgraded and doubled the number of CPUs in the array and doubled the amount of cache. EMC replaced two 800MHz P3 processors with four 1.6GHz P4 processors and increased the cache from 2GB to 4GB. This has had the effect of doubling the number of cached

reads from 60K IOPS on the CX400 to 120K IOPS. It has also increased the performance of disk reads from 460 MB/s (CX400) to 675MB/s, a gain of 47%.

In order to enable ILM at the department level, EMC has increased the maximum number of disk drives in the CX500. That number has grown to 120 from its current level of 60 in the CX400. With this expanded capacity, they have also extended the host connectibility from 64 high-availability connections to 128 and doubled the number of LUNs from 512 to 1024.

All of these enhancements have improved the capabilities of the CX500 for:

- Financial workloads in transactional applications,
- Video streaming in high bandwidth applications, as well as
- Creating an ideal platform for standard departmental applications such as database and email.

CLARiiON *CX700*

EMC extended the capabilities of the CX600. They replaced the four 2GHz P4 processors with four 3GHz CPUs and made 8GB of cache standard instead of 4GB. These enhancements enabled 33% improvement in cache read IOPS from 150K to 200K in the CX700. These modifications also provided an 80% gain in disk read performance, from 720MB/s (CX600) to 1300MB/s (CX700). EMC doubled the capability to attach high-availability hosts from 128 to 256 and doubled the maximum number of LUNs allowed, from 1024 to 2048. They did leave the maximum number of disks at the CX600 level of 240, although this is more than the number allowed on a DMX1000 in the Symmetrix family.

The CX700 is ideally positioned for bandwidth hungry applications such as Data Warehousing and Transaction Processing Applications such as OLTP. It is also ideal for use as a consolidation platform for the enterprise, with its outstanding connectivity and throughput.

CX Series Software

EMC offers a common operating environment for all CLARiiON arrays via their Flare environment, enabling the CX family of arrays to provide support for all three interconnect technologies – SAN, NAS, and DAS.

EMC also offers a complete suite of storage management applications on the CX family. This set of software includes:

- *The Navisphere Management Suite* – to simplify and automate the management of the CLARiiON storage infrastructure. This suite is offered in three packages for workgroup, department, and enterprise;

- *VisualSRM* and *VisualSAN* – to provide point-and-click management of hetero-geneous storage systems and networks including centralized storage resource management for mid-tier storage environments;

- *PowerPath* – to provide multi-path access between storage and servers for load balancing and failover;

- *SnapView* – to create up to eight Business Continuance Volumes to accelerate backup and recovery through a disk-based immediate restore of production data;

- *MirrorView* – to provide highly available data storage by performing remote data mirroring between CLARiiON arrays, local or remote; and

- *SAN Copy* – to enable high-speed data copying between multi-vendor storage systems without server intervention or using LAN bandwidth.

Conclusion

EMC has continued to upgrade the CLARiiON product set to improve performance connectibility, and capacity, but most importantly, they have optimized the CX Series for multiple service levels in order to deliver ILM-enabled platforms. EMC continues to protect the investment that their customers have made in previous generations of CLARiiON.

Any enterprise that is serious about implementing mid-tier storage for its wider range of capabilities, needs to look at the CLARiiON product set, whether this platform represents its primary or secondary storage platform.

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About the Author

David Reine is Director, Enterprise Systems for The Clipper Group. Mr. Reine specializes in enterprise servers, storage, and software, strategic business solutions, and trends in open systems architectures. He joined The Clipper Group after three decades in server and storage product marketing and program management for Groupe Bull, Zenith Data Systems, and Honeywell Information Systems. Mr. Reine earned a Bachelor of Arts degree from Tufts University, and an MBA from Northeastern University.

➢ *Reach David Reine via e-mail at dave.reine@clipper.com or at 781-235-0085 Ext. 23. (Please dial "1-23" when you hear the automated attendant.)*

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