

White Paper

The Cost of Maintaining the Storage Status Quo

Rising Data Capacities and Increased Workload Requirements
Are Quickly Driving Up the Cost of Business

By Scott Sinclair, ESG Senior Analyst;
And Kerry Dolan, ESG Senior Lab Analyst

October 2016

This ESG White Paper was commissioned by Panzura
and is distributed under license from ESG.



Contents

Introduction	3
The Cumulative Cost of Staying with the Storage Status Quo	3
The Expensive Elements of the Status Quo	4
An Economic Evaluation of the Traditional Storage Model	5
The Bigger Truth.....	8

Introduction

Over the past decade, the world has undergone a massive digital transformation, creating a near-universal dependence on data. As a result, the reliance on data and information technology has become ubiquitous across a broad range of industries. No industry is immune to the opportunity or competitive threat that digital technology presents. As firms continuously ramp up their abilities to generate and leverage data, however, many organizations are finding the traditional mechanisms of storing and managing data unable to keep pace.

Earlier this year, ESG polled 633 IT decision makers in a research study of IT spending intentions. As part of this study, ESG collected details on the current state of IT budgets, and while 61% percent of IT organizations indicated that their budget was increasing, overall IT budgets are expected to be up only 4.15% on average.¹ In a separate research study, ESG surveyed 373 storage decision makers responsible for their organizations' data storage infrastructures. When storage leaders were asked to identify their organization's capacity growth rates, nearly two-thirds said that data was growing at a rate of 20% or more annually.² These two figures highlight the unsustainability of traditional data storage paradigms. IT storage capacities are outpacing the ability of IT budgets to support them.

Adding an extra level of complexity, IT workloads are evolving. As businesses capture increasing levels of digital content and discover new ways to leverage that data, the pressure mounts on IT organizations. Contemporary workloads are increasing data access rates and extending the useful life of digital content. Storage performance requirements are becoming less predictable as a result. This leads to an increase in the demand for higher performing storage tiers and a greater need to move data among tiers when necessary.

Still, despite an often radically evolving set of requirements, many IT organizations are choosing to stay with the same basic IT architecture, especially with regard to storage technology. Since they are responsible for data security and availability, IT teams often exhibit a prudent reluctance to change. Yet, under ever-increasing demands, the status quo storage ecosystem dramatically increases the total costs of ownership to the point of unsustainability.

The Cumulative Cost of Staying with the Storage Status Quo

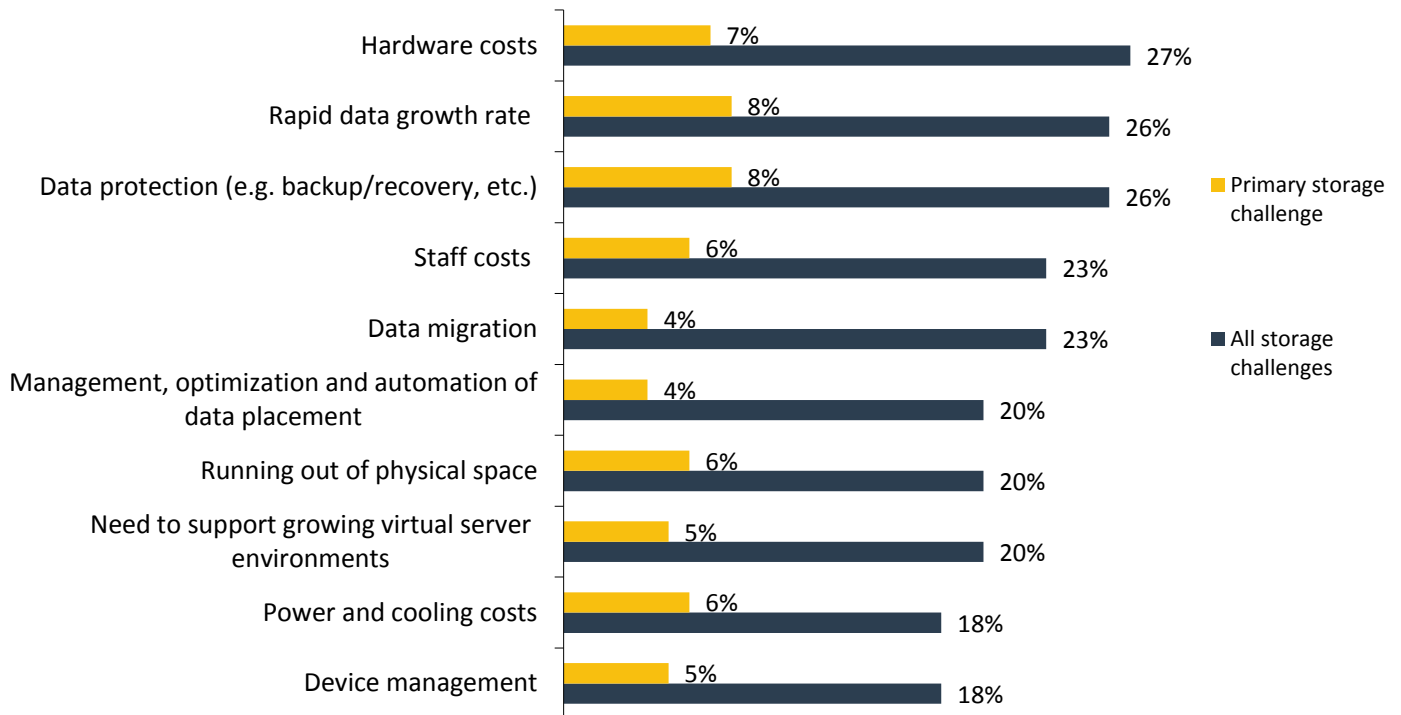
As part of ESG's investigation into general storage industry trends, respondents were asked about their organizations' specific storage challenges. The most commonly identified primary storage challenges were the rapid rate of data growth and data protection. In addition, seven of the top ten challenges can be considered symptoms of storing and protecting data on-premises. These challenges include hardware costs, the rapid rate of data growth, data protection, staff costs, running out of physical space, power and cooling costs, and device management (see Figure 1). As capacity levels rise, so too do the costs of maintaining the entire data ecosystem.

¹ Source: ESG Research report, [2016 IT Spending Intentions Survey](#), February 2016.

² Source: ESG Research Report, [2015 Data Storage Market Trends](#), October 2015. All ESG research references and charts in this white paper have been taken from this research report unless otherwise noted.

Figure 1. Top Ten Storage Challenges

In general, what would you say are your organization's biggest challenges in terms of its storage environment? Which would you characterize as the primary storage challenge for your organization? (Percent of respondents, N=373, top ten shown)



Source: Enterprise Strategy Group, 2016

These data points are further reinforced in ESG's IT spending intentions research study. In that study, IT leaders also identified managing data growth as one of their most important IT priorities for 2016, placing as the third most popular response, behind cybersecurity initiatives and business intelligence/data analytics initiatives.³ At the IT executive level, managing capacity growth and increasing the use of analytics is front and center for many organizations. As these demands increase, however, so too do the costs of maintaining the data storage ecosystem.

The Expensive Elements of the Status Quo

The list of storage challenges presented in Figure 1 provides insight into the storage-related costs impacting IT budgets. Each new terabyte of data often generates at least three terabytes in supporting infrastructure, generating considerable cost outlays. These storage ecosystem elements combine to place tremendous pressure on IT storage budgets. They include:

- **The cost of new storage acquisition:** In a traditional storage ecosystem, technology selections are often the result of a lengthy evaluation and procurement process. That process requires resources and time, and once the decision is made, it can take additional weeks to acquire the new hardware and deploy it.
- **The cost of storage expansion:** When adding new capacity to an existing solution, firms are often locked into the expansion pricing of the storage technology already deployed. Additionally, the granularity of storage add-ons is limited by the architectural design. New capacity shelves take time to deploy, since, once procured, new

³ Source: ESG Research report, [2016 IT Spending Intentions Survey](#), February 2016.

hardware must be shipped from the manufacturer. Also, expansion is often deployed in large chunks of capacity, either one shelf or one new storage frame at a time. These two limitations often require IT organizations to deploy capacity based on expected data growth levels, rather than current needs, or hold up business operations awaiting new capacity deployments.

- **Infrastructure costs:** As storage expands, so too do the requirements to access and maintain the newly deployed capacity. Each new storage frame increases the floor space and networking required to transmit data to and from each new addition. It also increases the amount of power required to operate and cool this ever-expanding hardware infrastructure. Demanding resiliency, incremental capacity often generates a multiplier effect as data is copied both onsite and offsite. Remote or multi-site replication further increases infrastructure costs by extending WAN bandwidth requirements.
- **Administrative costs:** There is a limit to the number of storage frames an individual admin can support. Even as the capacities within traditional monolithic systems increase, thanks to greater scale or larger drive capacities, there are limits. Once reached, expanding beyond these limits requires more people to both manage existing capacity and plan for future expansion.
- **Maintenance and support costs:** As each new storage hardware addition increases the cost of maintenance and support, additional costs arise through increased complexity. Each new system or vendor often introduces differences in support contract terms or length. These differences increase the costs of managing support contracts, as firms must ensure that no element of the ecosystem goes unsupported. Over time, the sheer volume of contracts drives up the personnel costs required for managing those contracts.
- **The cost of data protection:** With each new storage frame, the amount of data protection infrastructure required increases as well. While changing the underlying storage architecture does not directly impact the amount of protection required for each data set, traditional monolithic storage systems introduce inefficiencies in data protection. Each storage silo requires its own infrastructure to connect to the data protection ecosystem. Additionally, traditional storage systems often provide limited data accessibility and mobility, which results in the creation of a greater number of copies than necessary, increasing costs.
- **The cost of disaster recovery:** Protecting the business against a disaster can be a costly endeavor. The creation, management, and support of multiple sites add significant infrastructure and facilities costs. As capacity grows, so too do the requirements of these distinct sites, adding a cost multiplier as capacities increase.

An Economic Evaluation of the Traditional Storage Model

That list of storage ecosystem costs demonstrates how the TCO of traditional storage deployments can get out of hand. First, having storage at every site means having to buy, install, and manage separate storage silos—for headquarters, remote production sites, and DR sites. Second, individual maintenance and support contracts for all this hardware have to be managed. Networking and energy costs are incurred at every site, with higher costs for technologies like MPLS that improve performance for data movement. Organizational growth, mergers and acquisitions, and ongoing regulatory compliance and corporate governance requirements add to the costs, not just due to the hardware and software needed to retain data over the long term, but also because of the attendant infrastructure and maintenance costs.

While every customer's situation will differ depending on workloads, hardware, and configurations, there are some commonalities.

- **CapEx:** In a traditional data center, costs are heavily weighted with upfront hardware, software, and infrastructure acquisition costs.
 - The amount of hardware required to service all the locations can come with a huge cost, especially as organizations try to predict their future needs and procure infrastructure ahead of those needs. More locations also require more software licenses for functionalities like deduplication, replication, and backup.
 - Adding sites requires purchasing the latest hardware, often resulting in either inconsistencies between sites that make maintenance more difficult, or the need to upgrade hardware at all sites in lockstep.
 - The amount of hardware also drives up the costs of networking, power/cooling, and floor space.
- **OpEx:** Administrative costs are generally high as separate silos must be individually managed.
 - Storage administrators are responsible for individual sites or groups of sites, and must manage upgrades and maintenance. These can require time-consuming and disruptive data migrations across dissimilar hardware deployed at remote locations, consuming administrative time as well as stealing time from production activities.
 - Backup administrators are responsible for individual backups, restores, and replication that drive up operational costs.
 - Growth requires adding capacity, which often requires downtime and disruption that drive up costs.
 - Storage problems are not always easy to find and resolve; IT managers, help desk staff, and users often spend a lot of time identifying and remediating problems. Even worse, many organizations must overpay for expensive priority professional services for their remote locations.

Today, other ways of storing file data, based on cloud storage with global file systems, can significantly reduce costs. Hybrid cloud options that leverage both on-premises controllers and cloud storage subscriptions can enable high performance, improved collaboration, and lower costs. The difference in the costs is based on several realities:

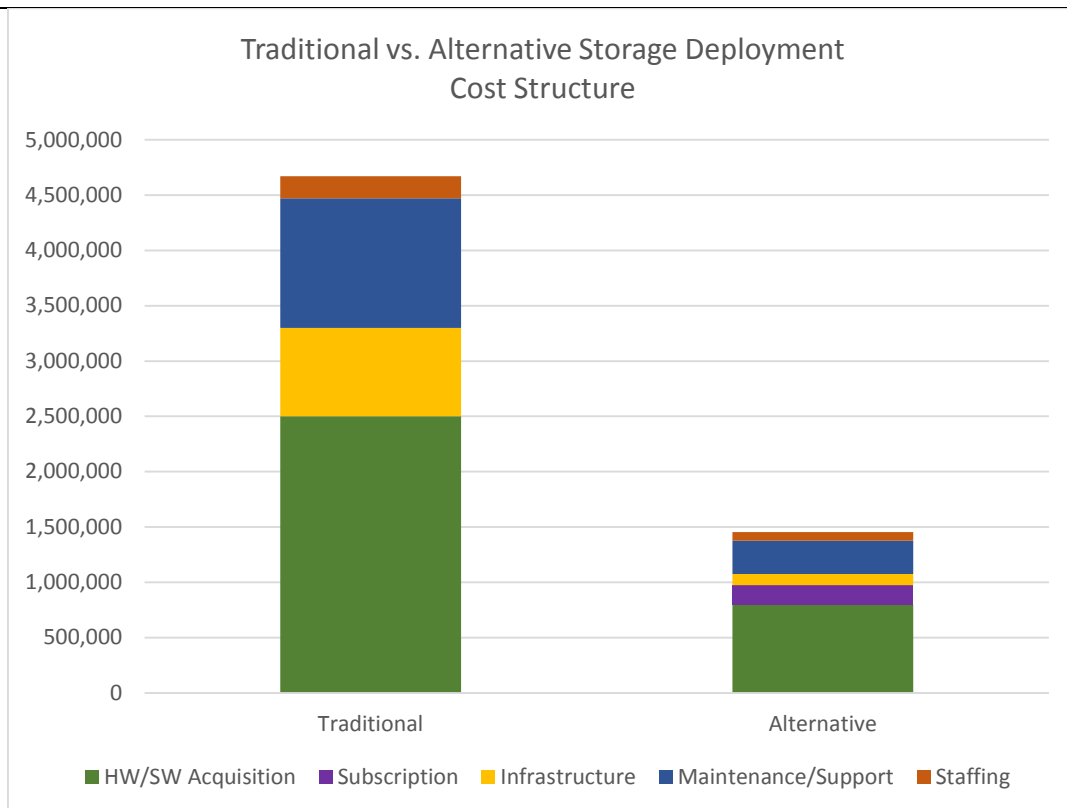
- Acquisition costs are being reduced. Fewer, lower-cost on-premises devices are required. Less hardware also reduces the costs of networking and other infrastructure. In addition, HA storage and backup devices can be eliminated in favor of appliances.
- Data protection does not depend on backups, replication, and DR sites that require onsite equipment and software. Instead, many solutions leverage cloud-based snapshots that are automatically replicated for protection.
- Maintenance and support costs of these devices are lower, with fewer interoperability and upgrade issues.
- Cloud storage subscription costs are based on what is actually used, and can scale up and down according to need. This dramatically reduces the upfront CapEx costs and turns them into predictable monthly OpEx costs. In addition, expensive hardware is not sitting idle until it is needed.
- Growth is simpler and less disruptive, and can be timed as needed instead of set up in advance.

- Centralized and self-service administration can reduce the amount of management needed, and reduce disruption.
- Depending on the solution, other economic benefits can include faster storage problem resolution, simpler data protection, less downtime and disruption, and greater operational efficiency because of centralized management, automation, and global file systems.

ESG has tested and validated many types of file storage implementations. To provide a better understanding of the cost structure, we looked at a typical example of a file storage environment using mid-range NAS gear with low-cost backup software solutions. We charted costs over three years for a rapidly growing hypothetical organization with 2,000 users, leveraging a primary data center, a DR site, and 20 remote offices; consuming 200 TB of capacity with a 40% annual growth rate; and using a common backup scenario of weekly full backups and daily incrementals. Traditional storage environments incurred significant costs when it came to the acquisition, evaluation, and deployment of new hardware and software components as data capacities scaled over time. The capital and maintenance costs of the resulting on-premises IT infrastructure further increased the burden on IT organizations. Additionally, the added complexity of these incremental systems introduced new staffing requirements, further impacting budgets.

Figure 2 demonstrates how much the costs can differ. The specifics will change according to which solutions are considered, but it is common to find alternative solutions such as hybrid cloud deployments costing 3-4x less than traditional solutions, and enabling the economic benefits of greater efficiency, simpler administration and protection, less downtime and disruption, and simpler scaling. What is important to note here is not the numbers—those will change according to solutions, workloads, and implementations—but the simple difference in cost structure: Less hardware infrastructure, maintenance, and administrative effort will be spent using alternative solutions that leverage the cloud.

Figure 2. Typical Cost Breakdown



Source: Enterprise Strategy Group, 2016

The Bigger Truth

The advent of public cloud services alters the IT infrastructure cost paradigm for businesses, and ESG's analysis presents one example of how a hybrid cloud environment can dramatically reduce the cost of storage infrastructure. For many environments, however, these numbers may fall on the conservative side, underestimating the cost of traditional infrastructure deployments. For example, many of the distributed organizations that ESG has spoken with spend considerable amounts on remote office infrastructure. The added costs may be due to regulatory compliance needs, such as those prevalent in the oil/gas and financial industries. Organizations that hold a strong aversion to risk and deploy double or triple redundancy schemes or take backups at each site often see far higher storage costs than those that ESG would expect to see. While some organizations may view these added costs as simply the cost of doing business, often it is simply not the case. The cost delta between traditional technologies and emerging storage platforms, such as public cloud services, is simply too dramatic. With the ever-increasing demands faced by IT organizations, however, these incremental costs of traditional storage are increasing to a level of unsustainability. At that point, the decision to transition away from the traditional storage paradigm will no longer be solely about reducing costs. It will be about survival.

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.



Enterprise Strategy Group is an IT analyst, research, validation, and strategy firm that provides actionable insight and intelligence to the global IT community.

© 2016 by The Enterprise Strategy Group, Inc. All Rights Reserved.

