Enterprise Strategy Group by TechTarget

Tri-Delta Resources

ECONOMIC VALIDATION

Analyzing the Economic Value of IBM Storage FlashSystem Built-in Resilience

Improve Cyber Resilience, Optimize Price/Performance Mix, and Increase Sustainability With IBM Storage FlashSystem

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Introduction

This Economic Validation from TechTarget's Enterprise Strategy Group focuses on the quantitative and qualitative benefits organizations can expect by using IBM Storage FlashSystem, specifically on resiliency and the ability to recover from cyber attacks.

Challenges

The importance of data is increasing in most organizations. In the past, the focus was on storing data. As businesses became data-driven and as analytical capabilities increased, being able to access and mine stored data began to drive IT planning. Now, with 65% of firms reporting that data either drives or supports their business success, organizations are struggling to effectively protect data and assure restorability in the event of cyber attacks or disasters.[1] As seen in Figure 1, 79% of organizations reported ransomware in the previous 12 months, with 50% saying it happens on at least a monthly basis. Enterprise Strategy Group (ESG) research also found that 47% of organizations were not successful in recovering all of their critical data during their last recovery event.[2] With data being a cornerstone for success for data-driven organizations, "somewhat successful" isn't a high enough bar.

Figure 1. 79% of Organizations Report Having Experienced a Ransomware Attack in the Last Year

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

ESG studied the challenges that organizations have with storage and recoverability and found the following to be top of mind for most organizations:

- **Ransomware and disaster recovery.** The sophistication and quantity of ransomware attacks mean that, for most companies, it is not a question of *if* they will be the victim of an attack but of *when*. Most firms struggle to assure their leaders that they can restore critical data, much less do it in a time frame to minimize the impact on operations.

[1] Source: Enterprise Strategy Group Complete Survey Results, *From Data Backup to Data Intelligence*, January 2022.
[2] Source: Enterprise Strategy Group Complete Survey Results, *The Long Road Ahead to Ransomware Preparedness*, June 2022.

- **Complexity.** Recoverability becomes exponentially more complex as data sources grow in number of locations, types, and purposes. Creating a system to protect critical data in a way that provides rapid and complete recoverability is a challenge that is out of reach for many organizations.
- **Data cost.** Cost-effectiveness is a key tenet for almost every IT discussion. Storage planning is often a five-sided equation involving capacity, security, performance, cost, and reliability, with cost pressures taking priority over the other four.
- **Overhead of compression.** Data compression lowers data footprints and reduces the cost of storage. However, the process of compressing the data to store and uncompressing it to make it available comes at a cost. Organizations must balance the tradeoff of lowered footprint against performance costs to end users.
- **Storage downtime.** Downtime in a data-driven business can be extremely costly. With data teams stretched to provide access and secure data, both human and mechanical errors in data systems can have huge financial impacts.
- **Overall storage performance.** ESG research showed that the weighted average of data growth is 33% annually.[3] With so much stress being put on storage, performance sometimes takes lower priority than capacity.
- **Flash durability.** The stability of most flash storage systems relies on the robustness of the NVMe-based drives holding the data. Many storage solutions focus their intelligence on the array infrastructure and use standardized drives.
- **Squandered capabilities due to bottlenecks.** The components of a traditional storage system are often separate pieces of technology connected through some type of interface. Companies find that bottlenecks exist throughout these interfaces and that capacity is underutilized because of these holdups.

Data teams need a solution that helps them store critical information in a secure fashion that provides access, assures restorability, facilitates performance, and minimizes cost.

The Solution: IBM Storage FlashSystem

IBM FlashSystem is a platform of enterprise-level storage systems designed with FlashCore technology, a hardware and software solution that delivers high performance, enhanced recoverability, and superior resilience. IBM FlashSystem technology includes:

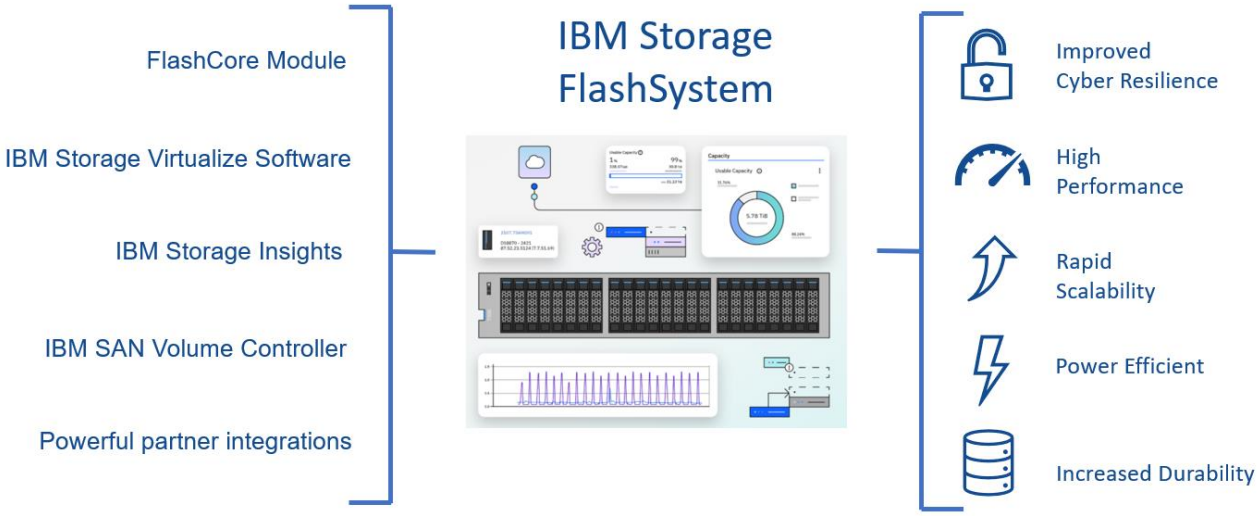
- **IBM FlashCore Modules.** These deliver higher performance, greater density, rapid scalability, and higher levels of resilience when compared to standard flash-based storage systems. The ability of the FlashCore technology to add up to 3:1 inline hardware-accelerated compression and encryption, without any impact to performance, enables organizations to achieve their storage service-level agreements (SLAs) while eliminating much of the complexity and support burden often associated with enterprise storage.
- **IBM Storage Virtualize Software.** This enables organizations to manage and store data across multiple systems, including legacy storage devices. This flexibility lets companies effectively plan the transformation of their storage strategy.
- **IBM Storage Insights.** This cloud-based service provides threat detection, analytics, and insights into the health, performance, and usage of IBM FlashSystem. Storage admins report that Storage Insights enables them to better manage current storage as well as plan for future growth.

[3] Source: Enterprise Strategy Group Master Survey Results, *2021 Data Infrastructure Trends*, September 2021.

- **IBM Inline Threat Detection.** IBM's AI-enabled threat observability service helps you detect and respond to potential ransomware attacks. This service works as part of IBM Storage Insights to help you identify and automatically trigger workflows to respond to potential threats.

As shown in Figure 2, IBM Storage FlashSystem is a combination of IBM hardware, software, and expertise that produces technical and business outcomes that protect data and produce results.

Figure 2. IBM Storage FlashSystem Overview



Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Enterprise Strategy Group Economic Validation

Enterprise Strategy Group (ESG) completed a quantitative economic analysis to understand the impact that moving to IBM Storage FlashSystem can have on a company's ability to reach their business and technical goals.

ESG's Economic Validation process is a proven method for understanding, validating, quantifying, and modeling the economic value propositions of a product or solution. The process leverages ESG's core competencies in market and industry analysis, forward-looking research, and technical/economic validation. ESG conducted in-depth interviews with end users to better understand and quantify how FlashSystem has affected their organizations, particularly in comparison with previously deployed and/or experienced solutions. The qualitative and quantitative findings were used as the basis for a simple economic model comparing the impact of restorability of data as well as the expected costs of FlashSystem storage.

IBM Storage FlashSystem Economic Overview

Enterprise Strategy Group (ESG) economic analysis revealed that companies that deploy IBM FlashSystem can realize significant benefits in business continuity, operations, and overall storage cost. ESG found numerous quantifiable benefits that FlashSystem provides to its customers, with significant savings and benefits in the following categories:

- **Improved cyber resilience.** Cyber resilience is the ability to prepare, respond, and recover from cyber attacks. ESG found that companies utilizing FlashSystem storage have better insight into storage operations to understand attacks, as well as a higher likelihood to limit the business impact of an event when data needs to be restored.

- **Optimized price/performance.** IBM FlashSystem customers report that they have a better mapping between storage cost and overall performance, with the ability to get a higher IOPS per dollar spent than they could before deploying FlashSystem.
- **Increased sustainability.** Sustainability is important to most organizations, but injecting a sustainability mindset is often accompanied by shrugged shoulders and the question, "How can we get there?" IBM FlashSystem is power-efficient and based on FlashCore modules that create less industrial waste over their lifetime.

Improved Cyber Resilience

Cybercriminals are becoming more sophisticated in both the methods of attack as well as the strategy behind an attack to increase the likelihood of the targeted organization paying some type of ransom to regain control over their data. ESG research found that 79% of organizations have received ransomware attacks in the last 12 months, with almost half (47%) experiencing attacks on at least a monthly basis.[4] The impact of ransomware attacks can have a remarkably negative impact on the organization's financial success, driving up to 60% of smaller companies out of business within six months of an attack and causing reputational damage across companies of all sizes that can create loss of profitability for years. [5]

Recoverability from a cyber event can mean the difference between a learning experience and a catastrophic business event. With the financial impact of a breach event estimated at $4.45 million per occurrence[6] and recent reports from a ransomware attack at a public entertainment company costing "in excess of $100 million" per their SEC filing[7], the impact of events goes far beyond the cost of ransoms or replacement hardware.

ESG analyzed the impact of IBM FlashSystem's cyber resilience when compared with alternative storage ecosystems across multiple interviewed FlashSystem customers and found substantial benefits in areas, including:

- **Increased likelihood of recovery.** The key to any data disaster or loss event is the ability to recover critical data with as little impact on business activities as possible. Too often, organizations find out their data is non-recoverable after an event. During customer interviews, ESG found that FlashSystem storage can provide safeguarded copies: immutable data copies that can't be changed, intentionally, unintentionally, or maliciously. Additionally, companies reported that they do more extensive recoverability testing with FlashSystem because of the low cost of storage and ease of use of FlashSystem.

> **"We test our recovery weekly now because FlashSystem makes it easy and inexpensive to explore recovery scenarios that would go untested in the past. Because of FlashSystem, we have a much higher level of assurance that we can recover all critical data in any recovery event."**

- **Full system replication.** As one interviewee shared, ***"FlashSystem full system replication is a game changer for our company."*** They continued to explain how IBM's Full System Replication Manager helps them automate and manage disk and system backups using geographic mirroring to ensure that all critical data is backed up in multiple locations.
- **AI-enhanced analytics with Spectrum Virtualize.** IBM AI constantly analyzes FlashSystem storage to provide optimal placement of data as well as identify system issues that could cause performance degradation, unplanned downtime, and threats to system integrity. Customers report that their assurance levels of

[4] Source: Enterprise Strategy Group Research Report, *The Long Road Ahead to Ransomware Preparedness*, June 2022.
[5] Source: University of Maryland Francis King Carey School of Law, "The Devastating Impact of Ransomware Attacks on Small Businesses," April 2023.
[6] Source: IBM Corporation, *Cost of a Data Breach Report 2023*, July 2023.
[7] Source: Arielle Waldman, "MGM Faces $100M Loss from Ransomware Attack," SearchSecurity, October 2023.

recoverability with FlashSystem are ***"much higher than with our previous flash-based storage system and helps us assure senior leadership that our disaster recovery capabilities are rock-solid."***

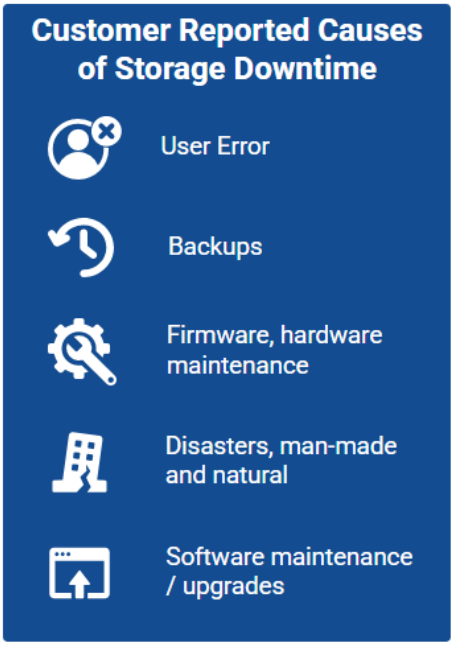
Optimized Price/Performance

ESG found that customers were able to lower their overall storage costs when compared with other flash-based systems by increasing the predictability of their performance-based SLAs. Interviewed customers reported that their storage costs were between ***40%-90% lower*** when compared to their previous environments, while performance levels were an average of 840% higher than comparative systems. ESG analysis found the following benefits:

- **Better utilization of capacity.** ESG found that FlashSystem customers were more likely to use compression, with some interviewees seeing up to a ***60% reduction in data footprint***. Reasons given for this reduction included the following:
  - The extremely low (reported by customers as "zero") impact that FlashSystem compression has on performance enables the use of compression across all storage.
  - The ability of FlashSystem to provide advertised performance metrics removed the need to overprovision, as was reported with previous storage systems.
  - FlashSystem customers reported the alleviation of planned capacity upgrades they would experience with other flash systems. One customer shared, ***"In the past, we would budget approximately $400K for additional storage capacity. With FlashSystem, we have been able to reduce our footprint to the point that we have been able to eliminate that upgrade expense for at least two years. This alone has given our purchase of FlashSystem a positive ROI."***

"With FlashSystem, we actually get the advertised performance of our storage system. Not in bursts, we get the speed we purchased on a day-in, day-out basis."

- **Elimination of complexity.** Complexity in IT systems manifests in many ways, including higher costs, squandered performance, lower-than-optimum employee effectiveness, and the creation of technical debt. ESG found that, while FlashSystem enables very complex scenarios, the interface to monitor and administer storage was extremely powerful yet intuitive. One interviewee summarized it best: ***"The interface for FlashSystem and the other IBM applications that we use just make sense. They allow me to empower my people while allowing us to give them the level of access that is appropriate for their level. It just works."***
- **Improved application performance.** With customer-provided examples that include application performance increases that ***average 840% above other flash systems***, and with examples of queries that can be executed in seconds instead of minutes, ESG found that performance benefits extend to end users in many of the studied scenarios. In our modeled scenario, this benefit was calculated to affect 525 of the organization's 2,500 employees and ***create $850K of new profit***.
- **Reduced downtime.** Depending on industry and usage, each hour of storage downtime can range from a simple frustration to a business event that costs millions of dollars. ESG analysis showed that customers with FlashSystem storage experience a drastically lower frequency of downtime occurrences when compared with their previous storage ecosystem to the point that each person interviewed reported they have had ***zero cases of unplanned storage-related downtime*** since deploying FlashSystem.



- **Operational efficiency.** ESG estimated that FlashSystem organizations can realize a 60% savings on full-time employee (FTE) administrative costs. This is the result of streamlining tasks, along with the ability to match the complexity of the task to the correct level of administration. During interviews, customers shared the impact of shifting 60% of their FTE focus from below-the-line storage tasks to ***above-the-line thinking that better aligned IT capabilities with business needs***.

"We have not had a single hour of unplanned downtime since moving to FlashSystem, and the impact of planned events is exponentially lower than it was in the past."

Increased Sustainability

Most companies have a goal of increasing their sustainability efforts, but few have the ability to effectively create a plan to reduce the impact of their storage efforts. IBM's sustainability program is three-pronged:

1. Intelligent assets, facilities, and infrastructure.
2. Responsible computing and green IT.
3. Sustainable supply chains and circularity.

In reviewing IBM's sustainability program as well as discussing sustainability efforts with FlashSystem customers, ESG found many components of the program compelling, including:

- **Capacity density.** During interviews, customers consistently shared stories of how they were able to meet their storage needs better with FlashSystem, without the consistent overprovisioning and capacity additions they had experienced in the past. They needed fewer drives, fewer racks, and less energy, and they generated less waste with FlashSystem.
- **Energy efficiency.** ESG reviewed—and found credible—an IBM-provided example that showed FlashSystem storage uses 29%-46% less power than competitors and had up to 809% better transactional IOPS per watt than Energy Star-published competitors.
- **Continuous health monitoring for higher endurance.** FlashCore moves heat bins around, keeping all blocks within 5% of wear. Per IBM, this health binning brings up to a 57% improvement to the endurance of the flash, resulting in fewer resources needed for manufacture as well as less waste hitting landfills.

Enterprise Strategy Group Analysis

Enterprise Strategy Group (ESG) leveraged the information collected through vendor-provided material, public and industry knowledge of economics and technologies, and the results of customer interviews to create a three-year TCO/ROI model that compares the costs and benefits of FlashSystem storage with traditional flash storage architectures. ESG's interviews with customers who have recently made the transition to FlashSystem, combined with experience and expertise in economic modeling and technical validation, helped to form the basis for our modeled scenario.

ESG's modeled scenario is based on a high-tech company that generates US$450 million annually across their 32 locations. This revenue is created by 2,500 employees and consists of an 875 TB data footprint. They have 22% annual growth in data. They are migrating from a hybrid data environment that is 58% legacy rotating drives, 20% flash based, and the remaining 22% in public cloud stores.

Why This Matters

While Enterprise Strategy Group created a modeled organization to base our analysis for the benefits of FlashSystem, companies of multiple sizes and infrastructures were tested in the model to ensure the projected benefits were logical, consistent, and achievable for businesses in various industries and structures. The benefits presented in this analysis are considered achievable for the majority of organizational scenarios.

ESG found annual cyber-resiliency benefits of $319,825, consisting of a 35% higher likelihood of restorability and 50% increase in restore time in major events. Additionally, IBM AI-enhanced analytics were able to shift 85% of storage-related support events to a proactive approach that minimizes the impact support issues have on overall cyber resilience. While interviewed customers reported that they believed they were less likely to experience data breaches because of the structured governance improvements that came with their migration to the FlashSystem environment, ESG did not quantify this reduced risk but did find a sizable benefit in the ability to recover from a data loss event.

The modeled scenario did find an annual benefit stemming from operational improvements of $2,609,265. This number included lower hardware costs from a lowered data footprint and overall cost per terabyte that was 11% when compared with the previous environment. Administrative hours needed went down 60% and downtime reduced from 10 to 5 hours per year. The largest piece of the operational benefits was the improvement in application performance that was reported by every company interviewed. While many customers reported increases in performance that were exponential, to remain conservative, ESG calculated a 28% improvement in our modeled scenario. Based on this, we feel that at least 21% of employees can increase their work output by 3%. This results in a $1.34 million benefit; however, if 50% of that increased output is driven into revenue-producing activities, then $850,500 new profit dollars can be generated.

ESG's modeled scenario ROI of 320% was validated in each interview and is realistic and achievable based on customer-reported ROI ranges from 300% to 500%.

Conclusion

Storage is easy, until it is not. As data footprints grow, most companies find themselves in scenarios where storage is fragmented between multiple systems, architectures, and locations in a way that injects risk into data storage, adds cost, creates technical debt, and—most importantly—reduces the likelihood of recoverability in a loss or disaster event. Enterprise Strategy Group research found that almost half of organizations were not confident they could recover all of their critical data.

ESG analyzed the impact that IBM Storage FlashSystem can have on an organization's ability to reach its business and technical goals—specifically, the impact that FlashSystem has on a business's data resiliency. ESG found that companies that deploy FlashSystem ecosystems benefit from technology and best practices that both improve the likelihood of data recovery and accelerate the process of data recovery in data loss events. In addition to strong data resilience, ESG found that IBM FlashSystem has an extremely beneficial price/performance match that improves end-user and IT administration output.

As one interviewee stated, "IBM has created a storage platform that doesn't require customers to make a sacrifice. FlashSystem protects our data in a way that I know we can restore it when needed, is much a lower cost per terabyte than what we used to pay, and gives us performance that has changed the way our people can work." ESG found this sentiment shared across all customers interviewed for this analysis. If your organization is looking for a storage solution that increases data resilience in a performant and cost-effective way, ESG strongly recommends you consider IBM Storage FlashSystem.

About Enterprise Strategy Group
TechTarget's Enterprise Strategy Group provides focused and actionable market intelligence, demand-side research, analyst advisory services, GTM strategy guidance, solution validations, and custom content supporting enterprise technology buying and selling.

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