



The Right Storage for the Midsized Data Center — HP Delivers Enterprise Functionality, Midrange Price

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Management Summary

Every consumer is faced with making a choice between functionality and cost. When you go to the market, can you afford the filet mignon or do you have to settle for hamburger? When you shop for a new phone, can you afford the smart phone with all of the bells and whistles, or do you settle for that flip-phone that only lets you make and receive calls, and perhaps texting? When you shop for a new car, can you afford the hybrid or electric car that will enable you to save on gas, or do you have to settle for the three-year-old used car with a gas guzzling internal combustion engine. We constantly are faced with decisions between the product with the most functionality and the one that fits our budget. While often these competing factors duke it out only inside of our head, evaluating the trade-offs is something that we frequently do. Of course, we all “want to have our cake and eat it too.” Another way of say this is “why can’t I get what I want?” Debates and decisions like these are not new to the CIO of the midsized data center where performance, capacity, and reliability are constantly at war with the IT budget.

Enterprise data centers have seen their share of storage platforms that have been designed to accomplish one task very well, but were not as adept when asked to perform another function or multiple functions. Many larger enterprise IT organizations have been successful in deploying a unified storage platform based on the latest technologies, thus receiving the benefits of multiple storage architectures (blocks and files) converged onto a single integrated platform. **Somewhat jealous, the IT staff of midsized and smaller businesses (SMBs) wants to do the same, without blowing their constrained budgets, of course. They seek that same highly-scalable, highly-functional storage that can scale dynamically to support consolidated and virtualized servers with block, file, and object requirements, with high-speed for performance-sensitive, mission-critical applications.** To have this kind of encompassing solution without breaking the budget would be great, but for the midsized or smaller data center, you probably want and need even more, like being easy to provision and manage, preferably all with the same storage administration tools and interface. In simple terms, a lot of things need to “come together”, both physically (a consolidated platform for all of the storage needs) and logically (an integrated management perspective).

For the larger enterprises, there are a number of vendors eager to provide high-value solutions to cure their large-sized pains. However, *what about the midsized data center with the same needs, but without the large capacity requirements?*

With a smaller IT staff and, certainly, a smaller budget for IT infrastructure, the midsized data center is in desperate need of a midrange storage solution that can support both high-capacity and high-performance devices with enterprise-level functionality, without breaking the budget. *Where can they look for storage to handle their needs at a reasonable price, with the simplified data management required by a limited staff? How about one of the leaders in storage and storage services? How about HP?*

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HP likes to talk about “convergence” or “converged infrastructure”, with multiple, overlapping meanings. For today’s focus on HP storage, consider these three.

- 1) The convergence of block and file storage,
- 2) The convergence of high-performance and high-capacity storage, and
- 3) The convergence of common (similar) infrastructure and components, from a management perspective.

With decades of storage experience and the innovation from HP Labs and other newly acquired technologies, HP has delivered the finest converged storage platforms. HP recently announced their newest midrange storage system offering, the *HP 3PAR StoreServ 7200/7400*, a Tier-1 storage platform designed to meet the capacity and functionality requirements of any midsized data center, but also could find many uses in departments and branch offices of any larger enterprise. To learn more about HP’s midrange 3PAR StoreServ storage array, please read on.

Midrange Data Center Issues

One fact is indisputable: *storage is on an unrestrained rampage through your IT infrastructure budget.* It seems determined to consume every dollar it can find. It does not matter if you are an enterprise data center, midsized data center, or SMB, your data store is growing at a pace that seems to be without limits. With data center storage requirements often doubling every 12-to-18 months (to contain the explosion of human information), the IT staff *must* find a means to gain control of it. Mission-critical applications are looking for more high-performance, Tier-1 storage every day, while business-critical applications, such as email and backup, are taking longer to accomplish their tasks, often exceeding the timeframe allocated in the backup window. At the same time, these applications, and others, are filling every high-capacity, Tier-2 drive provisioned to their LUN. In the world of storage area networks (SANs), islands of high-performance Fibre Channel (FC) arrays often are competing for increasingly expensive administrative attention with islands of high-capacity disks and SAS arrays, trying to determine which array is the correct resource for storing the application data that they *really* need. Similarly, SAN storage solutions are competing for data center budget with NAS platforms, also while a variety of archiving solutions are competing with platforms

dedicated to the storage of unstructured objects. ***How many storage architectures do you have competing for those same resources across your data center?***

Today’s midsize or smaller data center really requires the seamless delivery of IT services possibly via a single storage architecture to simplify the support of all critical applications and data types regardless of their server environment – physical, virtual, or cloud. Today’s business is mining its data for more valuable information every day, analyzing archived data to retrieve information from huge “Big Data” repositories throughout the enterprise, not just within the walls of the data center. Because this now is critical to the operational success of the business, the CIO of every business, regardless of size, is demanding that the IT staff reduce the risk of data loss, by protecting the information for an efficient and rapid recovery in the event of the inevitable data loss.

On the server frontlines, application consolidation and server virtualization have enabled the IT staff to reduce the total cost of ownership (TCO) attributable to the server infrastructure, but *what is being done to reduce the TCO for storage?* **With multiple applications sharing the same server resources, the smaller data center now must look toward upgrading their storage environment to support multiple tiers, to deliver dynamic scalability, to and accommodate a virtualized environment demanding higher I/O throughput.**

For many enterprise data centers, this means upgrading their SAN to support a high availability, 8Gbps FC connectivity. For smaller data centers, there more likely is a requirement to deploy fast iSCSI or NAS connectivity, in order to unify and simplify the network connectivity and to avoid the high acquisition costs and even higher administrative costs associated with FC SANs.

Often, the midrange data center also wants to consolidate all existing drive protocols onto a single array. Thus, if applicable, the data center can deploy FC for their highest performing applications that also require high availability, while using iSCSI or SAS for any high-capacity storage required, thus likely lowering the TCO of the IT infrastructure.

Using yesterday’s storage solutions and multiple storage architectures to solve today’s data center challenges probably has proven to be insufficient, especially for the midsized data center, which now must change the storage paradigm,

moving toward a converged architecture. Two things need to be considered: (1) the method of physical connectivity, typically FC or Ethernet, and (2) the use of more expensive FC drives. While FC connectivity (to the array) with FC drives (in the array) is most common in a SAN, you also can have FC (SAN) connectivity to SAS and SATA disks and Ethernet connectivity to FC drives. By evolving from decades-old legacy models (with many silos of storage), this convergence also can prepare the way for the delivery of ITaaS¹ and cloud-based storage.

Larger enterprise data centers, with higher budgets and a broadly-skilled set of storage administrators, have resources available to them that do not exist for the midrange or smaller data center. Their IT staffs are larger, with a broader range of experiences that often carry a significantly higher salary. Even so, there may be less of a difference in the needs of smaller data centers when compared to the larger ones. **Frequently, the midsized data center needs storage solutions that are integrated with all, or at least most, of the hardware and software functionality found on enterprise-level storage arrays.**

In terms of hardware, the midsized or smaller data center is looking for a single multi-tiered, storage solution that includes most, if not all, of the following features found in the largest enterprise data centers.

- **Solid State Disks (SSDs)** for their highest performing applications requiring very high IOPS. This often is the case for databases.
- **High-performance SAS** drives to satisfy mission-critical Tier-1 application requirements at a lower cost than with FC drives;
- **High-capacity** drives to fulfill the rapidly growing needs of Tier-2 business-critical applications, such as email and other web-facing requirements; and
- **Virtualization** capabilities to improve the utilization rates of storage devices, in much the same way that the data center has consolidated and virtualized their server infrastructure to improve the TCO of the IT environment.

The technology roadmap for primary storage software for the midsized data center includes the same functionality provided to many of their bigger brothers – in terms of:

- Block, object, and file management;
- Retention and protection;

- Thin provisioning; and
- Storage services, including performance monitoring.

Many storage vendors have a virtually unlimited range of products that they try to force-fit into every solution. HP, for example, has an extremely broad range of storage solutions available, from the home-grown *EVA* for the largest enterprise data center with the highest functionality requirements, to a variety of storage solutions that they have not-so-quietly been amassing over the past few years, including the hardware platform from *3PAR*, the *Autonomy information platform*, *LeftHand* (now *StoreVirtual*), and *StoreAll*. HP has had solutions that could be tailored to meet the specific needs of any data center; however, with a variety of architectures that each required its own set of expertise.

Now, HP has introduced a new, innovative, converged storage platform to change the enterprise storage paradigm. Using all HP-owned IP, based upon HP's successful 3PAR platform and specifically designed to meet the growing scalability requirements of the midsized data center, it includes functionality features usually only found only in the largest enterprises. **HP's range of storage solutions has just gotten better, especially for the midsized data center!**

Converging Enterprise Storage

HP will appear to be dedicated to the concept of converging data center storage. With a single hardware architecture that spans the gamut of data center storage requirements, from the SMB level, through the midrange, and on to the largest enterprise cloud, HP is providing a common set of hardware components to simplify the deployment of their product set and management of storage. In addition, HP has developed a common set of shared data services, with technology to provide services for storage compression, encryption, scale-out, object store, file system, metadata search, and more. HP also provides a common converged management capability to provide automation and access from any device with a converged infrastructure.

With a converged architecture, the data centers can enjoy an easy-to-use, simplified environment. This simplification always will result in an improved ROI, or return on investment. However, with HP's converged architecture, ROI also takes on additional meanings. The data center can experience the following.

¹ Information Technology as a Service.

- **An improved Return on their Information**, enabling the enterprise to scale with an intelligent integration using HP's Autonomy and other third-party software, providing increased value for better decision making;
- **An improved Return on the Infrastructure**, to lower costs and enable greater agility, because of an improved utilization through consolidation and a federated data mobility; and
- **An improved Return on Individuals**, saving time and reducing complexity as a result of common services and management simplifying IT throughout the enterprise.

HP 3PAR StoreServ

Once again we see that infrastructure matters. HP's 3PAR StoreServ product set provides new Tier-1 functionality, along with the traditional Tier-1 functionality needed for the smaller data center. This includes a new standard for the virtualization of storage, which enables the establishment of ITaaS for block, object, and file storage. 3PAR StoreServ offers the following.

- **Autonomic Response** to reduce the amount of time spent on the management of storage by 90%, as the system responds effortlessly and immediately to new workload requirements;
- **Management Efficiency** to reduce enterprise storage requirements by 50%, through hardware enabled thin provisioning and tiering for high efficiency without tradeoffs, and this is *guaranteed* by HP;
- **Multi-Tenancy** to double the density of VMs for each server with a bulletproof resilience for the consolidation of unpredictable workloads, and this is *guaranteed* by HP; and, finally,
- **A Federated Environment** to provide non-disruptive data mobility between systems. This provides the easy refresh and data services management across multiple arrays.

These features enable enhanced protection of application performance levels with persistent ports for online upgrades without multi-pathing dependency, along with peer persistence for transparent server failover for metropolitan distances. HP guarantees performance levels in a multi-tenant *Priority Optimization* environment, delivering to SLAs based upon IOPS and bandwidth.

In addition, with autonomic replication groups for configuration-less disaster recovery, including three-site replication, 3PAR StoreServ enables the data center to reclaim even more time for their storage administrators. This autonomic management capability, through self-optimiza-

tion, enables StoreServ to provision a volume of storage with a disaster recovery policy. These features enable HP to raise the bar on previous management capabilities.

Now HP is bringing 3PAR StoreServ within the budget of smaller data centers, retaining all of the Tier-1 features required at the high-end enterprise level while eliminating the functional distinctions between midrange and Tier-1. With the same architecture as the high end, HP has added two new models to the 3PAR family: the *StoreServ 7200* and the *StoreServ 7400*.

With the same *3PAR StoreServ File Services* provided to the enterprise data center, HP can reduce the time spent by the mid-sized data center staff in managing storage by 90%, via autonomic management functionality to self-configure, provision, and optimize storage. With primary data deduplication and autonomic capacity reclamation, StoreServ can consolidate user directories and increase capacity utilization. As with the 3PAR high-end, the midrange StoreServ 7000 can reduce storage capacity needs by 50%, guaranteed by HP, through thin provisioning, advanced tiering, and thin persistence² for both file and block data.

HP also has improved the reliability and performance standard for the midrange, making them bulletproof with quad-controller resiliency, a multi-tenant design, and SSDs with mixed workload optimization. The StoreServ 7000 systems can support up to 240 SSDs with up to 320,000 IOPS, and up to 2.4 times the performance of its competition (according to HP), enabling HP to guarantee the 3PAR performance level. HP guarantees that mid-sized data centers can double the VM density to further reduce the TCO of the IT infrastructure. Because of the single scale-out architecture, 3PAR StoreServ can grow freely in any direction, both in terms of processing power and storage capacity. In addition, the capability to federate data from across the business via HP *Peer Motion* provides a virtually limitless migration of data, protecting the investment made in previous technologies.

In fact, this architecture enables the data center to experience a painless and risk-free migration from their older HP EVA storage products.

² Thin provisioning means that space is not taken until it is needed. For example, you can provision a LUN to be very large, but only the space that actually is needed will be consumed. This means that volumes stay as lean and efficient as possible (i.e., "thin") by leveraging the hardware to non-disruptively reclaim unused space associated with deleted data.

3PAR StoreServ can turn a complex storage environment with a fragmented architecture into a simplified, converged one for any size enterprise. The new 3PAR midrange servers are the StoreServ 7200 and StoreServ 7400.

HP 3PAR StoreServ 7200

The 3PAR StoreServ 7200 has two controller nodes with up to 144 hard disk drives (HDDs) and 120 SSDs. Each controller chassis comes in a 2U rack format with 24 small form factor (SFF) slots, while the disk chassis comes in two configurations: 24 slots for 2.5” drives in a 2U chassis and 24 slots in a 4U chassis for the 3.5” drives. It has 24GB of cache and can have up to 12 8Gb Fibre Channel ports, with four built-in, and eight optional. The 7200 also has four optional 10Gb/second Ethernet ports, providing the midsize data center with all of the Tier-1 and Tier-2 storage that it needs. In addition, it comes with two built-in Gigabit Ethernet ports for file access and remote copy.

HP 3PAR StoreServ 7400

The 3PAR StoreServ 7400 has up to four controller nodes with up to 480 HDDs and 240 SSDs. Each controller chassis comes in a 2U rack format with up to 48 SFF slots in a four-node 7400, while the disk chassis comes in two configurations: 24 slots for 2.5” drives in a 2U chassis and 24 slots in a 4U chassis for the 3.5” drives. It can have up to 64GB of cache with up to 24 8Gb Fibre Channel ports, with up to eight built-in, and up to sixteen optional. The 7400 also has four 10Gb/second Ethernet ports. With this configurability, the HP 3PAR StoreServ 7400 platform is the first mid-tier price point storage solution with a quad-controller architecture that can provide the midsize data center with all of the Tier-1 and Tier-2 storage that it needs.

Conclusion

With the growth of data at peak levels (so far), it is more important than ever that all businesses gain as much value as possible from every dollar spent on its storage infrastructure. After all, it is data that provides the data center with the information that it needs to achieve the responsiveness required in today’s competitive environment. Like the proverbial “early bird”, whoever can provide answers faster likely will win the competition for the users’ attention and business. Today, HP can deliver that information faster than ever before, and at a lower cost and with more agility than ever before.

With a scalable architecture that provides high-end resiliency and protects the investment that the enterprise is making in new hardware, products such as HP’s StoreServ, HP is also protecting the investment that you made yesterday, in products such as HP’s EVA storage. With a single architecture, HP storage can satisfy the performance needs of not only applications operating in an enterprise environment, but also the needs of the midsize data center, as well. In addition, HP can do this and enable all data centers to remain on budget.

With a simple, easy to use storage infrastructure, HP enables the enterprise to reduce administrative costs while taming the growth of previously uncontrolled unstructured data with new technologies and new services. HP can deliver the quality of service that your data center must have to deliver the service levels that you promise. Innovation is alive and well at HP research facilities.

If you need to reduce complexity and eliminate inefficiencies, HP’s 3PAR storage family could provide the infrastructure that you have been seeking to improve IT performance while taming the storage budget. Check it out!



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