



ESG WHITE PAPER

IBM FlashSystem Family: Ease of Use for All Environments

Simplifying the Complexities of Modern IT with Faster, Smarter, More Economical Storage

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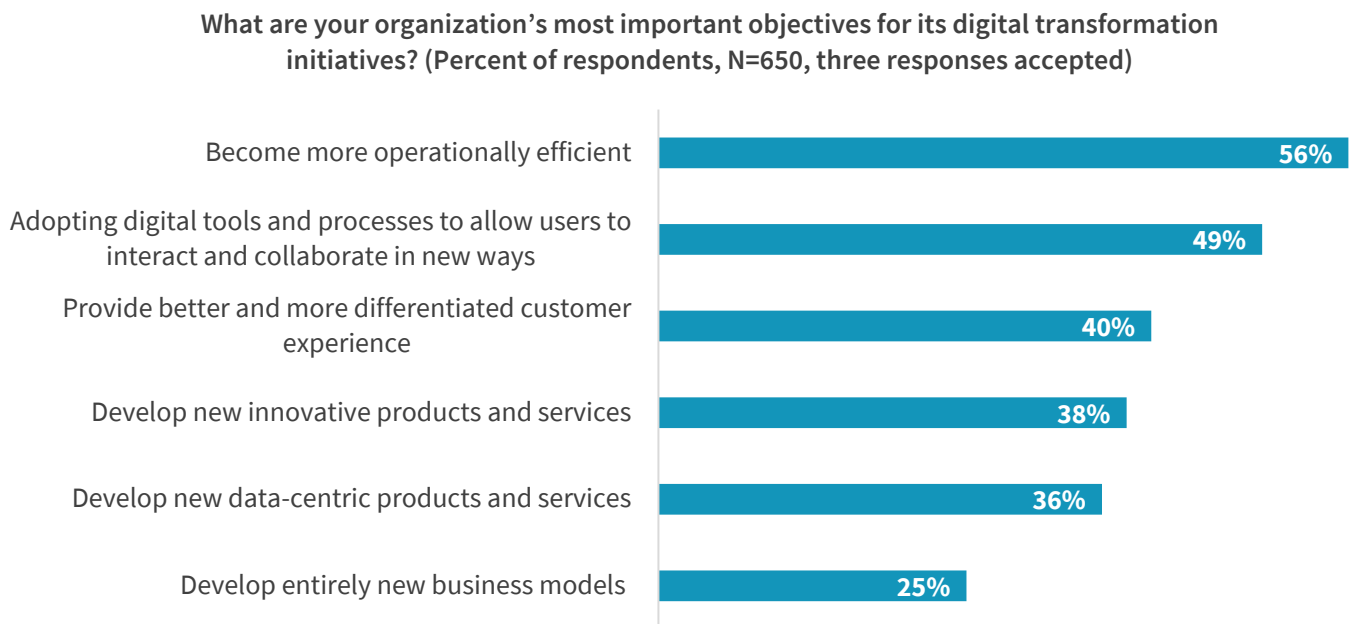
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Introduction

Information technology is the driving force behind business success today. The term “digital economy” was coined back in the 1990s. Now, decades later, the bulk of modern business interaction and engagement is dependent upon data, and for businesses to thrive, good IT is essential. This is a widespread belief. Consider that 98% of IT decision makers surveyed for ESG’s 2021 technology spending intentions research identify their organization as being in some phase of digital transformation.¹

Under the general umbrella of competitiveness and effectiveness, companies often have multiple objectives in mind when putting a transformation initiative into motion. For example, the most common goal for digital transformation initiatives is to boost operational efficiency (56%). But as Figure 1 shows, respondents also hope for a range of positive outcomes, from tactical advantages such as improving collaboration (49%) to more strategic advantages such as developing entirely new business models (25%).

Figure 1. Most Important Objectives for Digital Transformation



Source: Enterprise Strategy Group

Being efficient and innovative is important for any sized enterprise. In a digital economy, data is a great equalizer. Companies need IT innovations that are right-sized for them and that enable them to simplify operations and maximize data’s business value.

These requirements are crucial, as businesses extend IT functions to the cloud, often to multiple public clouds. ESG found that a combined 78% of surveyed infrastructure-as-a-service and/or platform-as-a-service users leverage more than one public cloud infrastructure provider.

¹ Source: ESG Research Report, [2021 Technology Spending Intentions Survey](#), January 2021. All ESG research references and charts in this white paper have been taken from this research report, unless otherwise noted.

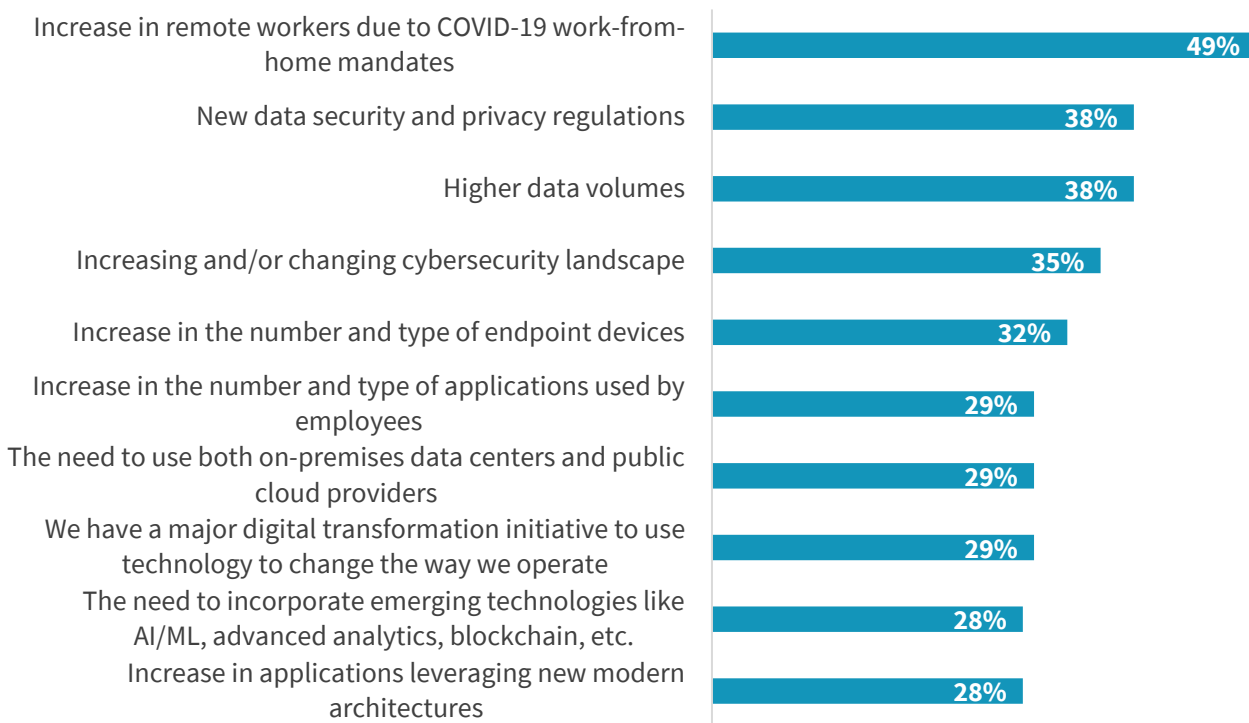
IT organizations want simple, flexible storage infrastructures. They want tools that help them to optimize and simplify operations today and make it easier to integrate new on-premises technologies and cloud services in the future. IBM appreciates these needs and is addressing them with the IBM FlashSystem family.

IT Complexity Holds Companies Back

Combating the pervasive problem of IT complexity is essential to delivering effective IT. Nearly three-quarters (75%) of surveyed IT decision makers told ESG they believe IT is more complex than it was just two years ago. And Figure 2 shows that multiple factors are responsible for these recent increases in IT complexity, with concerns over data storage and security ranking among three of the top four most common reasons on the list.

Figure 2. Top Ten Factors Driving IT Complexity

What do you believe are the biggest reasons your organization’s IT environment has become more complex? (Percent of respondents, N=496, five responses accepted)



Source: Enterprise Strategy Group

Specifically, Figure 2 reveals a few trends:

- The first trend relates to the increased value that businesses place on data. Companies today have a clearer understanding of the connection between leveraging data wisely and achieving positive business outcomes. This realization fosters not only accelerated data growth rates, but also the rise of bad actors. As a result, complexities around storing and securing data are taking a toll on IT.
- The second trend relates to the onslaught of applications and technologies IT must learn, integrate, deploy, and manage. Even technologies that are expected to simplify IT professionals’ lives, such as cloud services, can add layers of complexity to daily operations. This fast pace of innovation is not a short-term phenomenon. It will continue to

accelerate, causing additional complexities to arise and introducing new technologies and applications to implement and master.

- Lastly, the impact of COVID-19 forced many IT organizations to quickly pivot from existing priorities to support a massive ramp-up in the volume of remote workers. While these activities placed a significant burden on IT administrators during 2020, this driver of IT complexity is expected to be relatively short-term when compared to others in the list.

As IT Complexity Grows, the Rules Change

ESG surveyed senior line-of-business (LOB) executives on their concerns about IT. A quarter (25%) of the executives considered their IT organization to be a business inhibitor. For comparison, only 6% perceived IT as a competitive differentiator. Several causes appear to be responsible for those discouraging sentiments, but here are the two most common issues that LOB executives had with their companies' IT organizations:

- **The process to select, deploy, and/or provision technology resources is overly complex** (identified by 33% of respondents). This is a situation that can make it difficult for business units to access data they need for ongoing operations and data analysis.
- **The IT organization's processes to deploy IT services take too long** (identified by 32% of respondents). That is a situation that hampers business competitiveness.²

The rules are changing. IT organizations are now being held to a higher standard and are under more pressure. They still need to keep services online, available, and resilient, as always. Now, however, even as IT complexity grows, they are also being judged by these LOB leaders who are well aware of the connection between business success and IT effectiveness.

Storage Innovations Unlock the Value of Data

Under these circumstances, IT should be leveraging innovations that deliver fast, superior access to data. These organizations would especially benefit from a high-performing, agile storage infrastructure. In particular, two innovations—NVMe and storage virtualization—will help these organizations thrive in our era of new and greater IT demands.

The Promise of NVMe

Non-volatile memory express (NVMe) is an open logical device interface for accessing non-volatile storage media attached via a PCI Express (PCIe) bus or switch. Designed for flash storage rather than spinning hard drives, the NVMe protocol is both streamlined and parallel in its design to maximize low-latency performance. More efficient than traditional protocols such as SATA or SAS, NVMe better delivers the latency improvements of flash.

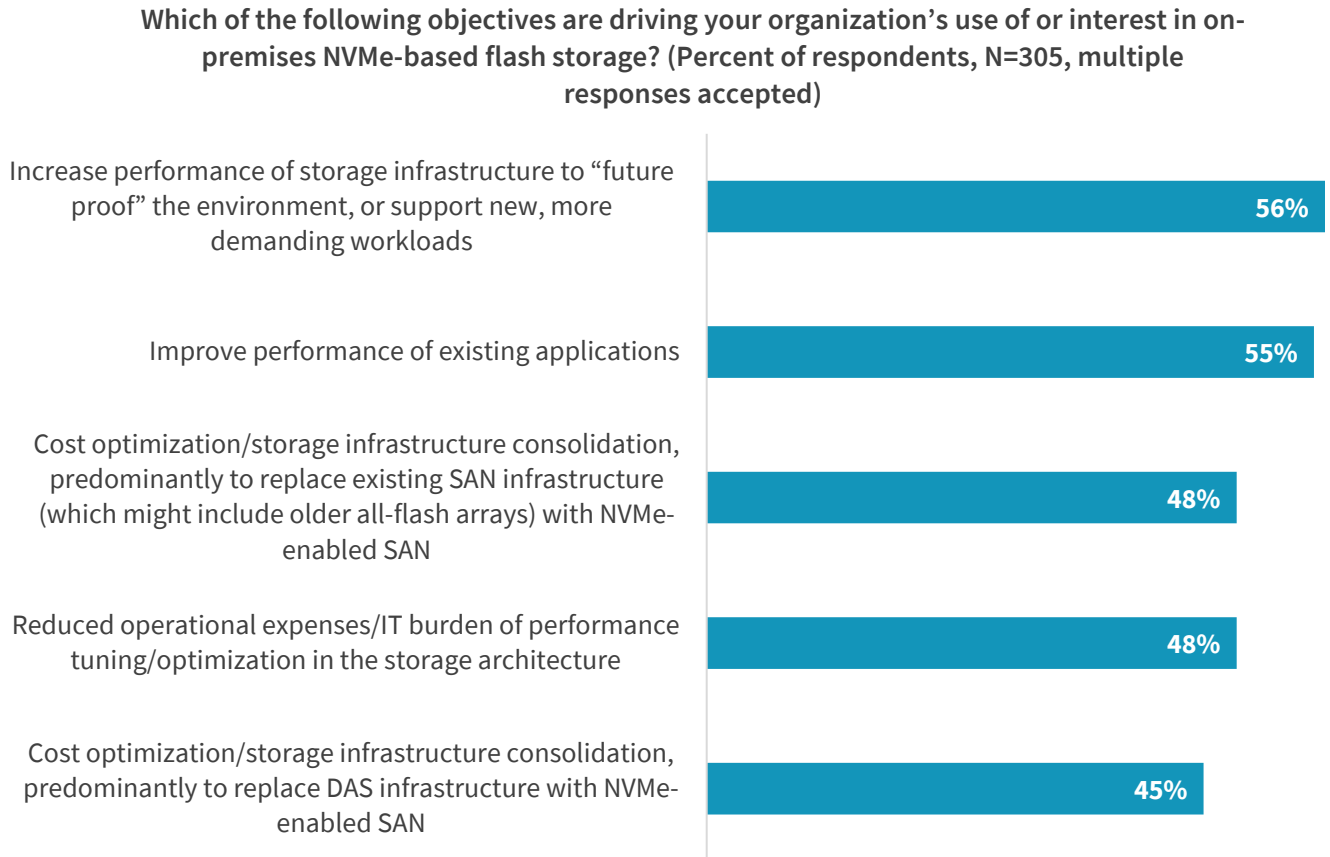
For parallelism, NVMe offers a queue depth of 64,000 commands while supporting 64,000 separate queues. In contrast, SATA offers a queue depth of only 32 with only a single command queue. That stark difference between NVMe and its traditional counterparts is fueling demand for NVMe. Storage decision makers are already leveraging or making plans for NVMe—35% of the IT managers surveyed by ESG for a separate research report said they were already leveraging NVMe-based flash storage, with another 36% expecting to deploy it in 2019.

When storage decision makers familiar with NVMe were asked to identify the objectives driving their interest in the technology (see Figure 3), more than half identified the need to create a more performant storage environment for current

² Source: ESG Master Survey Results, [2019 Technology Spending Intentions Survey](#), March 2019.

and future application needs. Benefits to storage consolidation and simplification were recognized by nearly half of the respondents as well.³

Figure 3. Factors Driving Interest in NVMe



Source: Enterprise Strategy Group

The Necessity of Storage Consistency Across Environments

Most IT organizations understand the difficulty of staying current with new technologies. They also know the pain of traditional data migrations, which have been essential in the effort to keep up. As a result, consistency in how administrators access and manage storage technology as well as consistency in how applications and application developers interact with the storage infrastructure have become essential to overcoming the complexity that results from managing storage hardware across generations.

Software-defined storage (SDS) often offers a storage virtualization software layer to provide abstraction and consistency across different, heterogeneous storage environments. ESG has researched the benefits of software-defined storage, finding that 35% of storage decision makers using or interested in SDS believe it offers them the agility to adjust and update their storage hardware quickly to keep pace with shifting business requirements. Additionally, 37% identified the ability of SDS to simplify hybrid cloud storage environments as one of its benefits.⁴

This need to simplify storage management whether the infrastructure resides on-premises or across hybrid or multi-cloud environments is so pervasive that 35% of storage decision makers indicated that the ability to manage all storage

³ Source: ESG Master Survey Results, [2019 Data Storage Trends](#), November 2019.

⁴ *ibid.*

infrastructure across any location would be a feature that, if present in on-premises technology, would increase the likelihood of their organization replacing public cloud infrastructure with that on-premises storage technology.⁵

Some storage systems, including the IBM FlashSystem family, offer these consistency benefits of SDS plus the added benefit of integrating that technology inside the array.

IBM FlashSystem Family

Technical Benefits

IBM's storage systems have long been popular with organizations desiring storage solutions that are simple and economical with fully modern capabilities. IBM offers a family of IBM FlashSystem® arrays, including the new IBM FlashSystem 5000 and 5200 models, as well as the IBM FlashSystem 7200, 9200, and 9200R models. The family boasts several key architectural characteristics:

- The FlashSystem 5200, 7200, 9200, and 9200R models all have all-NVMe-based architecture and support for storage class memory (SCM), enabling faster business decisions.
- Each FlashSystem model offers better performance than its predecessor. For instance, according to IBM's analysis, the FlashSystem 5035 offers a 33% performance improvement over the earlier FlashSystem 5030, and the FlashSystem 5200 offers a 66% performance improvement over the FlashSystem 5100.
- All the systems offer impressive capacity flexibility with massive scalability. The IBM FlashSystem 5015 scales up to 12PB and the FlashSystem 5035 up to 30.8PB, while the FlashSystem 5200, 7200, 9200, and 9200R each scale to a maximum 32PB.
- Transparent storage optimization and flexibility are hallmarks of these systems. This will be especially helpful when migrating data from existing storage (IBM or not) to any IBM FlashSystem model.
- AI-powered IBM Easy Tier® automatically moves data between tiers to optimize cost and performance. IT administrators can keep an eye on the tiering movements using IBM Storage Insights, which provides a unified view of the storage environment.
- The systems are architected to make it easy for IT to migrate data to and from the cloud.

Business Benefits

The technical specs are solid, but their value lies mainly in supporting the *business* benefits—most pertinently, the benefits that come with easy management in a highly demanding digital era. The systems provide:

- **AI-optimized storage consolidation for modern IT.** They combine the benefits of NVMe and SCM performance with the ability to consolidate high-performance applications on a single infrastructure. And the massive capacity scalability, with up to 32PB in a single system, will be helpful to any organization dealing with growing data. IBM's solution is cost effective and comes with a cloud-like pricing model.

⁵ *ibid.*

- The AI-based optimization ensures that the array is utilized to the maximum extent. That optimization, along with the data-reduction capabilities, ensures organizations will see lower expenses related to power consumption and footprint.
- **Transparent infrastructure flexibility.** Technology is always changing. Given the rate of that change as well as the scale of many IT infrastructures these days, migrations and radical changes to storage management can get costly. The systems' AI-powered data tiering with transparent migration makes it easy for an organization to take advantage of the latest storage technology. These FlashSystem systems can migrate to and from the cloud also, so organizations can accelerate their rate of public cloud infrastructure adoption.
- **Advanced data security and risk mitigation.** Due to data's increased value to the business, the importance of ensuring data security has become greater. The FlashSystem arrays are designed for cyber-resiliency, featuring encryption and a cloud "air gap" snapshots capability, which allows for snapshots to be virtually isolated from the active copy as an extra layer of protection from malicious activities, such as ransomware. IBM Spectrum Virtualize® provides six-nines availability with proactive support and predictive analytics delivered from the cloud. Also, IBM has made thousands of community-sourced best practices available to FlashSystem users, which helps ensure that each FlashSystem deployment is optimally tuned for the specific application environment.
- **Cost-effective NVMe-level Performance.** With its IBM FlashCore® Module technology, IBM can deliver the impressive performance of NVMe-based flash storage with higher-levels of capacity and performance density than traditional SSDs. In addition, IBM's technology can run advanced services, such as compression and encryption, with no performance impact. The net result is faster data access and data services without requiring unnecessary cost or space. These advantages in price, performance, and density that IBM delivers with its FlashCore® Module technology are available starting from the FlashSystem 5200 and available to all enterprises from entry to high-end organizations.

IBM FlashSystem 5015, 5035, 5200, and 7200 models are a channel-only set of products available exclusively through IBM Business Partners.

The Bigger Truth

This is a fast, highly flexible, easy-to-use virtualized storage system that enables businesses to meet the challenges of rapid data growth in the context of limited IT budgets. After all, IT organizations of nearly every size are facing the challenges and complexities that have stemmed from keeping pace in the modern, digital economy.

Businesses need to consolidate workloads, accommodate data growth, achieve performance SLAs, ensure uptime even during data migrations, and solve a range of other workload issues. To succeed, they need storage with advanced functionality and cloud capabilities.

IBM recognizes this fact. With its latest iteration of the FlashSystem family of storage solutions, IBM is providing all the business benefits of AI-optimized storage consolidation for modern IT, transparent infrastructure flexibility, advanced data security, and risk mitigation—in a manner that is simple and cost effective enough to suit the requirements of almost any sized IT organization.

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