



WHITE PAPER

Deploying Microsoft SharePoint Server with NetApp Networked Storage

By Mark Peters

January, 2009

Table of Contents

Table of Contents	i
Introduction: SharePoint and Storage	1
SharePoint: Situation, ESG Research, and Storage Implications	2
SharePoint Market Situation	2
ESG Research	2
Storage Implications and Challenges	2
Summary.....	4
Limitations of DAS in SharePoint Deployments	5
Introduction	5
DAS Limitations	6
Playing in the Overall 'IT Sandbox'	7
The Storage Implications for SharePoint in Virtualized Server Environments	8
Why Networked Storage Complements Virtualized Servers	8
SharePoint and Server Virtualization.....	9
NetApp's Networked Storage Surpasses DAS for SharePoint	10
The Advantages of NetApp Networked Storage and SnapManager for SharePoint.....	11
Conclusion	14

All trademark names are property of their respective companies. Information contained in this publication has been obtained by sources The Enterprise Strategy Group (ESG) considers to be reliable but is not warranted by ESG. This publication may contain opinions of ESG, which are subject to change from time to time. This publication is copyrighted by The Enterprise Strategy Group, Inc. Any reproduction or redistribution of this publication, in whole or in part, whether in hard-copy format, electronically, or otherwise to persons not authorized to receive it, without the express consent of the Enterprise Strategy Group, Inc., is in violation of U.S. copyright law and will be subject to an action for civil damages and, if applicable, criminal prosecution. Should you have any questions, please contact ESG Client Relations at (508) 482-0188. This ESG White Paper was developed with the assistance and funding of NetApp.

Introduction: SharePoint and Storage

SharePoint (or, to use the full formal name, Microsoft Office SharePoint Server 2007¹) is definitely a big deal—both in terms of its growth and also its importance in medium-size and enterprise markets. It is a very successful product for Microsoft—garnering nearly a billion dollars in sales in 2007 alone—with tens of thousands of customers and many millions of licenses. As such, it has very quickly established itself as part of the daily IT lexicon in data centers worldwide. In fact, according to Microsoft's website, "Your organization can use Office SharePoint Server 2007 to facilitate collaboration, provide content management features, implement business processes, and supply access to information that is essential to organizational goals and processes." So, yes, it's a collaboration and content management tool that—for example—enables file sharing, document workflows, publishing automation, document management with version control, search, and access control for distributed users such as employees, customers, and business partners. No wonder it is such an attractive proposition.

The website continues (the italics are added): "... SharePoint sites... support specific *content* management, *records* management, or business intelligence needs. You can also conduct effective *searches* for people, *documents*, and *data*, participate in *forms*-driven business processes, and *access* and analyze *large amounts of business data*". Clearly then, SharePoint is also considerably reliant upon, and underpinned by, data (both unstructured and semi-structured)—which, of course, means storage.

This paper focuses generally on optimal storage and storage management for SharePoint and specifically evaluates NetApp's approach, detailing how the capabilities in NetApp's DataONTAP and SnapManager for SharePoint Server offerings help to drive storage efficiency, reduce cost, and exclude complexity in a comprehensive SharePoint implementation. It is not so much a 'how to' guide, but rather a 'why to' explanation. While there have been some suggestions to use Direct Attached Storage (DAS) for SharePoint (and they certainly has some prima facia validity), there are also many reasons why a networked storage approach— such as NetApp's—is not only a fully adequate approach that is well-suited for SharePoint, but it is also one that offers distinct advantages in terms of additional data management value.

Indeed, the mere existence of a storage discussion around this application actually reflects well upon SharePoint, because the need for carefully considering the optimum storage approach is a function of both its sheer success as well as the consequent increase in the importance of the data stored and managed within it.

¹ Note – the formal product name is acknowledged, but for brevity and readability, throughout this paper, the term "SharePoint" is used as shorthand to refer collectively to Microsoft Office SharePoint Server 2007, SharePoint Portal Server, and Windows SharePoint Services.

SharePoint: Situation, ESG Research, and Storage Implications

SharePoint Market Situation

Microsoft Office SharePoint Server (MOSS) is rapidly becoming a popular enterprise application and productivity tool as organizations seek to enhance collaboration and enable information accessibility. Outfitted with new features for enterprise content management and tighter integration with Microsoft Office productivity tools, MOSS now ranks, in many organizations, as a 'mission-critical' application, not unlike Exchange. Therefore, minimizing downtime, protecting data, and meeting compliance requirements now go hand-in-hand with its new-found status. However, due to a server farm architecture, a complex platform configuration, and a document repository consisting of one or more SQL Server databases, MOSS presents some interesting storage choices as well as unique backup/recovery challenges (especially when it comes to granular recovery).

It's not uncommon for users to report that SharePoint and its storage are "growing like weeds"—and, although the association may be an unfair one given the benefits SharePoint can bestow, it does highlight the challenges that follow in terms of rational and flexible storage provisioning! Although it is not yet the biggest (by sales) application from Microsoft, nor the biggest (by projects) application supported by NetApp, it *is* one of the fastest growing for each company. With such importance and focus, it is of paramount importance to consider the challenges for IT in terms of storage—not only in terms of SharePoint itself, but also in terms of the broader and dynamic IT environment.

ESG Research

ESG recently conducted extensive research² into these very issues and a sample of the key findings highlights both the impressive quantitative growth of SharePoint as well as its qualitative market standing.

- **SharePoint adoption is widespread and increasing.** ESG's survey of 1,191 IT and business managers found that one in three (33%) North American and Western European midmarket and enterprise organizations are using SharePoint today and that an additional 13% plan to do so.
- **SharePoint is quickly becoming a critical organization-wide resource.** Some 29% of current adopters rate SharePoint as one of their top 3 IT initiatives and 82% place it in the top ten.
- **Three major "triggers" are driving current and planned SharePoint implementations.** These triggers are: organizational efforts to standardize on Microsoft applications, specific projects that require collaboration tools, and Office 2007 upgrades.
- **SharePoint is viewed very favorably by current adopters.** Sixty-nine percent of current adopters say they would recommend that organizations similar to theirs implement SharePoint broadly. Any customer challenges with SharePoint reflect cultural and process issues more than technology obstacles.

Storage Implications and Challenges

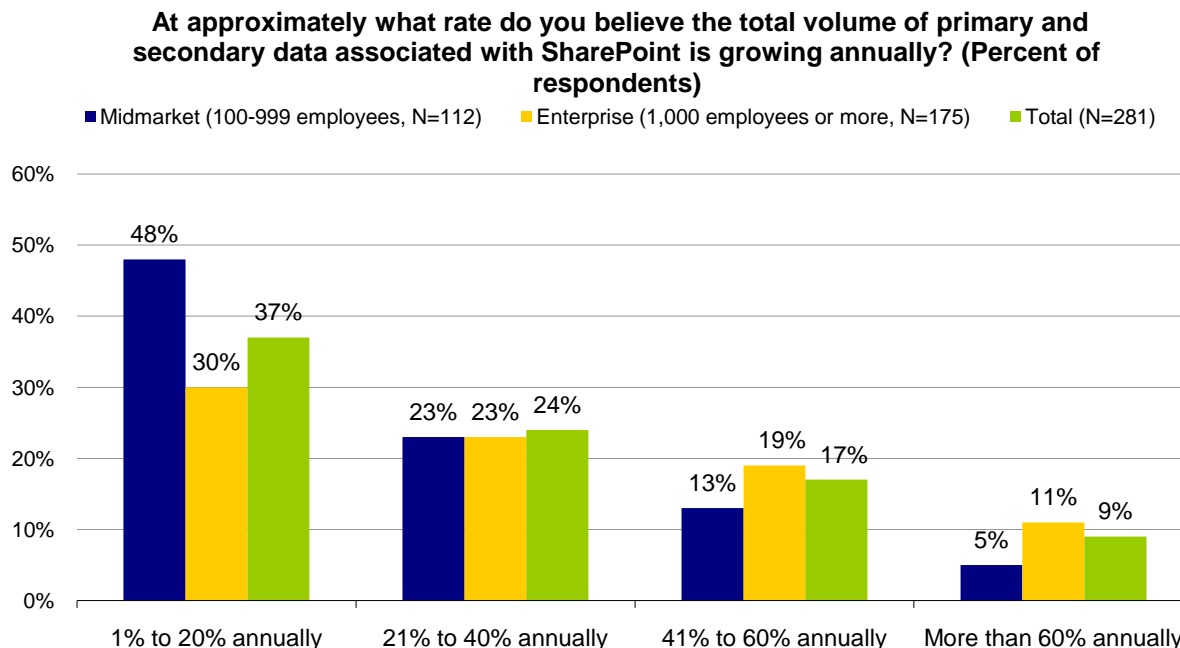
Clearly, a successful application of such size and data-intensity has considerable implications for the storage environment and management. Much of this paper will address and compare methods to deal with these implications, which, at a high level, can be summarized into three main categories:

- 1) **Capacity.** SharePoint usage can lead to a significant increase in primary and secondary storage capacity, as shown clearly in Figure 1. Documents stored in shared folders on file servers will be

² Source: ESG Research Report, *The Impact of SharePoint on IT and Information Management*, November 2008. Unless otherwise mentioned, all other references to ESG Research and resultant charts in this paper refer to this study.

replaced with Managed Document Repositories (i.e., SQL Server databases). In addition, information previously stored only on desktops and laptops may now be centralized in SharePoint.

FIGURE 1. DATA GROWTH ASSOCIATED WITH SHAREPOINT



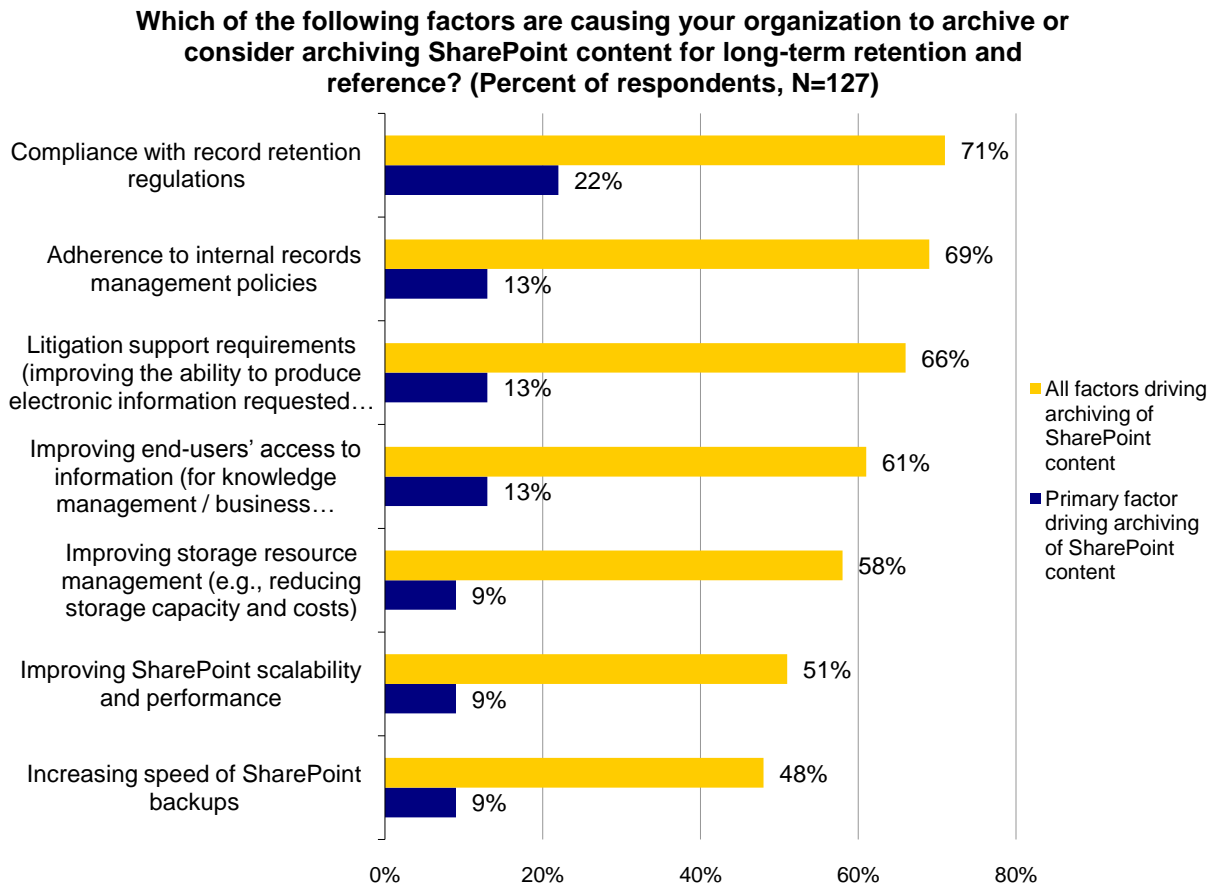
Source: Enterprise Strategy Group, 2008

Additionally, the versioning feature of SharePoint can easily lead to multiple copies of data being stored. ESG research found that, in terms of annual storage capacity growth, 37% of respondents experienced a 10-30% increase and one-third of respondents experienced an increase of 30% or more. This added capacity will also impact the sizes of future backups as 68% of the SharePoint research respondents noted increases in this area.

- 2) **Data Protection.** As the extent to which users depend on SharePoint grows, so will the need to maintain high data availability and to establish business continuity and disaster recovery strategies. ESG research found that of those SharePoint users surveyed, 36% have concerns that their current backup processes do not provide an adequate level of protection against data loss. This is of particular concern considering that over one-third of survey respondents cited a SharePoint downtime tolerance of one hour or less before their organization would suffer adverse business affects. So why so much concern about protection? A few reasons: the amount of data stored in SharePoint can become staggering, SharePoint configurations can be complex, the native backup and recovery tools are sometimes inadequate, and item-level recovery can be—at a minimum—challenging. In fact, users are still trying to figure out the backup and recovery implications of SharePoint—23% of current adopters say SharePoint is more challenging than other applications from a backup perspective.
- 3) **Overall Storage Management and Infrastructure.** Many IT managers would acknowledge the superficial benefits of having specialized tools for every job in the data center, much as drivers might acknowledge that different vehicles for varying journeys and purposes would be a pleasant luxury. However, in the same way that most of us are forced to limit ourselves to one car, so must most data centers make holistic decisions about the optimum method of operations management. This approach has many advantages:

- a. Management of fewer systems and processes is much easier in terms of training and troubleshooting. It means less complexity and less room for variation—both of which can add errors, costs, and extra management overlay if not controlled.
- b. Invariably, it is more cost effective to share resources since initial acquisition costs are better and the effective ongoing running costs are improved as a function of higher overall utilization, without—for instance—having stranded and unused storage capacity on one system while another is bursting at the seams.
- c. As shown in Figure 2, certain management motivations and regulations apply *across* a data center—not only do these drive the growth of broad management applications such as SharePoint. It is far more preferable from both an operational and an auditing perspective to have standard methods and tools across the data center to meet archiving, regulatory, and other management requirements.

FIGURE 2. REASONS FOR ARCHIVING SHAREPOINT CONTENT



Source: Enterprise Strategy Group, 2008

Summary

Making choices and managing data at the data center level is the most pragmatic and efficient way to operate. It offers an infrastructure that is understandable, flexible, and capable of controlling costs as all applications—SharePoint or otherwise—grow and change. However, managing the capacity, protection, and infrastructure needs of a rapidly growing SharePoint installation can often be so challenging that ‘taking the easy route’ of adding new servers and DAS storage can seem very appealing. However, do you remember what your parents told you about carpets, cars, and the like? There is such a thing as a false economy—unless you’re planning to flip the house, you’ll end up spending more time and effort to replace cheap carpets. And so it is with IT—doing things correctly and planning the data center both holistically *and* with an eye to the future will pay benefits.

Being more specific, there are a range of reasons why DAS may not be the best choice for a SharePoint environment once data center operational breadth and longevity are factored in. The next section outlines these.

Limitations of DAS in SharePoint Deployments

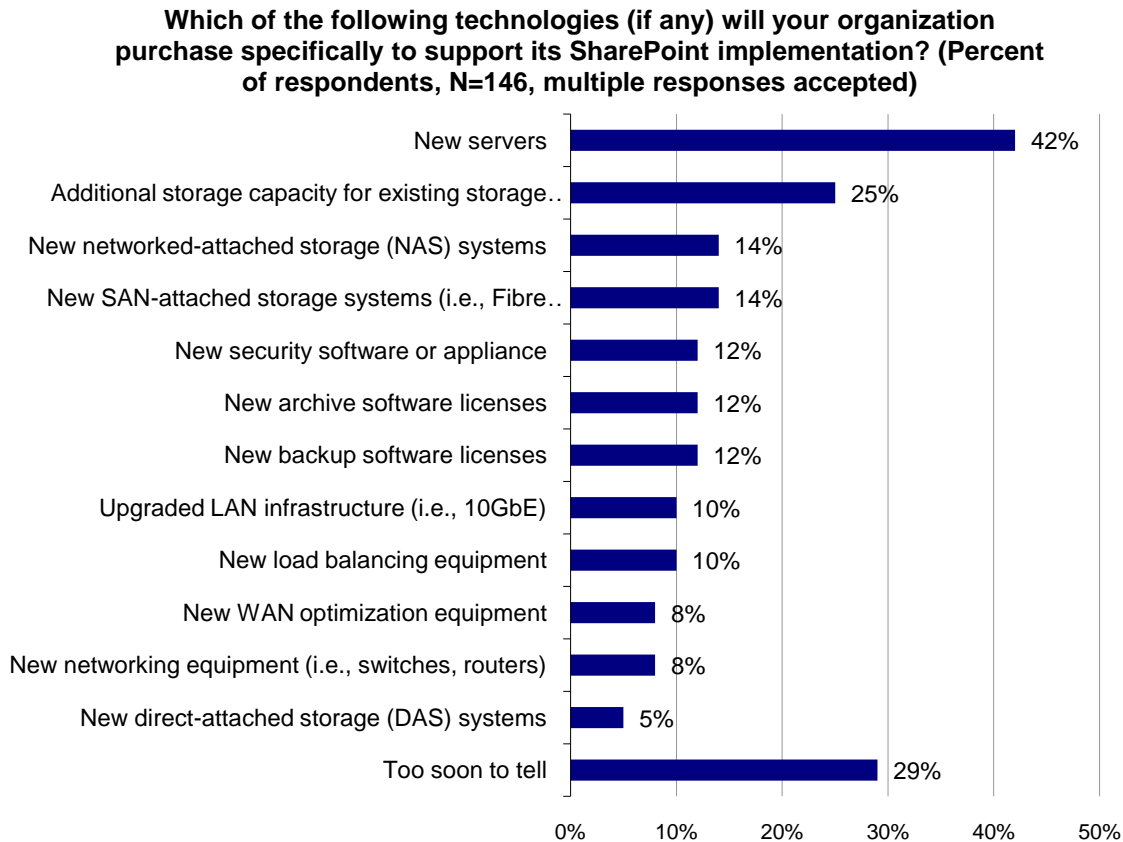
Introduction

It is already clear that the type of storage to use for a SharePoint implementation is important. Users would not want to introduce limitations for either current or expected future elements of SharePoint. Indeed, conversely, potential *added business value* that could be derived from a particular storage choice should not be missed. Perhaps even more important than just these two rather balanced thoughts, however, is the fact that—as already mentioned—the storage decision is invariably not just a myopic analysis of SharePoint and its storage. It is about the *overall* IT environment. In other words, what are the best types and uses of resources— servers, storage, applications, people—for the entire enterprise? To answer this question, there are two main routes we can take:

- What does our knowledge and understanding of IT lead us to propose?
- What is actually happening with real users who have actually implemented SharePoint?

Starting with the real world results, ESG's research shows that SharePoint implementations are indeed driving new technology purchases, especially of new servers, storage capacity, and SAN and NAS storage systems.

FIGURE 3. WHAT USERS PURCHASE TO SUPPORT SHAREPOINT



Source: Enterprise Strategy Group, 2008

As Figure 3 shows, the real world situation is that users buying new networked storage (whether NAS or SAN) outnumber those buying new direct attached storage by more than 5 to 1. Why would users be choosing networked storage? It is, after all, reasonable to assume that users are well enough informed to appreciate that DAS is a functional—indeed, simple—option. So why choose shared storage? Here are the three main categories of explanation:

- 1) The straightforward limitations of DAS, which boil down to potential restrictions in capacity, scalability, reliability/stability, ease of use, and management flexibility.
- 2) The inherent benefits created by the ‘hand in glove’ combination of networked storage with virtualized server environments.
- 3) The advantages of networked storage itself, which can be further split into direct advantages *for* SharePoint in isolation, as well as more holistic advantages *across* an overall data center (for example, dealing with the needs of a range of applications, and deriving value from standard tools such as deduplication or integration into a virtualized environment).

DAS Limitations

DAS is very often the default expectation and initial ‘whiteboard strategy’ for SharePoint. After all, it is easy and contained. Furthermore, in terms of pure upfront cost (not eventual TCO), DAS can be an attractive offering. But it has a number of limitations that are not easily overcome and often require additional IT resources, which can mitigate its being the apparent ‘obvious’ choice. The over-arching point is that DAS goes against the notion—and popular aim—of creating a truly dynamic data center with the ability to apply business policies in an automated and self-healing fashion to the *entire* IT infrastructure. The shortcomings of DAS can leave IT tripping over its own feet, struggling to keep pace with the rapid changes and escalating expectations to which businesses worldwide are constantly exposed.

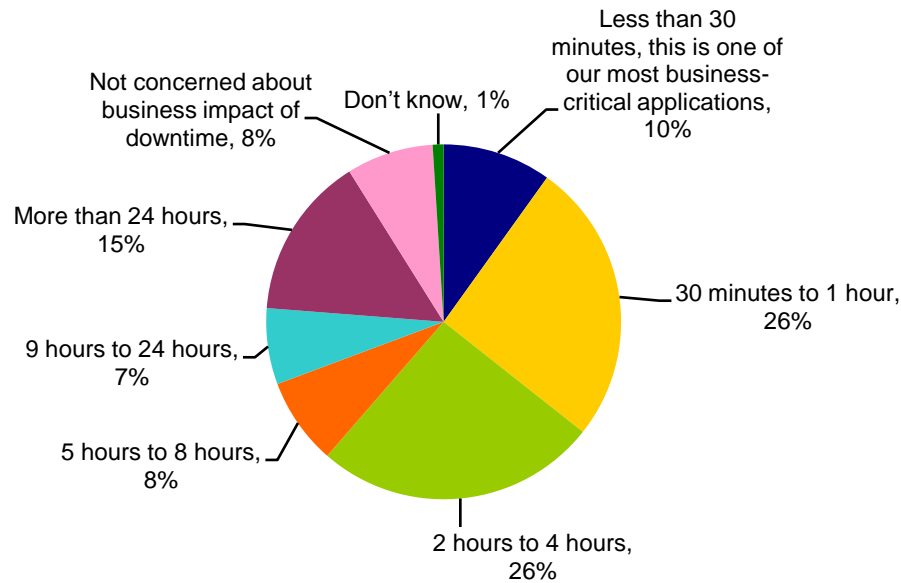
The major limitations are:

- **Inefficient Capacity Utilization:** Put simply, capacity should be purchased to be used, not to lay dormant. Wasted space is a poor use of IT resources and investments that consumes power while delivering no business value. Of course, there is always some comfortable ‘headroom’ needed so that IT managers can maintain ‘optimum capacity utilization’ while maintaining application performance and responsiveness to growth. Capacity planning managers attempt to “right-size” storage capacity requirements to business needs, but managing individual storage silos (DAS) is far likelier to lead to over-purchasing (a.k.a., inefficient storage utilization, plus unnecessary power and cooling demands) as ‘headroom’ is needed on every individual system rather than being managed across the overall data center.
- **Scalability Limitations:** Scalability is what enables IT to easily grow without having to make major infrastructure changes, dip too deeply into already-constrained budgets, or perform forklift upgrades. Scalability is crucial to enabling IT to keep pace with the business and deliver maximum value. As SharePoint usage grows, the only certainty is change. Whether it is generic growth or the burgeoning of latent demand as SharePoint enables new work to be considered and implemented, scalability is needed. DAS invariably and by definition does not offer as much scalability as networked storage.
- **Availability:** Although we have developed methods to address the impact of the shortcomings of spinning disks (RAID is found in DAS systems as much as anywhere else), failures do happen and consideration must be given to the impact that a RAID rebuild will have on application response times and availability. Poor performance will, of course, impact productivity, while a lack of availability can place business at risk. Although some applications can absorb some disruption in service or just simple performance degradation, SharePoint is becoming increasingly mission-critical and thus does not typically fit into this category. As shown in Figure 4, nearly two-thirds of businesses indicated a tolerance for SharePoint downtime of 4 hours or less, with 36% at 60 minutes or less. DAS cannot provide the same robust availability as a flexible networked storage solution. Instead, DAS can introduce a single-

point-of failure that can impact an entire environment and, although there are solutions that can address this issue, they also introduce additional cost (via multiple failover copies of the SharePoint data) and complexity.

FIGURE 4. TOLERANCE FOR SHAREPOINT DOWNTIME

How much unplanned SharePoint downtime could your organization tolerate before experiencing significant negative business impacts? (Percent of respondents, N=156)



Source: Enterprise Strategy Group, 2008

- Management:** Each instance of direct attached storage exists, by definition, in an un-shared manner. Each must be managed separately. Managing multiple 'islands' of storage is challenging for applications such as SharePoint (and the same applies to Exchange, file sharing, databases, web servers, etc.). Since each environment is separate, standard processes are hard to apply and running backup jobs across the entire environment can lead to a slew of problems that might require individual backup strategies, the retention of excessive duplicate data, or extremely lengthy and error-prone restoration processes. In simple terms, when compared to current networked storage implementations, a DAS topology demands more dedicated IT resources of all kinds to manage the same capacity.

Playing in the Overall 'IT Sandbox'

Beyond the limitations of DAS itself, and before looking at the advantages of networked storage, there is another element to consider. As mentioned already, a holistic view of data centers and management approaches is important when discussing the best way to support an application as important as SharePoint. And no review of current data center approaches would be complete without an acknowledgment that server virtualization is a key and growing initiative for many users. Although there is no prerequisite link between SharePoint and server virtualization per se (since SharePoint can run on any suitable physical or virtual machine), there are two important facts to consider:

- Networked storage is becoming the 'norm' in virtualized server environments
- SharePoint implementations are increasingly likely to run on virtualized servers

Clearly, the combination of these two facts supports the earlier research disclosure that users implementing SharePoint are buying more networked storage than DAS. The next section examines this important market development in more detail.

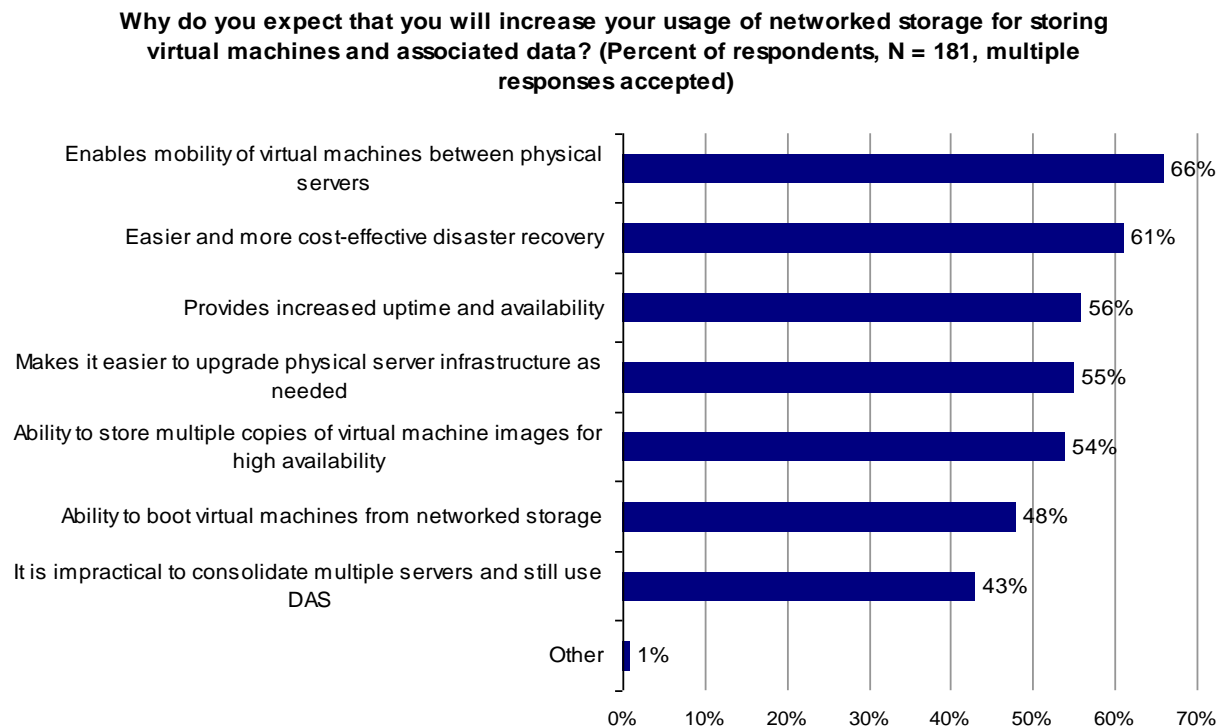
The Storage Implications for SharePoint in Virtualized Server Environments

Why Networked Storage Complements Virtualized Servers

DAS and server virtualization are like oil and water. Having recognized that the storage associated with virtualized servers needs the same level of fluidity, server virtualization adopters are widely utilizing networked storage to support business continuance, high availability, and disaster recovery initiatives to take advantage of the mobility of virtual machines between physical servers (see Figure 5). Implementing SharePoint in virtualized environments has become a consistent trend as the built-in mobility, high availability, efficient resource utilization, and disaster recover assistance—all managed as a single pool of resources and inherent in a virtualized environment—are highly attractive. This is not just an operational attraction, but also an economic one delivering advantages such as reduced costs, lower TCO, increased ROI, and deferred capex. However, to take advantage of the aforementioned benefits, virtualization has to be deployed with networked storage. In a recent ESG survey of current and planned virtualization adopters, 86% of current users had deployed networked storage to support virtualization. Server virtualization can be implemented with DAS to achieve initial consolidation and utilization, but networked storage is required for mobility, high availability, and DR across the virtualized infrastructure.

Server virtualization solutions offer functionality that fundamentally relies on underlying networked storage. For example, storing virtual machine images on networked storage enables the mobility of virtual machines between physical servers for load balancing, high availability, and maximum utilization of resources. With networked storage, multiple copies of virtual machines can also be created, stored, and accessed for replication and disaster recovery purposes—as well as to perform more efficient bare-metal restores. As such, a networked storage infrastructure is a key building block in deploying server virtualization solutions.

FIGURE 5. REASONS FOR INCREASING USE OF NETWORKED STORAGE FOR VIRTUAL MACHINES

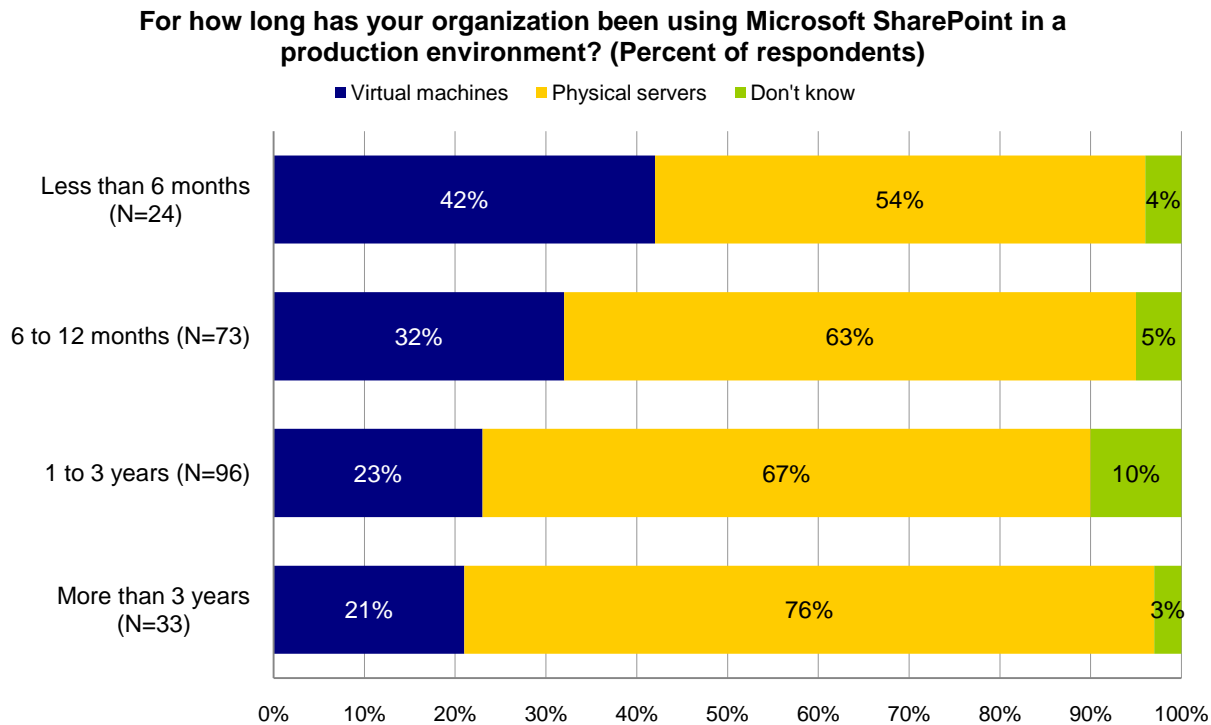


Source: Enterprise Strategy Group, 2008

SharePoint and Server Virtualization³

ESG’s latest research found that 28% of SharePoint production implementations are running on virtualized, as opposed to physical, servers. Taking a closer look at the 28% of respondents running SharePoint on virtual servers, ESG found an interesting correlation between the type of server infrastructure used and length of SharePoint deployment in a production environment. Among organizations that have been using SharePoint in a production environment for less than six months, 42% have implemented it on a virtual machine foundation while only 21% of organizations with over three years of production environment SharePoint experience are leveraging server virtualization technology (see Figure 6).

FIGURE 6. SERVER INFRASTRUCTURE USED TO SUPPORT SHAREPOINT BASED ON LENGTH OF DEPLOYMENT IN PRODUCTION



Source: Enterprise Strategy Group, 2008

The nature of SharePoint (based on its objectives as an enterprise collaboration tool) means that it calls for high availability and data mobility—two key features provided by server virtualization technology. The fact that a virtualized server platform also accommodates many of the architectural concerns users have about SharePoint, including backup and recovery, provides extra motivation to deploy the two technologies in conjunction.

The immediate deployment of new SharePoint instances on virtual machines serves as the latest example of a growing trend in which organizations deploy applications on a virtual server infrastructure from the outset. While this can be partially attributed to the typical complexity associated with SharePoint installations, precluding IT staffs from implementing the application on traditional servers only to migrate to virtual machines at a later date, it is also further validation that server virtualization provides a stable platform upon which strategically significant applications, like SharePoint, can be rolled out.

³ Source: ESG Research Brief, 'Recent SharePoint Adopters More Likely to Use Virtual Servers for Deployment' October 2008.

NetApp's Networked Storage Surpasses DAS for SharePoint

Having previously outlined some of the limitations that DAS has, it is appropriate to consider the benefits of a networked storage approach – specifically a NetApp approach. It turns out that this is not just about mitigating the limitations of DAS...but both *overcoming* those restrictions and also providing *additional value*. NetApp's networked storage solutions certainly address the shortcomings of DAS, but also enable IT users to achieve a leap in efficiency, productivity, and manageability – which ultimately translates as improved ROI and lower TCO. Figure 7 shows a 'highlight summary' of the many ways in which networked storage, such as that from NetApp (it includes a NetApp specific feature) can be beneficial to the *entire* data center and business, inclusive of the SharePoint environment.

FIGURE 7. THE ADVANTAGES OF NETAPP NETWORKED STORAGE VERSUS DIRECT ATTACHED STORAGE IN MICROSOFT SHAREPOINT ENVIRONMENTS⁴

	Networked Storage	Direct Attached Storage
Capacity Utilization	Thin provisioning, data deduplication, and RAID-DP	Poor allocation, low utilization and over-purchased capacity
Scalability	Provision from a central pool and grow based on demand without affecting applications	Requires planned downtime and retains capacity limitations
Management	Centralized, common tool set and control from a 'single pane of glass'	Many management points and hence more committed IT resources
High Availability	Multi-pathing, redundant controllers, and built-in data protection	Single points of failure and third party replication tools often required
Disaster Recovery	Instant snapshots; users save on WAN bandwidth by only sending unique data	Difficult to replicate data dispersed within and across data center
Backup and Recovery	Instant copies of data, easily clone data for test/dev, and save multiple space-efficient copies	Typically, lengthy backup and recovery times – multiple and/or 3 rd party tools
Server Virtualization	Built in mobility, high availability, and maximum resource utilization	Requires application downtime to utilize any advantages

Source: Enterprise Strategy Group, 2009

The 'net-net' is that IT organizations seeking high efficiency will do well to leverage networked storage throughout their data centers as they will have the best chance to achieve optimum capacity utilization, improved performance, increased availability, reduced floor space, and global protection of critical data. Operationally, the list invariably extends to include a more efficient IT staff that can manage and maintain storage dependencies and processes uniformly across the entire data center.

The following sections look at this in more detail—both at the advantages of a generic networked solution and at the specific added functions and values that a NetApp implementation can bring.

⁴ Note – this chart and some other select elements have been adapted from the companion ESG White Paper: *Deploying Microsoft Exchange Server 2007 with NetApp Networked Storage*, October 2008.

The Advantages of NetApp Networked Storage and SnapManager for SharePoint

Storage and Applications - The Big Picture: As wonderful as it would be to be able to support a particular application well, most users are also looking for a storage solution that will confer benefits across their entire operation. NetApp offers SnapManager for Microsoft Office SharePoint Server (giving the nifty acronym, SMMOSS) to work in conjunction with its overall DataONTAP architecture. The former ensures a tightly integrated and application specific set of tools for SharePoint and utilizes NetApp's foundation SnapManager technology to automate and streamline the management of SharePoint data. The latter is NetApp's single unified storage architecture that turns the usual complexity of storage into a powerful and efficient convenience. Although each is powerful in its own right, the two go hand-in-glove to provide an all-in-one solution. SMMOSS can bring the full feature-set and advantages of the DataONTAP architecture to bear for SharePoint users; if it were a relationship, it would be a marriage—not just a text message or hand-holding!

What does all this mean? It means operational and economic efficiency. Users will not only be able to use one storage system for everything, but the efficiencies within that storage system will be available to SharePoint. At the highest level, DataONTAP offers a single architecture for everything from mission critical primary data to archive and compliance files and it can be deployed as a SAN or NAS and have any common disk media type connected via a broad range of protocols. Further, it is managed through one control interface and can offer the many benefits of virtualization (including thin provisioning and deduplication) to not only NetApp storage, but to a heterogeneous storage pool. With SMMOSS plugged in to the DataONTAP architecture, all these capabilities and efficiencies become a part of a user's SharePoint implementation. Indeed, SMMOSS derives and delivers its real value, not simply from the connection to SharePoint nor even from the integration and interoperability, but rather from being a part of a larger storage architecture that delivers overall efficiency. With that in place, we can now examine the specific additional features and explain how a SharePoint user can benefit from them.

Focusing in on SharePoint: In addition to being integrated as a part of the holistic DataONTAP storage architecture, SMMOSS uses existing functions to deliver many specific capabilities and features, adding particular value in a SharePoint environment. These include:

- **Sophisticated Snap technology:** including SnapVault—which can be employed for backup purposes, local snaps for test and development—and SnapMirror, which is valuable for Disaster Recovery.
- **Scheduled and automated archiving and tiering:** which is key as SharePoint grows and is used more as a long term, broad organizational data store. SnapLock is a valuable extension, offering an SEC-compliant WORM capability.
- **Advanced provisioning with FlexVols and Thin Provisioning:** for accurate, flexible, and maximized capacity utilization and availability. This—as with most NetApp functionality—can be managed with just a few clicks from a central management screen.
- **Specialist functions such as Deduplication and Automated Discovery:** the former is, of course, becoming crucial and no more so than in an environment as prone to duplication as SharePoint. The latter is of particular use when determining SharePoint data layout.

These, and other, features translate into operational efficiencies and value for SharePoint environments as follows:

High Availability and Data Protection: NetApp delivers high availability through fully redundant storage systems that support multi-pathing with redundant controllers to incorporate redundant power supplies, fans, network ports, and disk access paths. In terms of data protection, NetApp has RAID-DP, a double parity RAID implementation (which means users are protected against data loss even if two drives in the same RAID group fail), that provides better resilience than RAID 10 while using close to half as many disk spindles. RAID-DP thus makes it more practical for users to choose less expensive disk drives—if that is suitable for their SharePoint implementation. Rather than full mirroring (which, whether using Fibre or SATA drives, doubles the price), RAID-DP means users can consume less capacity than RAID 1 while experiencing greater reliability than other non-RAID 1 levels can offer. This is a good combination as the importance of SharePoint increases for many users.

That increased importance drives stringent SLAs in SharePoint environments and is also why the downtime associated with traditional DAS and tape backup is unacceptable. Networked storage solutions from NetApp can replace tape backups altogether through the use of efficient snapshot, cloning, and replication technologies. Tape might still be used for compliance purposes, but it does not have to be used as the primary restoration vehicle.

Capacity and Scalability: The inherent limited scalability of DAS can obviously and easily be overcome by deploying networked storage. Furthermore, applications such as SharePoint are very dynamic and can change rapidly, demanding flexible storage. DAS solutions are far less flexible than networked storage; they have rigid limits that, when reached, require abrupt disruption and committed IT resources. Avoiding such pain is one of the reasons that DAS is often over-purchased, although the next issue is that the excess capacity is not available to be shared and used by other needy applications as it would be in a networked storage environment. NetApp storage enables organizations to scale capacity on demand; efficiently store data on thinly-provisioned, flexibly-sized volumes; share capacity amongst the entire IT infrastructure; and—transparently to applications and based on intelligent monitoring—automatically move data between different tiers of storage to optimize application and storage system performance. For example, IT can leverage a lower, more cost effective, deduped tier of storage for archiving and still maintain a simple-to-manage centralized pool of storage capacity (which is available, without additional purchasing or downtime, to SharePoint or any application needing it).

Disaster Recovery: DR considerations are crucial when deploying SharePoint. Not only is it important to have a plan in the event of a local outage, but careful consideration should also be given to the possibility of an entire site failure. In the event of a disaster, one of the increasingly crucial systems to be restored is SharePoint. Although DR *can* be provided across multiple DAS systems, it is challenging to achieve as it requires fully redundant hardware, can be slow, is often a manual process, and thus requires both extensive and specialized technical personnel. ESG research shows that users are aware that a comprehensive and sufficient approach is needed—36% of respondents indicated a level of concern about the adequacy of their current backup processes for SharePoint and the exposure to data loss, and 23% felt that SharePoint is more challenging to back up than other applications. NetApp offers a comprehensive, automated, policy-driven, bandwidth-efficient backup and DR functionality. Its goal is to simplify the DR process while reducing the administrative costs associated with DR for SharePoint. Users are able to gain more efficient and granular SharePoint recovery—all the way to point and click restores, flexible searches, and even single-step item-level recovery.

Manageability: Data center managers are constantly looking to consolidate, to automate processes, and to simplify mundane daily tasks. Segregated workloads or platforms only serve to introduce proprietary skill sets, additional infrastructure, increased costs, and potential risk to the business. Thus, the watchwords of management efficiency are things like 'automation' and 'policy-driven' and 'standard process'—all of which are difficult to achieve across disaggregated IT resources such as DAS. And yet systems don't manage data center decision-making: people do. The aim is to let people manage and let systems execute—to keep things standard and automated across the infrastructure whenever possible. NetApp understands these challenges and, with the features offered by SMMOSS, is able to delegate storage system strategy decisions to the SharePoint administrators who ultimately know the types of protection, performance, and DR solutions required for their specific needs better than anyone. As an integrated part of the NetApp management suite, SMMOSS executes the policies and management for SharePoint as a part of the overall infrastructure, applying other mission critical, business critical, and core service mandates as already determined across the overall networked storage.

Virtualization: The growing link between server virtualization and networked storage has already been discussed. DAS is an island, which contrasts starkly with the tight integration NetApp has built with the virtual server vendors. For example, NetApp has teamed with VMware and its Site Recovery Manager product, which helps users automate the failover and recovery processes in a virtualized environment. The NetApp mirroring and replication processes are actually managed from VMware's vCenter as a part of policies that control and maintain the entire virtualized infrastructure. Indeed, NetApp works with all the leading vendors of virtualization infrastructures, including Microsoft Hyper-V and Citrix XenServer, as well as VMware. Since virtual machines are really just files, they are, of course, highly mobile and NetApp can provide local protection and ship them to a remote site for DR purposes. As with the management aspect, NetApp's vision is to enable the owner of the application (SharePoint, for example) to determine availability, DR, and performance requirements and then, through an automated set of policies, drive the supporting infrastructure.

Implementation and Summary: Perhaps the number one piece of advice for those users embarking upon or extending a SharePoint implementation is to stop and think of the storage implications and infrastructure before simply 'going with the flow.' The growing mission-critical nature of SharePoint means very simply that its storage should be planned and managed accordingly. DAS is probably adequate when the application is looked at in isolation, but networked storage is sufficient when SharePoint is viewed both in context of its importance and also as a part of the broader IT infrastructure.

As stated at the start of this section, users are typically looking to embrace and employ 'positives,' not to merely avoid and reduce 'negatives.' NetApp networked storage not only addresses the issues of DAS for SharePoint, but also confers many useful additional benefits *upon* SharePoint users and *for* SharePoint users as a part of an overall IT infrastructure. Less cost and more value is a strong value proposition!

The reduced cost is a function of needing *less overall hardware* (no need to over-provision), offering *better utilized hardware* (using as tiering), and requiring *less overall storage* (via deduplication). The improved value comes from such aspects as *better DR safeguards* (less downtime, more standard, and more granular), *higher uptime* (from flexible scalability and RAID-DP), and a *more secure and compliant* storage platform (integrated with overall, policy-based, automated management). Couple all this with the overall value proposition of NetApp's Unified Storage—including a single, simple management overlay and an agnosticism between FC and iSCSI—and SharePoint users gain access to a complete and credible avenue through which they can add SharePoint into an overall NetApp networked infrastructure, rather than a disaggregated DAS alternative.

Conclusion

Deploying SharePoint is not an easy undertaking. Because it sits so centrally with regard to all operations and embodies both collaboration (by design) and archiving (by default at times, but it's growing) a SharePoint implementation should involve careful consideration and planning that covers all levels and areas of an organization. Logically therefore, the infrastructure decisions made to support the SharePoint environment should be similarly broad and, ideally, should consider the impact on and within IT as a whole—and thus be at least cognizant of, and preferably integrated with, other major data center initiatives (such as virtualization and storage efficiency) and practices (such as backup and recovery processes). In simple terms, SharePoint must be considered as a part of IT—not as an add-on.

NetApp has built solutions and incorporated features that meet the demands of SharePoint while still considering other application deployments and infrastructure principles. Deploying SharePoint on DAS is, of course, feasible, but there are roadblocks and pitfalls. There are few good reasons to use DAS, whereas there are plenty of good reasons to use networked storage in general and NetApp's DataONTAP in particular. Networked storage solutions allow the IT team to focus on working with business managers to apply standard policies across the infrastructure to ensure a secure, highly available, scalable, and disaster-proof package.

NetApp (via its services group and partners) brings years of specific data management integration experience to bear as well as a reassuring cooperative support agreement with Microsoft. The continuing development of SMMOSS (SnapManager 2.0 for Microsoft Office SharePoint Server has just been released) improves application-specificity and integration to ensure that SharePoint users can benefit from the full power and flexibility of NetApp's Unified Storage. Indeed, 'integration' is perhaps the key word here. NetApp hasn't just provided an ability to *connect* storage to SharePoint, it has instead truly *integrated* with SharePoint. This means that the real value of NetApp's Unified Storage—a single methodology, architecture, and management across the entire storage infrastructure—is available to SharePoint as well. It means integration with virtualized server environments and integration with advanced features such as deduplication. It means adding value in addition to merely addressing the limitations of DAS.

Barring rare circumstances, it doesn't make operational, financial, or business sense to deploy separate storage for every separate application. There is a gentle irony in the fact that the first part of the word 'SharePoint' is 'Share'—the application itself is all about sharing and yet some suggest that, from a storage perspective, it should run as an island. It is surely far better to ensure not only that the information in SharePoint is shared, but that SharePoint itself shares the best of what is available across the storage and IT infrastructure. And that means networked storage. And, when it comes to that, NetApp offers some of the best.



20 Asylum Street
Milford, MA 01757
Tel: 508-482-0188
Fax: 508-482-0218

www.enterprisestrategygroup.com