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Revisiting the
Midrange Storage Market
A Current Look at Strategic Shifts,
Market Accelerators, and Solutions

A White Paper
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Revisiting the Midrange Storage Market

ABSTRACT

Storage in the enterprise is no longer just about adding peripherals and capacity as the network grows. Storage infrastructure, its integration into the greater IT environment, and efficient management of corporate data as well as the infrastructure itself has become a strategic part of IT's charter. Managers are looking for better, more efficient ways to manage and protect the assets they have. They are struggling with new data types that have different performance and management requirements than traditional data, and they are looking for ways to efficiently protect enterprise data assets in real-time.

What has come as a revelation to some is that these needs are driving not only the high end of the market, but the midrange as well. The way Sageza see it, this trend will continue to accelerate as information continues to multiply. In addition to the expansion of basic capacity, mid-tier customers have to grapple with management effectiveness increasing in importance as they seek to multiply the amount of storage resources an individual administrator can manage.

As technologies move to this environment, they must become easier to use and more standardised since they are implemented by more generalists and fewer specialists. What appeals to the mid-market are solutions that involve straightforward deployment, provide investment protection, and are simple to use. This portends the development of a new generation of products that package capabilities in a smaller footprint at more attractive prices. Customers are deploying networked storage infrastructures and consolidating their storage in the data centre in order to gain cost efficiencies and business agility. As they achieve these benefits in the data centre, they are looking to drive this approach further out into their organizations. These expanded environments require storage solutions that offer a whole new price/performance curve while still delivering a growing subset of capabilities currently found at the enterprise level.

In this paper, we will look at the business needs driving buying behaviour in the mid-market, and we will evaluate what the major storage vendors are doing to address those evolving needs. For the purposes of this report, Sageza define the midrange market to include departments within larger enterprises (generally ranging from 50 to 1,000 employees) as well as small- to medium-sized enterprises.

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Background

Tracking growth and change in mid-market IT departments is a bit like watching the development of the European Union over the last decade. The decision to create the EU was founded on the belief that countries working together could be more efficient and effective, and have a stronger whole if they centralised some processes while better managing localised functions. IT managers of mid-tier environments are struggling with similar sorts of issues. Most of the storage in organizations today has existed for years, perpetuating outdated assumptions about storage consumption; but these assumptions were based upon the technology infrastructure and business challenges of the past. IT managers, like their EU counterparts, have come to realise that in order to become more effective and cost efficient, they need to modify their mid-tier storage infrastructure by networking the storage, centralising the management of homogeneous and heterogeneous environments, and leveraging the enhanced scalability and price/performance of new technology.

This paper will focus on the motivating factors that are causing IT managers to reassess how they leverage storage, how the vendors are changing their strategies to solve these business needs, and where we believe the market will go next.

Business and Technology Together Drive the Market

Factors leading customers to the next generation of midrange storage products can be broadly classified into two types. The first and perhaps most important is in the business arena, being systemic issues driving change across the IT infrastructure. The second set of factors is technology issues. As the rest of the IT infrastructure such as applications and servers evolves, complementary changes in the storage architecture are also likely to occur. In this section we look at three business and three technology issues that we believe are affecting storage customer expectations.

Business

One business issue driving the market is environmental sophistication. Customers leading the call for advanced products usually have highly complex environments. Complexity is usually thought to be a function of the size of the environment or installation, but the relative size is less important than the tasks it is required to complete. In the past a smaller scale solution generally meant one denuded of features or that did not offer the same degree of performance in comparison to the high-end. Now it means a solution that is the right size for the environment, frequently with many of the same features as its high-end cousins. Vendors are challenged to create families of flexible products that scale up or down as customers require.

A second key business need is manageability, which is important in all environments. For large enterprises or departments, the number and variety of products that must be managed together in a coherent structure is often the primary problem. In smaller enterprises it is usually the breadth and depth of the IT department that is the essential issue. Even if an IT organization has a somewhat homogeneous environment, it needs products that do not require a team of people to manage them around the clock. In addition, customers frequently face a balance between manageability, and scalability or flexibility. IT managers are becoming increasingly unwilling to treat these characteristics as optional, and are looking for products that provide added value through manageability of scale and adaptability to a changing business environment.

A final motivating factor to mention in the business context is the necessity to protect data or provide business continuance. Mission-critical applications provide data that must be pro-

tected and continuously available to businesses. Organizations choosing mid-tier products require solutions that are relatively easy to deploy and meet budgetary limitations. They need solutions that scale from reliable data backup to and including uninterrupted availability.

Technology

One of the most important technology factors driving many enterprises is the changing importance of applications. Software that was once nice to have such as email is now mission-critical. Microsoft Exchange databases are growing, and large volumes of email data need to be treated accordingly. Even departmental projects in larger enterprises are often significant in size or have significant impact on corporate revenue. These applications require storage with the same manageability, availability, and scalability used for large enterprise applications. At the same time, businesses need solutions that are relatively easy to install, simple to use, and priced to fit in mid-tier budgets.

Manageability, scalability, and cost issues are driving server and storage consolidation. When IT managers consolidate storage they are likely to use either high-performing storage subsystems in a direct attached storage (DAS) architecture or networked storage in the form of network attached storage (NAS) and storage area networks (SAN). Since customers want products that can be adapted easily to various environments, they are moving from internal and relatively inefficient directly attached storage to more flexible and efficient automated networked storage, including SAN, NAS, and the management software to make it work.

Geography also plays a part in customer needs. For example, for many European customers space constraints are a real issue, making system modularity and a compact footprint important for customers with large data centres, and essential to many mid-market European companies as well. Europeans are also more likely to demand investment protection when evaluating new products. The mid-market here is unlikely to purchase new products just because they are technologically intriguing. They must see substantial ROI potential and be assured that generation to generation, products will retain compatibility and interoperability. One last note on Europe involves the channel. Country by country, selling to this market requires an understanding of varying channel structures. Successful vendors will make sure they have educated partners with access to appropriate products for their constituents.

Storage vendors' products must evolve to fit this changing space. Future products in this space should provide for:

♦ Improved price/performance to deal with growing infrastructure and new data and media types in a cost-effective manner,

♦ Better manageability through investment protection (older systems and new technology still work together) as well as with easy-to-install and easy-to-use solutions,

♦ Data protection capabilities similar to those found in the data centre but priced appropriately to the size of the environment.

Vendor Offerings for the Mid-Market

The primary suppliers for midrange storage have been the systems vendors and EMC. The focus of these suppliers has been the high end of the market, and up to now they have dedicated most of their resources to addressing the needs of enterprise customers. Vendors have offered products for the mid-market, but they have largely been point products to fill in product roadmaps rather than equipment strategically designed to meet the needs of medium enterprise and departmental customers. Fortunately this is changing, and products are finally coming to market that begin to address the specific needs of the mid-market,

including good price/performance, better manageability and product continuity, and business continuance capabilities. In this section, we will look at three of the vendors, HP, IBM, and EMC to see how each supplier is changing their offerings to meet these needs.

As to performance in the midrange, vendors have upgraded their products with faster 2GB Fibre Channel technology, end-to-end. This enhancement eliminates one key bottleneck within the storage systems. In addition, they have all increased the densities of drives within rack environments to ensure the footprint provides maximum capacity in limited space.

Sageza believe that manageability and interoperability have begun to improve but still have a long way to go. Most products work well in a homogeneous environment, but need to be specially adapted to work with other operating environments, or even with other products from the same vendor. All vendors have announced increased R&D on storage management, and we expect midrange products will work with those software products as they are brought to market.

Providing data protection and business continuance also has mixed results. Backup is possible with all systems, although advanced backup capabilities such as snapshots are relatively new for most midrange products. Snapshots are a collection of pointers that represent what the data looked like at the time of the snapshot. They are a faster form of data backup, as they enable concurrent backups. Mirroring is another technology for business continuance. Mirroring allows for maintenance of an updated duplicate of data. Remote mirroring is the ability to have the mirrored image located away from the primary data. The maximum distance allowed between the two sites depends on the technology used.

The HP StorageWorks Enterprise Virtual Array (EVA) System

With the merger of HP and Compaq, the new company went through each product line and chose the best products of each company to integrate into the new HP. For storage, Compaq was the dominant player, and HP's midrange product offering comes from the Compaq StorageWorks family. HP position the EVA for enterprise data centres searching for high performance and scalability. The second generation of the product was first announced in October 2001 and general product availability was announced in July 2002.

For manageability and interoperability, HP have recently added operating system support for HP-UX and IBM AIX, but the EVA version 2 does not support Linux or Novell NetWare. The EVA can also only be used in a SAN. It is not possible to connect the EVA via DAS, and it can only be used for NAS by supporting a NAS head located elsewhere on the SAN. HP still has a couple of issues to iron out regarding interoperability too. The new product cannot be used with the same SAN Management Appliance as the older Compaq MA8000 or EMA12000 until HP render the software compatible. For now they must exist in separate zones of a SAN with separate Management Appliances.

For data protection and business continuance, HP have added capabilities for data replication with improved snapshots, as virtual and multiple snapshots are now possible. However, for greater business continuity issues, the product still does not offer remote mirroring capabilities.

Overall, the product offers users many important capabilities. HP and Compaq separately had strong channel structures in Europe, and the merger will result in broader reach for all products. The challenge for HP will be to integrate the range of products they have into a family of interoperable products that customers can use flexibly within changing environments.

The IBM Fibre Array Storage Technology (FAStT) 700 System

The FAStT700 is IBM's entry for midrange storage. It is positioned as the high end of a family of storage products that scales from the entry-level to departmental and small-enterprise storage.

Unlike the HP product, the FAStT700 is part of a family of solutions, ensuring some level of investment protection through product continuity. IBM do support Linux and NetWare, and in fact, support three versions of Linux; Red Hat, SuSE and Turbo. The FAStT700 was rolled out without UNIX options, but the company just announced the addition of AIX and Solaris support. The IBM product supports SAN and DAS, and a NAS head can be attached. However, because IBM is an OEM of the product (originally created by LSI) they do not actually own control of interoperability testing and product direction. While IBM will offer some level of integration between products, there is no connectivity between this product and IBM's high-end ESS products, which the company actually designs.

Unlike HP, IBM offer FlashCopy (IBM's version of a snapshot) and Remote Mirroring with the FAStT700 through the Storage Manager software. However, with the current version of Storage Manager, users are only allowed up to four snapshots per logical unit. With remote mirroring, Storage Manager has a limitation of mirroring only one target at a distance of no more than 10 km away. Customers with multiple mirroring targets or greater distances will not be satisfied with this solution. This means the product will not satisfy customers who may want to mirror several different groups of storage to the same backup server.

IBM have an international network of sales people and business partners that provide the company with good channel coverage worldwide. IBM have a solid product offering for midrange customers, with a rich set of features and a good start to management software. IBM have announced that storage is an integral part of the systems business and they will continue to put a strategic focus on these products. Sageza expect to see ongoing investment in storage by IBM and an ongoing commitment to make the OEM product integrate with other IBM storage products.

EMC's CLARiiON CX600: the Birth of a New Generation of Midrange Storage Products

EMC have announced its latest generation of CLARiiON systems with the introduction of the high-end CX600, which the company describes as the next generation of storage infrastructure for the midrange, and the technology foundation of the CLARiiON family for the next five years. It also offers the sixth generation of Full Fibre Channel technology from EMC and is targeted to meet the changing needs of the midrange market. Regarding performance, the CX600 will offer significant bandwidth improvement over the older FC4700, with a maximum bandwidth of 1,300 MB/sec as compared to 350MB/sec. The FC4700 will remain at the mid-point in the CLARiiON line.

For management and interoperability, the CX family has a solid start. The product supports a broad range of operating systems, including Microsoft Windows NT and 2000, as well as NetWare and Linux. In addition, it supports Sun Solaris, IBM AIX, HP-UX, HP Tru64 UNIX, and SGI IRIX. The CX600 is also able to support SAN, Cluster, and DAS environments equally, and one can also attach a NAS head. EMC are proud to talk about their commitment to investment protection through product interoperability. Although this is the first in a new family, EMC are quick to point out that previous generations of product will interoperate with the new product from the time of first customer ship. EMC promises consistent software functionality between the FC4700 and the CX600. Their Navisphere management suite will work on the CX family. In fact, the Navisphere software is compatible with all CLARiiON FC products dating back to 1997 and with all previous SCSI-based products since its initial launch in the early '90s. All EMC products can function together easily within the same SAN.

An FC4700 can even be used to mirror to a CX600. Finally, leveraging EMC's AutoIS strategy, CLARiiON products are integrated with EMC's Control Center/Open Edition that provides simultaneous manageability of the Symmetrix line of high-end enterprise storage. The CX family will now also share traditional Symmetrix-only server-based software such as PowerPath and DBTuner for Oracle. It is also fully integrated with ESN Manager, and the overarching ECC/OE management environment that has management capability of non-EMC products as well. The CLARiiON family now shares common host bus adapters (HBAs) and drivers with the Symmetrix line, making mixed SANs a reality and simplifying SAN attachments for EMC customers.

The CX600 also offers notable business continuance features. The CX600 has SnapView as well as MirrorView Remote Mirroring capabilities, which means either snapshots or mirrors may be used remotely. Unlike the IBM FAStT700, the CX600 can perform up to 100 snapshots per array, and up to eight snapshots per logical unit. The new EMC product builds on all of the functionality of the FC4700, including the ability to source to multiple targets or provide multiple sources to a single target. Mirroring can be bidirectional and is available up to a distance of 60 km. Greater distances are also possible by leveraging MirrorView over IP.

EMC are able to deliver the product through multiple channels, having relationships with distributors ARROW and AVNET, as well as with partners such as Fujitsu Siemens, FST, and Unisys. Additionally, their new relationship with Dell Computer will make the systems available to Dell customers worldwide that want the latest midrange storage technology.

Summary

Like the officials who are working to create the European Union, IT managers have discovered a lot of effort and planning are needed to create effective systems. Both groups must create systems and processes that make the best use of assets and resources. Existing government structures, like corporate structures, must be taken into account for planning purposes. Government agencies must work together, often across different languages and customs, much like different operating environments within computing systems.

Similarly, as mid-market IT managers create new structures for storage, they expect the next generation of products to have greater price/performance, manageability for investment protection, and data protection capabilities. Vendors have addressed some of these issues with their latest products, and new upgrades and products will continue to bring the vision closer to reality.

The new EMC CX600 is representative of the future of midrange storage offerings. Like other midrange systems it is now end-to-end 2GB FC for better price/performance. It also has higher bandwidth to allow for greater throughput and is not limited as a midrange system. The system interoperates with other EMC products, including the high-end Symmetrix products, and is available for most operating systems in the market today. It also is capable of adapting to SAN, Cluster, NAS, or DAS environments, as the situation requires. Finally, EMC have also provided rich data protection and business continuance features through the use of snapshot and mirroring technologies that give midrange users options that they previously expected only from high-end products. With the release of this new family of mid-market products, EMC have set the stake in the ground for the next generation of enterprise storage and laid down a challenge for other vendors to meet.