6 Best Practices for Reducing Your Data Storage Footprint

Reducing your data footprint will help you maximize the usage of your IT infrastructure – but footprint reduction goes well beyond just managing cabinets and floor space. In this SearchStorage.com E-Guide – storage experts Greg Schulz and Terri McClure provide the tips and tricks you need for reducing your data footprint. Included in this E-Guide are the 6 best practices for data footprint reduction, the overlooked constraints often found in storage infrastructures, which storage tools you need to be using and the future of unified data storage.

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Optimizing enterprise data storage capacity and performance to reduce your data footprint

By Greg Schulz

When you think of data footprint constraints in enterprise data storage, what typically comes to mind are physical cabinets, racks and floor space. But there are other footprint constraints often found in storage infrastructures, including availability, capacity, power and cooling, license and maintenance fees, management tools, staffing and budgets.

To illustrate a point, let’s take a look at a generic scenario of a mixed workload environment, before and after performing a data footprint optimization. When contemplating these scenarios, you should scale performance and capacity up or down to meet the specific needs of your environment.

The before example consists of two storage systems, one configured for high-performance and another configured for high-capacity secondary storage. The after example shows a single storage system configured with a mix of both high-performance and high-capacity storage.

For the performance storage system, 192 146 GB 15K rpm (20 TB raw) disks provide good performance, albeit with low capacity utilization. This translates into a low capacity-per-watt value but provides reasonable IOPS per watt and some performance hot spots. The combined energy use of both arrays is about 15,000 watts, which translates to approximately $16,000 in annual energy costs (cooling excluded) when assuming an energy cost of 12 cents per kWh.

For the capacity-centric storage system, there are 192 1 TB disks (192 TB raw) with good space utilization. However, there are some storage performance bottlenecks, including growth constraints and a low IOPS per watt.

By using a combination of techniques, net performance, capacity and feature functionality can be increased, while floor space, power, cooling and associated footprints can be reduced.
By moving heavily accessed files or data, essentially consolidating I/Os to faster, yet higher utilized solid-state drives (SSD) or 15.5K disks, overall net capacity utilization can go up without impacting service quality.

Specifically, using a mix of technologies aligned to meet specific tasks provides a balance of performance, availability, capacity and energy. It can save costs, enable growth and allow another storage system to be put into that footprint (floor space, power, cooling, operating costs).

**Data storage tools to reduce your data footprint**

Storage tools you should be leveraging include storage resource management (SRM) tools, compression techniques, massive array of idle disks (MAID), data deduplication, thin provisioning and SSDs and other tiered storage technologies.

In the quest to reduce your data footprint, keep in mind that what might be applicable to one environment or application may not apply to another. Here are some final tips for reducing your data footprint:

- Establish a performance and capacity baseline
- Align applicable RAID level configuration to meet requirements
- Deploy disks drives of the right size and performance to meet your specific needs
- Balance performance and capacity optimization to your particular environment
- Gain insight into how resources are used to deliver a level of service
- Leverage data footprint reduction tools for online and offline storage
Simplify operations & reduce costs through Storage Consolidation

Rampant data growth has led to problems ranging from inaccessible, stove-piped data to stranded storage capacity. You need a solution that is simple to achieve and cost-effective to deploy—you need Dell EqualLogic, Compellent and PowerVault storage.

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Unified data storage adoption rate rising among users

By Terri McClure, Contributor

**What you’ll learn in this tip:** The unified data storage adoption rate is rising as more storage administrators realize the benefits the technology can provide to their data storage environments. Unified storage is a single shared pool of storage that can combine both block and file data, eliminating the need to manage separate block and file systems. Fewer storage systems mean fewer systems to power and cool, which can reduce costs and optimize resources. Plus, as virtual server environments and the cloud become more popular among users, consolidation is key. Having one unified storage system helps create a standardized environment.

In her latest Storage magazine column, Terri McClure, a senior analyst at Enterprise Strategy Group (ESG), analyzes the latest unified data storage trends.

Although it seems like we’ve been hearing about unified storage forever, it’s still relatively new -- and that means we’re fairly early in the adoption cycle.

But it’s clear that unified, or multiprotocol, storage has a pretty attractive value proposition. In a unified storage environment, data storage becomes a shared resource pool, available to store either block or file data that can be configured to meet application needs as they arise. So it comes as no surprise that there’s significant user interest in deploying unified storage platforms. In a recent survey of 306 IT professionals with storage planning or decision-making responsibilities, ESG found that 70% of those surveyed have either deployed or are planning to deploy unified storage: 23% have deployed the technology, while 47% are still in the planning phase.

**Why unified data storage?**

Our figure of one out of every four surveyed IT users deploying unified storage is significant in that data storage users are notoriously conservative when it comes to adopting new
technologies, and for good reason. The adage "If it ain’t broke, don’t fix it" is alive and well in storage infrastructure teams.

If a storage array fails and data is inaccessible or lost, it could cost a firm millions of dollars and the storage administrator could lose their job. Users have been dealing with having separate systems for block and file data, and are used to it. They’ll continue their current, stovepiped approach until they’re sufficiently comfortable the technology has matured and there’s no risk in adoption, or their corporate budgets demand a more affordable, flexible and efficient solution. Our research indicates it may be a matter of both.

Unified storage can increase operational efficiency by providing a single shared pool of storage that can be used where and when needed, eliminating the need to deploy, power, cool and manage separate block and file systems. This simple reduction in the number of systems to deploy can go a long way in reducing operational costs, never mind the flexibility afforded to the business from having a system that can be deployed in whatever capacity needed (without having to pay the price of having guessed wrong when doing their capacity planning exercise).

Virtualized environments present an even greater challenge. Using standards-based commodity physical servers, new virtual servers and applications can be deployed in a fraction of the time it used to take in a physical world, and the virtual machines could need either file or block storage to support apps.

A fluid virtual server environment creates a requirement for a fluid, responsive storage environment. Yet storage continues to be fragmented and specialized. Unified storage goes a long way in alleviating these issues.

**Unified storage usage trends**

ESG research finds a clear correlation between the number of systems under management and unified storage adoption. A whopping 80% of those with 26 to 100 discrete storage systems, and 83% of those with 100 or more systems, have either deployed or plan to deploy unified storage -- and those with 100 or more systems are leading the early adopter category, with 32% having already deployed unified storage. This corresponds to ESG’s
spending data results that users continue their drive to reduce their overall cost of doing business, especially on the operational cost front.

It follows that we would see a strong correlation between unified storage adoption and satisfaction with utilization rates, as unified storage eliminates specialized block or file stovepipes, and that’s what our research shows. Eighty-nine percent of early adopters are mostly or completely satisfied with their utilization rates vs. 77% of those currently not using unified storage. We see the biggest differential with those reporting they’re completely satisfied, with nearly a third of early adopters falling in this category, two-and-a-half times the number of non-adopters that are completely satisfied. Significantly, not a single unified storage adopter responded they were “not at all satisfied.”

**Unified data storage deployment alternatives**

Today, users have multiple approaches to deploying unified storage; they can deploy a unified storage system, which is an integrated system that supports both block and file data, or they can deploy a file gateway that attaches via a storage-area network (SAN) to block storage shared with other applications. Our research indicates there isn’t a strong preference for either approach, with 30% of respondents using or planning to use a unified system, 32% a gateway and 35% planning to use both approaches.

There are certainly business cases that can be made for both. Gateways allow users to redeploy existing block storage investments to support file data by adding a “file personality” to the front end. But the downside is that the SAN-attached block storage and the gateway are truly two distinct components that need to be managed. Unified systems don’t carry the attraction of allowing users to tap into existing SAN assets, but they do reduce the number of systems under management. ESG expects to see the continued trend of users taking both approaches to unify their data storage environments because users must deal with properly allocating existing investments in concert with adding new systems.

**The bottom line**

While specific implementation strategies may still be undetermined, ESG’s research clearly finds unified storage will become more common. It’s attractive in terms of both IT and
financial efficiency -- a winning combination by any standard. ESG’s findings reveal a clear desire for improved system efficiency as IT groups look to optimize their current storage infrastructure investments in light of continuing data growth and the ongoing tough macro-economic climate.

In addition to covering up past IT sins such as poor capacity utilization, unified storage can help IT organizations accelerate infrastructure consolidation and resource optimization, which are crucial components to future visions of dynamic, highly virtualized or private cloud computing environments. Indeed, as “cloud” becomes a more common model for the consumption of IT resources, there’s another explicit value for the standardization that unified storage can deliver.
Resources from Dell

Simplifying Management Through Windows Storage Consolidation on Dell PowerVault NX3000 Nas Appliances

Storage Consolidation ROI Calculator

Simplifying Storage Management for Virtual Environments