WHITE PAPER

The Business Benefits of Unified Storage

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IDC OPINION

Data storage in the corporate environment has become increasingly complex. IT leaders face significant challenges in effectively storing and managing data. High data growth rates, variability in datacenter workloads, multiprotocol storage platforms, and the proliferation of dissimilar systems drive this complexity. As a consequence, specialized skills are required to operate and administer storage, with a limited pool of candidates available to hire for these jobs. While staffing is increasing operational challenges, budgets are not keeping pace with capacity and management requirements.

NetApp unified storage systems and the FAS2500 series in particular are specifically designed to address these issues. Some of the key attributes of NetApp unified storage that align with these challenges are as follows:

- **Multiprotocol support.** NetApp unified storage provides the broadest range of interface and protocol options, allowing firms to use the same system or type of system across a wide range of workloads and offering consolidation and reduced management overhead.
- **Hybrid architecture.** Flash for high performance and disk for high capacity, with the flexibility and effective management tools to fine-tune the mix of each to match for workload-specific requirements, provides the optimal mix of price and performance.
- **Nondisruptive, clustered storage capabilities.** Organizations can start small and grow without forklift upgrades by expanding controllers and capacity without disruption. NetApp clustered storage also allows for nondisruptive operations including maintenance and upgrades.
- **Cloud and virtual deployment options.** NetApp unified storage can run as a traditional on-premises storage system. It can also be easily connected to a wide variety of public cloud service providers that are built on NetApp. With Data ONTAP Edge, storage operating system instances can be deployed as a virtual system.
- **Mature integrated management tools.** The NetApp Management Suite includes some of the most robust management tools in the industry and is built based on feedback from thousands of customers worldwide, offering high ease of use and low complexity of management.
- **Built-in efficiency features.** Data ONTAP has been providing native thin provisioning, data deduplication, and space-efficient snapshots as part of every NetApp system for years, allowing customers to shrink their capacity consumption to maximize efficiency.

This paper explores each of these storage system attributes in more detail. It also examines how the NetApp FAS2500 offers these capabilities and describes the business benefits of each.

SITUATION OVERVIEW

Storage capacity has grown tremendously over the past several years. Corporate IT environments are required to store more data with less tolerance for downtime, data loss, or access disruption. The interconnected nature of business in the information age makes data an essential asset for almost all businesses. The value and the promise of information increase the rate of data creation, and greater data fidelity and resolution combined with the retention of more data points from every step of the business process drive unabated growth. The increased use of data and the sharing of data with customers, business partners, and regulators raise the importance of corporate information to C-level executives. Businesses are struggling to keep up.

Key drivers of business challenges include the following, with supporting statistics from a 2013 IDC storage *QuickPoll* study of 500 U.S. firms:

- **Sheer growth of capacity.** The process of buying and configuring a sufficient amount of storage quickly enough to hold all the data is complicated and costly. Businesses have difficulty just getting through the purchasing process, cutting checks, and racking and stacking the systems needed to hold all the data.
- **Variability of data types and storage systems.** If all capacity looked the same, the challenge would be easier, but different types of data are being created, and capacity that works for one type doesn't always work for another type. In the IDC storage *QuickPoll* study, respondents pointed to seven mechanisms used to store and access data. Even the most commonly cited mechanism held only 31% of respondents' data on average. Additionally, 28% of respondents in the survey pointed to the complexity of managing too many storage architectures as one of their most pressing storage challenges.
- **High demand for agility.** Business has accelerated, and customers of IT won't tolerate delays of months or even weeks to architect and deploy custom solutions. In the same IDC storage *QuickPoll* study, 26% of respondents pointed to quickly fulfilling storage provisioning requests as one of their most pressing challenges.
- **Expectations for storage service quality and reliability.** Companies depend on storage reliability to run their businesses, and issues with performance, uptime, and data protection are barriers to growth, reputation, and, ultimately, success. Approximately 42% of firms pointed to difficulty meeting service-level agreements (SLAs) around performance, availability, or recovery as their most pressing storage challenge. And 73% noted four hours or less as the agreed-upon recovery time objective (RTO), with less than one hour as the most common response among 30% of respondents.
- **Keeping it all running smoothly.** It's hard enough just to deploy enough storage systems to handle capacity needs, but managing these systems over time is even more difficult in many cases. It's difficult to troubleshoot and update systems that are shared by many users and data types and at the same time provide constant consistent service. Refreshing these systems as they reach end of useful life is another tremendous hurdle that requires time, money, and expertise. According to the IDC storage *QuickPoll* study, troubleshooting ranked second (30% of respondents) among most pressing challenges, and refreshing and migrating followed at third (28% of respondents).

- **Driving efficiency in storage.** Given all the complexity in managing storage, addressing growth, and keeping everything running smoothly, efficiency often takes a back seat. With data and complexity growing, and budgets not keeping pace, improving the efficiency of IT is a key imperative for many IT organizations, regardless of how hard it may be. After resiliency, respondents to the 2013 storage *QuickPoll* study pointed to storage efficiency as the most important feature in the decision to replace their current external disk storage system with a product from a new supplier.

Unified Storage Can Help Meet the Challenges

The NetApp unified storage systems family and the FAS2500 series in particular are designed to address the challenges described previously. Unified storage from NetApp is highly automated, making it easy to deploy, use, and manage efficiently. It's built to support a wide range of workloads, in terms of protocols, performance profiles, and deployment models. It's designed to grow without disruption and with scale-out capabilities while using consistent software tools, from entry-level systems through the highest-level enterprise systems. Key features built into NetApp unified storage systems to address IT challenges include the following:

- **Multiprotocol support.** The heart of NetApp unified storage is versatility. Systems are configured with UTA2 ports that converge Ethernet, Fibre Channel (FC), and Fibre Channel over Ethernet (FCoE) networking in the same ports. This is combined with an operating system and management toolset that can simultaneously manage almost every protocol used in datacenters today (FC, iSCSI, FCoE, NFS, and CIFS). Regardless of the network transport or protocol, the storage staff uses the same management toolset and can draw from the same pool of storage capacity.
- **Hybrid architecture.** With so many variables in workload performance requirements in today's data storage environments, there's an imperative for systems that can adapt to varied and changing performance needs. NetApp unified storage supports all-flash, flash/disk hybrids, and disk only, allowing users to use the same platforms and management tools to solve a wide variety of workload challenges. Flash can be used as read/write automated caching, where the system determines what data to accelerate based on usage, or as a persistent storage tier. Disk deployments can be on higher-performance SAS or higher-density SATA, offering a wide range of cost/performance trade-offs. The OnCommand management suite is designed to make it easy to determine the optimal configuration for a workload and make it easy to fine-tune the system as performance and capacity needs change over time.
- **Nondisruptive, clustered storage capabilities.** Storage systems are designed to be used for five or more years, which is an eternity in terms of changing business requirements. With traditional systems, once the performance or capacity limits are reached, a costly and disruptive forklift upgrade is required. With the scale-out clustering capabilities of NetApp unified storage, users can increase the controller count, number of network interfaces, size of cache, and amount of disk and flash capacity without replacing the system and without even suffering downtime. This allows IT organizations to adapt seamlessly to the changing needs of their business customers. And maintenance tasks such as ONTAP software updates or hardware upgrades can be done online without disruption.

- **Cloud and virtual deployment options.** In the 2013 IDC storage *QuickPoll* study, 42.3% of respondents indicated that they are using public cloud storage, with another 15% of respondents stating that they plan to do so within 12 months. NetApp unified storage offers a variety of integration points to support users in taking advantage of the increasing options for cloud-based storage. There are options to connect NetApp physical storage arrays to compatible cloud services through fast interconnects, to run virtual NetApp systems in cloud environments, or to easily copy and protect data from customer datacenters to cloud targets. This works with hundreds of public cloud providers including Amazon Web Services. Additionally, Data ONTAP Edge offers the ability to run virtual NetApp storage systems within virtual server environments, optimized for branch office locations that need consistent storage capacity to connect back to central datacenters.
- **Mature integrated management tools.** The innovative approaches to unified protocols and hybrid performance are managed by proven management tools. NetApp's Data ONTAP operating system is designed to make it easy to deploy, operate, and manage storage, reducing the staffing burden and level of expertise required. The OnCommand suite is designed to help administrators and managers eliminate repetitive tasks, understand the environment, choose the best protocols for workloads, and optimize the mix of flash and disk to meet changing performance demands as well as continuously improve efficiency and reliability.
- **Built-in efficiency features.** As capacity grows exponentially, budgets are stretched thinner and the impact of low efficiency multiplies. NetApp's Data ONTAP offers a wide range of efficiency tools to shrink the capacity footprint required by business data. All protocols and capacity types deployed on a FAS system of any size can benefit from thin provisioning, deduplication, space-efficient snapshots and clones, compression, and space-efficient RAID protection. All of these features are designed to be easy to implement and have no negative impact on performance.

The Business Benefits of Unified Storage

Technology features are merely a means to an end. In the case of deploying better storage, that end is making the business move faster, more reliably, and more efficiently. The features of unified storage from NetApp are aimed at achieving those goals. Some of the specific areas of business benefits that customers realize from the combination of features and capabilities provided are as follows:

- **Reduced staff cost.** The cost of running a storage environment is often as much as or more than the cost of buying the equipment. The automation features of NetApp management software allow users to manage more capacity with fewer people and less requirement for specialized expertise. The unified features allow users to run many workloads on the same physical system or the same family of systems, reducing the need to deploy and manage a wide variety of different systems. This reduces cost, training time, and risk through streamlined operations.
- **Lower maintenance cost.** Managing a high-performance, high-reliability storage environment requires constant care and feeding. Software upgrades, capacity expansion, refreshes, and ongoing tuning take a great deal of time and money. It is easier and less risky to accomplish these tasks with a highly consistent environment than with a highly fragmented environment. The fact that NetApp can be used for so many different workloads means that administrators can spend less time learning how to maintain systems and be more proficient in accomplishing these tasks without errors that increase cost and risk. The automation and scale-out design inherent to the NetApp systems reduce the complexity and risk of these tasks as well.

- **Improved storage efficiency.** Storage TCO is driven by the amount of capacity needed to store the data, the media used to store the data, and the number of people required to manage the data. NetApp efficiency tools reduce the amount of capacity required to store a given amount of data by shrinking the footprint. The unified design means that a given pool of capacity can be shared among more workloads, reducing islands of wasted capacity. The performance optimization of the hybrid flash/disk design means that workloads can perform well at lower cost. NetApp automation tools make it easier to manage the capacity with fewer people. All of these features combine to drive increased efficiency and, therefore, reduced TCO.
- **Increased agility.** Business moves quickly, and IT needs to respond quickly to take advantage of opportunities. Consistent, automated unified storage allows IT organizations to be more nimble and less wasteful and, ultimately, give their customers what they need more quickly and more reliably. This increases trust, accelerates business, and helps make the most of opportunities. For environments that have moved to an IT-as-a-service model, NetApp provides a storage service catalog and integration with broader orchestration and management tools, enabling faster storage provisioning and self-service capabilities.
- **Minimized growth risk with future-proof capabilities.** Predicting future business needs can be tremendously difficult, especially over a time span of multiple years. Storage systems that don't adapt increase risk by locking users into a system that's either too big or too small for what they need down the road. NetApp systems make it easy to start small and then grow the system as demand grows, minimizing up-front investment. Capacity, performance, and bandwidth can be expanded nondisruptively, making it much easier to grow with data over time. This serves to reduce risk as well as the cost of unplanned downtime, migration, and new purchases.

CHALLENGES/OPPORTUNITIES

For IT organizations, accommodating business growth with fixed or shrinking storage budgets is a fundamental challenge. Hiring qualified storage experts is difficult. Varied workloads require multiple protocols, performance profiles, and management tools. Specialized systems for specific workloads create islands of management complexity and stranded capacity. Lack of effective management and reporting tools limits the productivity of storage administrators and capacity efficiency.

NetApp unified storage eliminates the need for separate systems for different workloads. The same system can be used for multiple protocols (file, block, and object) as well as across a wide range of performance requirements, from demanding transactional workloads that are extremely performance sensitive to archival applications that are highly sensitive to density and cost. The hybrid of disk and flash allows optimization across a wide variety of performance profiles required by different workloads. Ease-of-use features get the most out of limited staff and reduce expertise requirements. Cloud and virtual deployment options can reduce cost and improve agility for appropriate workloads. The Data ONTAP architecture is software defined, meaning that it will accommodate future advances in storage media, protocols, and network transports as well as cloud and virtual deployment options.

CONCLUSION

Unified storage systems and the FAS2500 series in particular are specifically designed to address challenges, including data growth rates, variability in datacenter workloads, and limited IT resources and budgets. By deploying the NetApp FAS2500, firms are able to address these challenges and realize reduced staff and maintenance costs, improved storage efficiency, and greater levels of agility.

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