

EMC's Broadened Storage Line Offers The Power to Choose

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Management Summary

Storage administrators have always known that while they would like to provide “nothing but the best” for all their clients’ storage requirements (i.e., 7x24x365 instant availability, all data remains online forever, etc.), it would be cost-prohibitive. “You can’t always get what you want...” goes the old Rolling Stones tune. **Something more modest, though still effective, will fill the need.** In today’s environment, differentiating needs from desires is crucial.

The goods news is that not all applications require the same storage service level. The fastest storage access speeds and highest availability may be necessary in one instance, but less may be sufficient in another. Based on the needs of the business, it is possible to make intelligent distinctions between these requirements and apply the right kind of storage and service level. **These tiered storage classes allow enterprise storage managers to meet overall business requirements while optimizing storage acquisition costs – not only today, but every time storage is purchased in the future. It is a gift that keeps on giving.**

A broad storage line facilitates this more precise method of provisioning. In the last year, EMC has completely refreshed and expanded its *Symmetrix* high-end and *CLARiiON* mid-tier storage families. Most recently, with the announced availability of low-cost ATA drives for the *CLARiiON CX600* and *CX400*, EMC now provides yet another degree of storage granularity for enterprises to leverage. EMC also provides *Centera* to store and secure long-term fixed content. **Together, they form a line of storage platforms and software that give enterprises many choices.** And it is now both real and practical to tier storage within a consistent storage management environment using EMC’s range of hardware, software and connectivity.

Choice is power. It always has been. In this case, **the broad coverage of EMC’s storage line, when coupled with the overarching management capabilities of its *AutoIS* initiative, create a powerful new lever for extracting cost efficiency from a storage infrastructure – today.** Read on for a closer look at how EMC’s storage product line breadth translates into more strategic and tactical power for the enterprise.

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EMC's High-End to Mid-Tier Storage Platforms

EMC now offers a notably broad line of storage platforms. It recently announced the high-end *Symmetrix DMX* series with a new *Direct Matrix* architecture that delivers a big leap forward in performance.¹ The *DMX1000* and *DMX2000* models are large, integrated arrays in one- and two-bay configurations, respectively. EMC also introduced its first modular Symmetrix, the *DMX800*. **EMC has moved the Symmetrix both up and down, broadening its tiering potential.**

EMC did the same at the end of 2002 with its *CLARiiON* mid-tier storage family. It introduced the *CX600* that arguably touches the high end with fast performance, up to 35 TB of raw capacity based on Fibre Channel (FC) drives, and a solid suite of software. EMC also brought out an entry-level offering, the *CX200*, which offers a smaller percentage of the performance and capacity of its elder sibling at a fraction of the cost. And in the middle of the mid-tier, so to speak, lies the *CX400*. **Each model touches a different point on the spectrum of performance, availability, consolidation, and cost.** Another nice feature is the ability to upgrade (data in-place) between CLARiiON models by changing the storage processor boards, thereby preserving disk investment.

Recently EMC announced the availability of 5,400 rpm, 250GB ATA drives for the CLARiiON CX600 and CX400 arrays.² These will allow the CX600 to reach 58.2 TB of raw capacity. For the CLARiiON CX600 and CX400, ATA is just another drive. The array can have both FC and ATA drives, all accessible from the SAN. **This is Fibre Channel access to ATA drives, with**

all of the benefits of SAN management software and all of the options for data protection that are available on the traditional all-Fibre-Channel CLARiiON arrays, such as RAID and remote mirroring. The only physical differences between FC-based storage and ATA-based storage are performance, likelihood of failure, time to recover, and cost. For each storage tier possible with an only-FC CLARiiON array (by combining disks under various implementation schemes, e.g., RAID, mirroring, and snapshot), there are now twice as many possibilities with the choice of FC or ATA drives. **Enterprises can now deploy additional storage tiers at a lower price/performance points within the box.** On first blush, it is one that makes targets for replicas, whether local or remote, more affordable and opens the door for additional business continuance options.

EMC's *Centera* product is optimized for storing fixed content (i.e., unchanging data objects such as medical images or cancelled checks) that require long-term, irrefutable data validation. Centera is integrated with more than 50 software partners to create complete solutions for e-mail archiving, medical image storage, document management, etc.

These three platforms form the hardware foundation of EMC's storage offering (see Exhibit 1 on the next page.) Various hardware and software features can be applied as needed to meet different service-level requirements. Other hardware products like *Connectrix* directors and switches and *Celerra* network-attached storage (NAS) solutions build upon the platforms by providing different means of connectivity and access. The unfolding *AutoIS* initiative also adds automated, open storage management.³

It's About Storage Service Levels

Just as a car is more than a metal frame

¹ See *EMC Kicks Up Performance and Right-Sizes Its High-End Symmetrix Storage Offering* in **The Clipper Group Navigator** dated February 3, 2003, at <http://www.clipper.com/research/TCG2003004.pdf>.

² See *EMC Brings Cost Efficiency to Enterprise Storage – CLARiiON with ATA plus SAN Copy* in **The Clipper Group Navigator** dated March 12, 2003, at <http://www.clipper.com/research/TCG2003009.pdf>.

³ See <http://www.clipper.com/research/TCG2002037.pdf> for *EMC Pulls Forward in Automated, Open Storage Management* in **The Clipper Group Navigator** dated October 3, 2002.

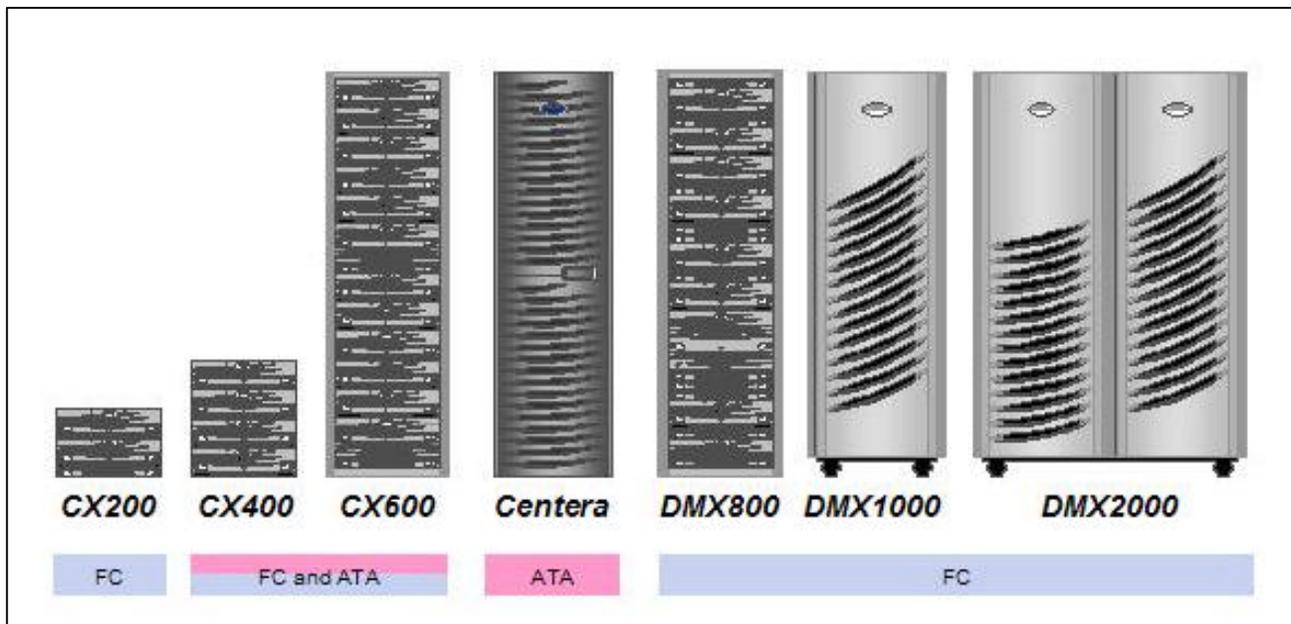


Exhibit 1: EMC's Mid-Tier to High-End Storage Platforms

with a certain kind of engine and wheels, a storage platform is more than a box with particular hardware and software features. Car aficionados may enjoy looking under the hood and admiring the polished chrome, but most folks are concerned with basic questions like:

- Is it what I need?
- Is it reliable (enough for my needs)?
- How much does it cost to own and operate?

They want to know the overall performance, reliability, and price a vehicle can deliver. The parts under the hood help determine that answer, but it is the end result that matters.

Storage is not significantly different. **Features and functions are important, but it's the storage service levels delivered to the business that matter at the end of the day.** These service level characteristics essentially reflect those mentioned above for cars:

- **Performance** – How fast is data accessed and stored?
- **Availability** – What is the percentage data availability (e.g., 99.999%)? Underlying

that, what is the expected mean time between failures?

- **Price/MB** – What is the acquisition cost? Possibly more importantly, what are the operating costs over its useful life?⁴
- **Recoverability** – What level of protection is required? This is usually measured in the elapsed time that is acceptable for recovery and the distance required to provide adequate protection in case there is a local disaster.

Combine them and, *voila*, you have a storage service level. Storage supports applications and users, which, in turn, support business operations and allow them to run more productively – or even run at all. Poor service levels can disrupt this entire cause-and-effect chain. **As storage has taken a central role in the modern enterprise, these service levels matter!**⁵

⁴ Total cost of ownership = acquisition cost + operating costs - residual value. Operating costs in the form of management are the largest component of storage TCO.

⁵ See *Tiered Storage Classes Save Money – Getting The Most Out Of Your Storage Infrastructure* in **The Clipper Group Explorer** dated August 29, 2003, at <http://www.clipper.com/research/TCG2002030.pdf>.

Economies of Choice

Economists talk about *economies of scale*; tiered storage is really about *economies of choice*. Scale is good because it leads to lower unit costs, as in the case of storage consolidation lowering the overall, long-term cost of capacity. However, **economies of choice are concerned with making a series of smart, optimal decisions.** *Give to each what it needs – not more – and certainly not less.* This is the essence of tiered storage. It recognizes that different parts of the business require different service levels. **By provisioning storage in a more precise, “tiered” manner, it is possible to deliver the appropriate overall service level to the business at an optimal price-point.** It is a practical way to handle today’s rising storage requirements.

Putting It All Together

How does all this translate into examples of tiered storage? Consider the following:

- An organization could build upon storage consolidation efforts to deliver even greater value to the business. For example, the CX600 and CX400 have the software, capacity, performance and connectivity to enable both significant consolidation and multiple price/performance tiers.
- An organization could establish a secondary tier to keep more data online for business continuance purposes or faster access to archived data. For example, the CX600 or CX400 can use cost-effective ATA disks as a target for replicas from a wide variety of EMC products, and can offer a less expensive form of faster-than-tape recovery from a disaster. It means that IT can offer new levels of service at very aggressive price points.
- A larger data center can use the new Symmetrix DMX for high-end requirements, delivering the highest levels of performance and business continuance to a number of applications. At the same time, it can use Centera as a repository for fast-growing, irrefutable fixed content as

well as CLARiiON with FC and ATA drives for several layers of mid-tier requirements. EMC makes it easy to deploy CLARiiON and Symmetrix in the same SAN. They use the same HBAs and drivers, much of the software is the same, and it all fits coherently within the AutoIS management scheme. **The result is a diverse but unified storage infrastructure that delivers the right service levels to the right part of the business at the right price.**

Conclusion

Tiered storage is about handing over the keys of power, choice, and efficiency to enterprise infrastructure managers. They specify the various quality tiers and translate that into physical allocations on a certain array with a certain kind of storage. They implement the appropriate level of protection for each tier, whether it is mirroring (local or remote), RAID, or some kind of disk-based recovery implemented by periodic snapshots of files and databases.

It is a more granular and precise way to provision storage to applications and users – in terms of service levels. The result can be a more cost-effective infrastructure. Many enterprises enjoy economies of scale through storage consolidation, and this trend will continue and become more refined. **But far fewer have made a concerted effort to reap economies of choice through tiered storage classes.** It is low-hanging fruit ripe for the picking.

In this orchard of opportunity, **EMC’s broadened line of storage platforms, coupled with AutoIS, is a solid toolkit for storage tiering.** It offers enterprises the power to choose with the convenience of a single vendor relationship.



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