



Advisory

How Small/Medium Enterprises Can Build Efficient Storage Environments

Introduction

Two years ago *Clabby Analytics* wrote a storage buying criteria *Advisory* entitled “Storage Buying Criteria for Small/Medium Enterprises”. In that *Advisory*, we suggested that small/mid-sized enterprises (100-1000 employees) base their storage hardware acquisitions on:

- Product features/functionality;
- Cost;
- Reliability;
- Service; and,
- Support.

But today, due to several advancements in storage technology, we need to expand this list. Storage vendors are still competing in the areas of feature/function, cost, reliability, service and support — but now they are also competing in the areas of virtualization, tiering, replication, compression, deduplication, scalability, cloud delivery, centralized management. As a result, the list of criteria to be considered when buying storage needs to be expanded.

We now suggest that storage buyers consider the above-mentioned five points — and also consider the following additional criteria:

- Ease of Implementation/quick time to value;
- Enterprise class features (such as graphically-driven storage management);
- Modularity/packaging;
- Investment protection;
- Productivity improvements; and,
- Flexible purchase options.

Of these new criteria, modularity/packaging is one of the most important for the small/medium (SME) storage buyer. SME’s typically lack deep technical expertise and highly specific skill sets that are required to do provisioning, virtualization, capacity planning, data migration, replication and other related activities. Storage vendors know this, and now focus on building storage subsystems that are pre-configured with software and “out-of-the-box” functionality that enables SMEs to quickly implement and deploy storage subsystems and appliances.

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Additionally, storage management has been greatly simplified and is also becoming an extremely important buying criteria. SMEs can now more easily manage storage using a graphically-oriented, centralized storage dashboard — simplifying the task of storage management, increasing the productivity of storage managers, and greatly speeding problem resolution.

Because the budget of the SME is usually much smaller than that of a large enterprise customer, it is also important to be able to make storage decisions that fulfill current needs while enabling scalability for the future. And new payment approaches such as pay –as-you-go delivery options such as software-as-a-service (SaaS) and cloud infrastructure-as-a-service (IaaS) can also ease the up-front investment burden.

Finally, the availability of tools that make SME storage managers more efficient should also be an important buying criteria

Fortunately, most major vendors are now offering packaged solutions that take out much of the guesswork when configuring storage hardware and storage management software. By providing these integrated offerings, vendors are making it easier and more cost-effective for SME's to deploy storage solutions that offer many of the same benefits and features that have previously only been associated with high-end enterprise class storage.

Also Understand the Competitive Environment

Using the above mentioned criteria, SME's often find that their final “short list” of vendors includes storage products from EMC, IBM, and HP. These companies offer solid products; their hardware/software costs are, for the most part, similar (although IBM usually has an advantage in total-cost-of-ownership); and all of these vendor's products are highly-reliable. But there are also important differences between these vendors, especially in the areas of:

- Storage strategy;
- Sales and marketing approach;
- Hardware/software portfolios; and,
- Service/support offerings (especially in the breadth and depth of services offered, and in service tools and technologies).

The remainder of this *Advisory* examines each of these comparison points more closely.

A Closer Look: Comparing Each Company's Storage Strategy

From our perspective, there are huge differences in the way that EMC, Hewlett-Packard, and IBM approach the storage marketplace. The way we see it, EMC's primary goal is to sell mainly high-end disk-based storage subsystems, and related virtualization software and services. IBM's goal is to sell integrated, verticalized systems (e.g., servers, storage, infrastructure, databases and related services) designed for specific types of workloads — and to promote the increased use of business analytics (this is all part of IBM's Smarter Planet strategy that focuses on workload optimization, cloud computing, and big data [the use of traditional data capture and newer streaming technologies to analyze large volumes of data]). And HP, with its recent acquisition of 3PAR, is looking to shore up its storage

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offerings and add innovative technology that will enable them to compete in the virtualized cloud infrastructure market.

EMC

EMC is historically a maker of storage products as well as a provider of virtualization software. EMC's technical leadership in virtualization with VMware has also positioned them well for their current strategic emphasis in the area of cloud computing. Further, EMC is also well-positioned for a push "Big Data" (helping companies leverage the huge volume of unstructured corporate data for business analytics) with the company's Isilon (Scale-out NAS) and ATMOS (distributed cloud storage) platforms.

EMC has increased its focus on software in recent years, but selling storage is still the root of EMC's strategy. EMC does not make systems/servers, nor operating environments, nor databases, nor development environments. It makes storage hardware and storage management software. So, for customers who just want just disk-oriented storage products and are willing to perform the work needed to integrate those storage products with systems environments, EMC can provide a wide range of storage solutions.

Hewlett-Packard

HP's strategy is to leverage their expertise in high-end server sales to become a leading provider of cloud services that will range from Infrastructure-as-a-Service to Platform-as-a-Service. This strategic direction will put them head to head against large cloud service providers like Google and Amazon. HP has also announced plans for a cloud "marketplace" that will sell consumer applications as well as enterprise applications and services, targeting low-end to mid-range markets. Not to be left out of the Big Data discussion, HP has announced a big data appliance that combines HP compute power with analytics from Vertica.

With HP's acquisition of 3PAR, HP is looking to compete in the cloud storage market with storage technology innovations around thin provisioning and storage tiering. 3PAR's F-class is aimed at the low-to-mid-range and the high end of the storage market will be addressed with the 3PAR T-Class.

We tend to see HP as a systems integrator with the ability to horizontally integrate servers, storage, networking — as well as the ability to vertically integrate middleware, applications and services. Further, we see Hewlett-Packard as an x86 server company (we have little confidence that HP's Itanium servers will be around and along run). For more on this topic, please see the following URL: http://www.clabbyanalytics.com/uploads/Itanium_Fire_CIO_Update.pdf.

IBM

IBM is a systems/infrastructure/operating environment/database/management software/storage maker as well as a professional services provider. Accordingly, IBM can deliver completely integrated solutions: turnkey systems/storage environments complete with end-to-end infrastructure and management software and related services. And, in the area of storage, these solutions are designed to optimize the efficiency in the datacenter.

IBM's corporate focus is built on what the company calls its "smarter planet" strategy — a strategy that calls for organizations to use their resources more wisely: "intelligence infused into the systems and processes that make the world work". Smarter Planet is

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focused on industry-specific solutions and cross-industry collaborative opportunities for growth. Talking specifically about storage, it is focused on improving operational efficiency; data protection, and the increased use of business analytics.

From our perspective, we see IBM as the progenitor of big data. Over the past several years IBM has invested \$4 billion in the acquisition of business analytics companies. The company acquired Cognos in early 2008 and Netezza in 2010. And most recently, IBM announced InfoSphere Big Insights and InfoSphere Streams, key components of an enterprise-ready Big Data platform. Also noteworthy, IBM expects the analytics business to grow to \$16 billion in revenues by 2015.

Other key growth areas are expected to be cloud-based business and infrastructure (expected to grow to \$7 billion in revenue by 2015) and Smarter Planet solutions targeted to healthcare, retail, banking and telecommunications (expected to grow to \$10 billion in revenue by 2015).

Storage buyers looking for turnkey, package storage solutions; for advanced storage management; for integrated workload optimized servers and storage; and for advanced business analytics capabilities

A Closer Look: Comparing Each Company's Sales/Marketing Approach

There are also big differences between EMC, HP, and IBM in the way that each company goes to market (using direct and indirect sales methods).

EMC

EMC sells storage directly to its customers and forms partnerships with systems makers when customers require more integrated systems/storage/infrastructure/management solutions. For example, VCE (Virtual Computing Environment) VBlock Infrastructure packages comprised of best-of-breed virtualization, networking, compute, storage, security, and management technologies from Cisco, EMC and VMware provide this level of integration through the VCE coalition.

For SME's, EMC has recently strengthened their channel focus through the Velocity Solutions Provider Program and the addition of an Authorized Reseller category that is accessible to a broader range of resellers. The "free and easy training gets partners up and running in under three hours, making the VNXe accessible to partners of any size, specifically those focused on volume sales." Historically, EMC covered this market segment through the relationship with Dell, but that partnership has cooled considerably since Dell's acquisition of Compellent (giving Dell its own strong SME offering). From a marketing perspective, EMC is, without a doubt, one of the information technology (IT) industry's strongest marketing companies. EMC communicates constantly with its customers and with the press and produces a steady flow of information on its products, on its new developments, and on its new centers-of-excellence, et al. Further, EMC constantly monitors its customer base to measure customer satisfaction as well as to detect problems or market shifts (and the feedback it gets helps EMC fix problems, tweak products, and/or create new products).

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Further, EMC's sales force is known industry wide as storage-knowledgeable and is known for being very aggressive in its pursuit of storage sales. But, when customers require solutions that involve systems integration or process flow solutions, we believe that EMC's sales force lacks the depth needed to orchestrate broader solutions.

In the past, EMC's marketing strategy has been described by research analysts and customers alike as "proprietary" and "lock-in" oriented. In recent years, however, EMC has worked hard to dispel this notion. EMC, HP and IBM all support VMware vStorage APIs for Array Integration (VAAI) which provide tighter integration between virtual servers and storage arrays and offloading functions from the host to the storage array increasing performance, scalability, and utilization. EMC has also embraced the SMI-S open API industry standard that can allow for multivendor storage subsystem interoperability. However, EMC continues to focus on enriching its own application program interface (API), Solutions Enabler which ships with all CLARiON and Symmetrix storage arrays. And VMware supports only the ESX hypervisor, VMware vSphere, creating a "lock-in" scenario at the hypervisor layer.

HP

HP also addresses the SME market through partners. HP's PartnerONE program manages various partner resources and offers and initiatives for its reseller and distributor partners. HP PartnerONE includes three levels of membership including Business Partner (basic membership), Preferred Partner (additional marketing/sales benefits) and Elite Partner (sales leads, rebates, dedicated sales support). To address the SME market, HP added the SMB Elite Expansion program to the mix enabling more partners to receive "Elite" benefits.

IBM

IBM uses both direct and indirect channels to sell storage solutions to its customers. But what makes IBM different than EMC and HP is that IBM can sell complete, integrated *systems/storage/network/database/middleware* environments to its customers (IBM makes its own hardware, operating environments, middleware, database, management software, etc.). IBM, therefore, does not need to partner with numerous other suppliers to deliver verticalized integrated, workload optimized storage solutions and packages.

Because IBM builds its own hardware and software stacks — the company can control its own developmental destiny. This is a huge advantage for IBM. Contrast this with the situation at Hewlett-Packard where Oracle has withdrawn future database and application support from HP's titanium servers. Failure to own and control important technologies can leave vendors and their customers exposed to market actions from third parties.

In the channel (indirect sales through partners), IBM spent \$130 million in 2010 on marketing and demand-generation programs to help channel partners expand their midmarket sales efforts. The company also has created a cross-IBM team to develop "building block" systems, incorporating IBM hardware, software and storage technology, which solution providers can customize and sell to SME customers. The SME market is addressed almost exclusively through channel partners, and these packaged systems are designed to accelerate channel sales and implementation

IBM is seen as a champion of open storage due to its aggressive contributions to the open standards process and its rapid adoption of those standards. And IBM is also seen as a champion of cross-platform storage management (its SAN Volume Controller multi-vendor storage management environment has

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received rave reviews from IBM customers and sales of this product have been outstanding). IBM has even packaged SAN Volume Controller with an external storage disk offering: Storwize V7000, which can be used to serve the SME marketplace (more on this later). Storwize V7000 supports external virtualization for storage systems from HP, Hitachi Data Systems (HDS), and EMC and HP.

A Closer Look at EMC, HP and IBM's Storage Hardware/Software Portfolios

From a hardware perspective, there are many similarities in each vendor's storage portfolio. But, from a software perspective, there are major differences in each company's software focus, packaging, and depth.

Hardware

From a hardware perspective, EMC ,HP, IBM hardware offerings are generally very similar. Each company offers a broad range of disk arrays; each offers strong NAS (network attached storage) products; and each company offers solid SAN storage area network products. Both companies are now offering unified storage solutions (SAN/NAS). Each vendor has packaged, turn-key offerings at the low-to-mid-range targeted at the SME buyer. But differences in product offerings and product focus can be found between these companies.

Tape still figures heavily into IBM strategy, while it doesn't at HP and EMC. For SME customers who cannot afford the expense of a remote data center for disaster recovery, sending tapes offsite to a third party for disaster recovery protection is still a favored alternative. (Yes, the time to restore is longer, but in a true disaster, businesses are cut a good deal of slack when restoring data). Tape is more energy-efficient than disk (as an idle tape does not use energy, but a spinning disk does even if not accessed). In addition, the overall tape infrastructure is still more cost efficient than a disk infrastructure for data protection purposes. Moreover, IBM has a rich heritage in tape at all levels — tape automation, tape drives, tape file systems (LTFS) and tape media That enables IBM to be an innovation leader in tape technology. SME organizations benefit from that IBM strength in half-height tape drives (the TS2240 Tape Drive Express) that gives useful space savings while preserving the essential tape drive functionality that these businesses demand.

Now let's turn to disk storage:

- As of January 2011, EMC has replaced its Celerra (NAS) and CLARiiON (SAN) with VNX and VNXe Unified Storage platforms that merge the functionality of the two systems. In March 2011, EMC announced worldwide general availability of the EMC VNXe series which is offered primarily through EMC partners. Boasting an entry point at under \$10,000, the key selling point is simplicity, with built-in wizards that cater to administrators with limited storage knowledge. EMC also announced the new EMC 25 % Storage Efficiency Guarantee enables VNX series customers to now purchase 25% less raw capacity than products from any other unified storage solution, while benefiting from the same amount of useable capacity.
- HP offers the X1000 Network Storage Systems for small and medium IT environments and the X3000 Network Storage Gateways that add IP-based services to arrays and SANs (for unified storage). For SME's, HP also has the recently

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acquired 3PAR F-class is positioned as HP's solution to utility and cloud computing. By integrating 3PAR with HP's IBRIX X9300 Network Storage Gateway provides a secure, multi-tenant unified storage platform

- IBM continues to enhance the N-series (NetApp NAS) and also offers the Storwize V7000 for the SME customer, providing a unified (block/file) storage solution through a SONAS gateway. The Storwize V7000 brings enterprise class functionality to SME's with automated storage tiering, thin provisioning and an innovative GUI that reduces complexity. According to IBM, these features result in optimized performance up to 2x and increased disk utilization up to 30% compared to other midrange offerings. For businesses with standard storage requirements, IBM has targeted products (the IBM System Storage DS3500 Express and the IBM System Storage DS5020/DS3950 Express) as part of its Express Advantage program that combines hardware, software, services, and financial solutions.

Storage Management Software Portfolios

EMC, IBM, and HP storage management software offerings for SMEs are very similar in terms of functionality. And just as with the packaged cloud-ready solutions discussed in the previous section, storage management has been simplified such that less-skilled storage administrators can perform tasks that previously required broad and deep technical skills – such as provisioning, data migration, and replication. When designing these management products, wizards have been created and tasks have been automated where possible.

EMC

EMC, as one would expect, covers all of the bases when it comes to the management of storage environments. Unisphere provides a web-based management interface to discover, monitor, and configure all your EMC CLARiiON, EMC Celerra, and EMC VNX storage. Best practice wizards automate provisioning and configuration. Event notification responds to and manages status changes proactively. Monitoring and management are context based and customizable dashboard views, graphics, and data tables. Unisphere is also the central point of management for EMC software suites including FAST, Local Protection, Remote Protection, Application Protection, and Security and Compliance.

HP

HP 3PAR Storage includes the Inform Operating System, providing automated provisioning and management. The HP 3PAR Management Console provides a scriptable command line interface (CLI), and is integrated with HP CloudSystem and HP BladeSystem Matrix to provision storage in cloud environments. HP offers a range of optional products to provide other software functions including “self-service” capabilities, service level management and advanced provisioning capabilities. HP StorageWorks line of storage has its own storage management platform.

IBM

The Storwize V7000 includes its own intuitive management interface, designed for easy, efficient operation and management. The 3D Mac-style GUI is based on the management interface of the IBM XIV (which has been very well received by customers) and simplifies management activities like provisioning, data migration and performance tuning, so that a

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storage expert isn't required to manage the system. This capability is extremely important to SME's typically staffed by IT generalists. To manage both physical and virtual servers and related storage, Storwize V7000 is integrated with IBM Systems Director Storage Control. N-Series storage is complemented by a broad range of a la carte software offerings that provide capabilities such as monitoring, provisioning, caching, backup and data protection.

IBM has the advantage of having storage management integrated with the broader set of IBM management tools such as Systems Director and IBM Tivoli Storage Productivity Center so that storage, systems and networking can all be managed from a single management interface.

Storage Services Differences

Both IBM and EMC focus on providing storage-related services. HP's service revenues draw largely from technology and business process outsourcing (related to the 2008 EDS acquisition). The primary differences between EMC and IBM storage services are in:

1. The breadth of services offered (IBM has greater depth because IBM sells services that integrate storage, databases, systems, and applications);
2. The geographical coverage model (where IBM has over 425,000 people in 160+ countries in professional services, whereas EMC has only 43,000 people in its entire company); and in
3. Annual revenue (IBM's professional services organization brought in \$56 billion in 2010 versus \$17 billion *total* annual revenue for EMC).

Comparing Products

As can be seen in the previous sections, there are major differences between EMC, HP, and IBM in each company's strategy, go to market approach (direct, indirect sales), in their control of their own developmental destinies, and in their software offerings. There are also similarities in the design and implementation of their storage hardware offerings.

From our perspective, we believe that most SMEs will end up comparing IBM's Storwize V7000, to EMC's VNXe, and to HP's 3-PAR F-class. These products offer cloud-ready, turnkey offerings with a range of enterprise-class features designed to improve efficiency and productivity. As we compare these three storage technologies, we think buyers should look closely at the following features and functions:

EMC's VNXe

- Built-in support for file/block storage (no gateway required)
- Built-in support for file-based (CIFS, NFS) and block-based (iSCSI) storage.
- Built-in data protection including replication
- Thin provisioning, deduplication, compression capabilities included
- Best-practice wizards for set-up
- Optional software packs for security, snapshot capability, remote replication and replica management
- Scales up to 240 TB
- SAS, SSD support.

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HP's 3PAR F-Class

- Block/file storage through gateway
- Fibre Channel, 1Gbps iSCSI
- SATA SSD
- Scales up to 384TB
- Optional HP 3PAR Virtual Domains, Thin Provisioning, Virtual Copy and Optimization software

IBM's Storwize V7000

- File/block storage (through gateway)
- Fibre Channel, 1Gbps iSCSI, optional 10Gbps iSCSI
- Storage Easy Tier, FlashCopy replication, thin provisioning included
- Dynamic migration
- With clustered system, scales up to 480TB
- SAS, SSD support
- Optional integrated Storwize Rapid Application Storage Manager and IBM Storwize Rapid Application Backup (for improved utilization, productivity, application performance, and shortened back-up window)
- External virtualization for heterogeneous storage array support

Why We Like IBM's Storwize V7000

The Storwize V7000 offers a modular system that enables the SME to start small and scale up to 480TB and offers Fibre Channel as well as iSCSI. The Storwize V7000 also offers the SME investment protection by enabling external virtualization in existing storage systems, extending the same thin provisioning and FlashCopy capabilities to non-IBM storage. Built-in support for Easy Tier tiered storage enables data to be stored efficiently and cost-effectively on all Storwize V7000 models. The Mac-like GUI improves operational efficiency by providing an easy “point and click” interface for management of storage functions. According to IBM, over 1600 Storwize V7000's have been sold to 1000 customers since November 2010 — with many of these customers new to IBM.

And to complement the hardware portfolio, IBM has storage optimizers, such as data ProtecTIER deduplication that can shrink backup data up to 25 to 1, and Real-time Compression for NAS environments that shrinks data up to 80% without degrading performance.

Vendors always try to compose a good total-cost-of-ownership (TCO) story. And IBM has a very good story to tell for the SME market in terms of warranty. IBM's DS3500 offers three years warranty as a standard while the Storwize V7000 offers one year in software besides the standard hardware warranty. Furthermore, all warranties in IBM are upgradable to adjust business needs.

Summary Observations

As stated at the outset of this Advisory, there are many similarities between the storage offerings of EMC, HP and IBM. But there are also several striking differences in strategic emphasis, in storage management, in information management, and in service offerings. Some of the biggest differences described herein include:

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- *Market positioning* — EMC is positioned to sell storage components and related software and services. Like EMC, IBM can sell storage components, software, and services, but IBM can also provide turnkey, integrated verticalized systems/storage solutions. HP is targeting the cloud services market, currently dominated by Google and Amazon.
- *Software portfolios (storage management)* — EMC's software portfolio primarily consists of storage-focused management products, some information management products, and virtualization software. IBM's software portfolio includes development environments, extensive systems and storage management offerings, extensive information infrastructure management offerings, collaboration software, and much more advanced virtualization functionality than EMC. HP also boasts a strong and broad software portfolio but HP 3PAR storage lacks enterprise level integration, and software functionality is largely a la carte, rather than bundled.
- *Heterogeneous storage management* — IBM's Storwize V7000 with SAN Volume Controller embedded, illustrates that IBM is more heavily committed to the virtualization and management of heterogeneous storage devices. And,
- *Storage services* — by virtue of providing both storage and systems integration services, IBM's services portfolio is broader than EMC's and HP's. IBM professional services organization alone has almost five times the number of people as EMC as a whole — giving IBM more people in more geographies than EMC. And IBM service revenue is substantially higher than EMCs — again highlighting the breadth and depth of IBM's professional services offerings as compared with EMC's. Much of HP's service revenue is from technology and business process outsourcing, rather than integration and consultative business-level services.

Ultimately, choosing the right storage vendor should be dictated by the business need as well as by business requirements for reliability, serviceability, and resource management. SMEs should bear in mind, however, that buying storage is no longer a decision that should be based on filling a need for more disk space. SMEs also need to consider the strategic importance of storage as a means to manage enterprise information.

In the end, making the right decision should be based on vendor's product set and strategic direction, the value the vendor offers, and the relationship that the vendor is willing to establish with your small/mid-sized enterprise.

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