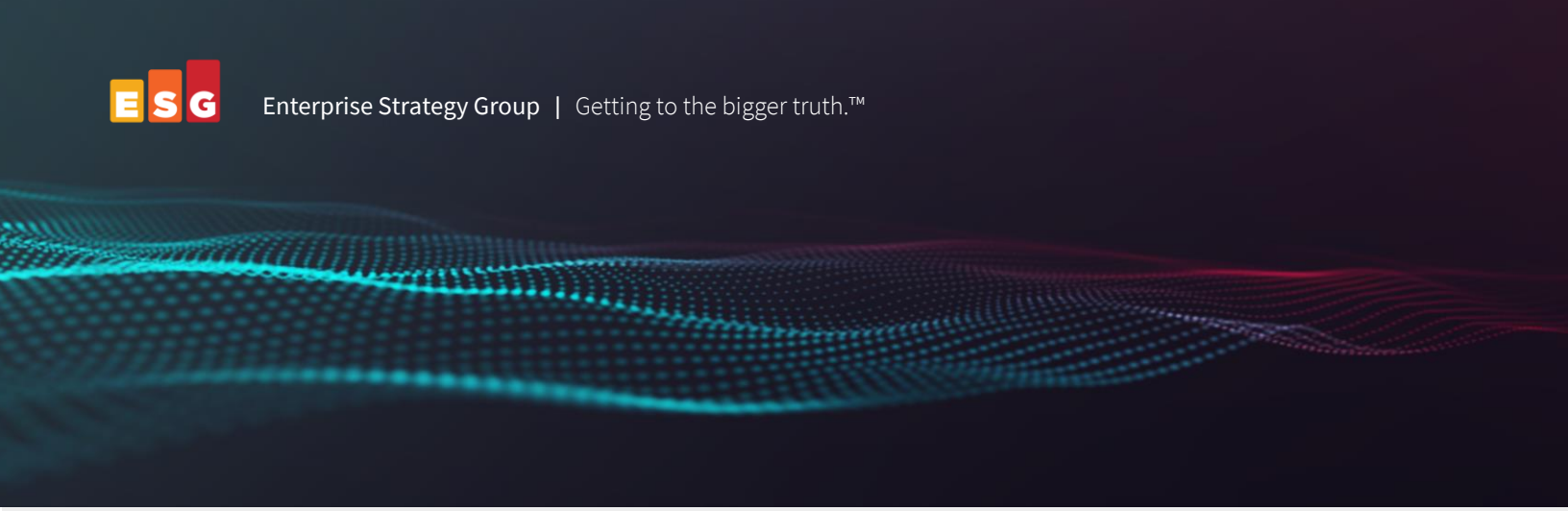

ESG WHITE PAPER

FlashSystem: The Centerpiece of the IBM One-platform Approach

Maximizing Economic Efficiency with a Single, Powerful, Flexible Storage Architecture

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February 2021

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Introduction

The rise of the digital economy is fueling great interest in pursuing digital transformation, but for many organizations, the race to integrate new technologies has proven to be complicated. According to ESG research, businesses that seek to transform themselves digitally want to become more efficient (reported by 56% of respondents), deliver a better customer experience (40%), and/or develop new data-centric products and services (36%). Excited by the promise of such improvements, 98% of surveyed IT organizations say they are in some phase of digital transformation.[1]

These initiatives are placing extreme burdens on IT and adding costs and complexity that hinder ongoing operations. The complexity stems from increases in application- and data-related demands, along with associated increases in application diversity. In particular, storage-related increases (in terms of product scale and diversity) are making IT architecture design and management complex. Another complexity driver comes from the rise in disaggregated, multi-location, multi-cloud environments. ESG research has found that 78% of the IT decision makers it surveyed report their organizations leverage infrastructure-as-a-service, with multi-cloud environments being commonplace.

This kind of IT—built on disparate silos—requires administrators to employ different techniques for management and troubleshooting, to use different APIs and automation protocols, and to pursue different "paths to the cloud" (adding risk to the cloud-adoption effort). In fact, mature digital organizations are *three times more likely* than organizations without digital transformation initiatives in place (29% versus 9%) to say that IT has become significantly more complex today.[2]

The complexity of separate technologies affects storage vendors, too. As they expand their portfolios, they discover that differences in their new technologies' features, management, and support profiles hinder internal product development and reduce or even eliminate the theoretical benefits organizations would get by standardizing on a specific vendor's solutions.

To simplify their IT environments, control costs, and speed operations, businesses need a single, consolidated platform that serves a diverse set of application needs. IBM®, a leader in IT, is fully aware of this need and offers a single storage platform that integrates multiple innovations designed to reduce the impact of mounting IT complexities. The new IBM FlashSystem® family provides IT organizations a single storage platform capable of supporting diverse application environments while integrating and consolidating new or existing, distributed, heterogeneous storage assets.

Digital Business Transcends Traditional IT Capabilities

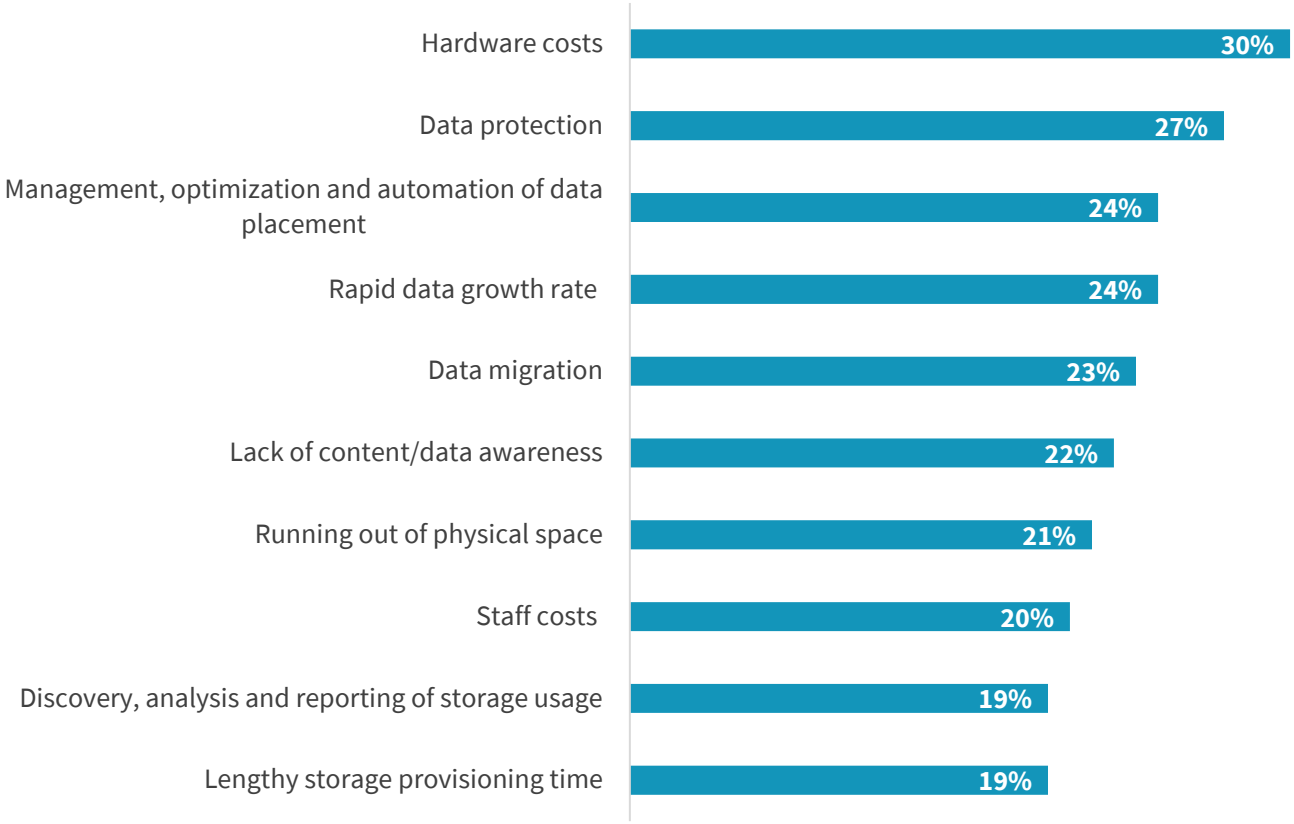
As mentioned, several forces fuel IT complexity and hinder business opportunity. Three-quarters (75%) of IT decision makers surveyed by ESG believe that IT is more complex today than it was just two years ago. The complexity driver they most commonly identify is higher data volumes (cited by 38%). Increases in applications that leverage new, modern architectures also add complexity (mentioned by 28%). Often, leveraging new technologies means throwing out the old ones. That means the organization is throwing away long-time investments in infrastructure, training, and expertise.

Organizations deal with numerous challenges when it comes to storage in particular. Figure 1 identifies the ten block storage-related challenges most commonly identified by respondents. The most common challenges pertain to cost, data protection, and management of data placement.[3] Those problems are made worse by the fourth most common challenge—the rapid growth rate of data.

[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.
[2] Source: ESG Research Report, *2020 Technology Spending Intentions Survey*, February 2020.
[3] Source: ESG Master Survey Results, *2019 Data Storage Trends*, November 2019.

Figure 1. Top Ten Most Commonly Identified Block Storage-related Challenges

In general, what would you say are your organization's biggest challenges in terms of its on-premises storage environment, for block environments? (Percent of respondents, N=372, five responses accepted)



Source: Enterprise Strategy Group

It's easy to see why greater storage volumes would translate into higher levels of IT complexity. Today's massive data volumes strain both personnel and infrastructure resources. Having to manage a huge amount of data does more than use up lots of floor space and budget. Rapid data growth also makes operations more complex. For example, it slows down getting data to the right location, migrating data, discovering/reporting storage usage, and provisioning storage.

IT organizations know what they want from storage providers when it comes to a single platform design. In an ESG research survey of storage administrators whose businesses leverage both on- and off-premises storage infrastructures, participants described what features could entice them to replace the public cloud offering they use with an on-premises offering. The most-needed on-premises infrastructure environment capabilities centered on:

- Better automation of storage-related activities (37%).
- An ability to manage all storage infrastructure across any location (35%).[4]

Both of those capabilities will result from *standardizing on a single storage platform*.

[4] Ibid.

Simplifying Infrastructure Is Essential to Accelerating Operations

The importance of standardizing on a single platform is made apparent through other ESG research findings. Only 6% of the line-of-business executives ESG surveyed viewed their company's IT group as a competitive differentiator for their business, while 25% regarded IT as a business inhibitor. Among executives who believed IT inhibits business success, 43% said that its IT organization's processes to deploy services took too long.[5]

Hiring more people to accelerate operations is just not possible due to problematic skill shortages for technical talent. About one-third of senior IT decision makers surveyed by ESG in 2021 for our spending intentions research reported that they are dealing with staff shortages in the areas of IT architecture/planning (cited by 34%) and/or cloud architecture/planning (cited by 36%). A majority (62%) of surveyed storage administrators also reported that most IT hiring that they expected to do in 2020 would be for IT generalists rather than domain specialists such as storage admins.[6]

IT Needs to Consolidate to a One-platform Design

If hiring more people is not the answer, then the IT infrastructure itself—in this case, a one-platform design—must be used to solve the complexity problem. It must extend everywhere and support every application environment (small, medium, or large) across the data center, the edge, and the hybrid cloud. And because IT rarely, if ever, works from a blank canvas, the existing infrastructure must be managed, too. These are the "single platform" needs of modern IT:

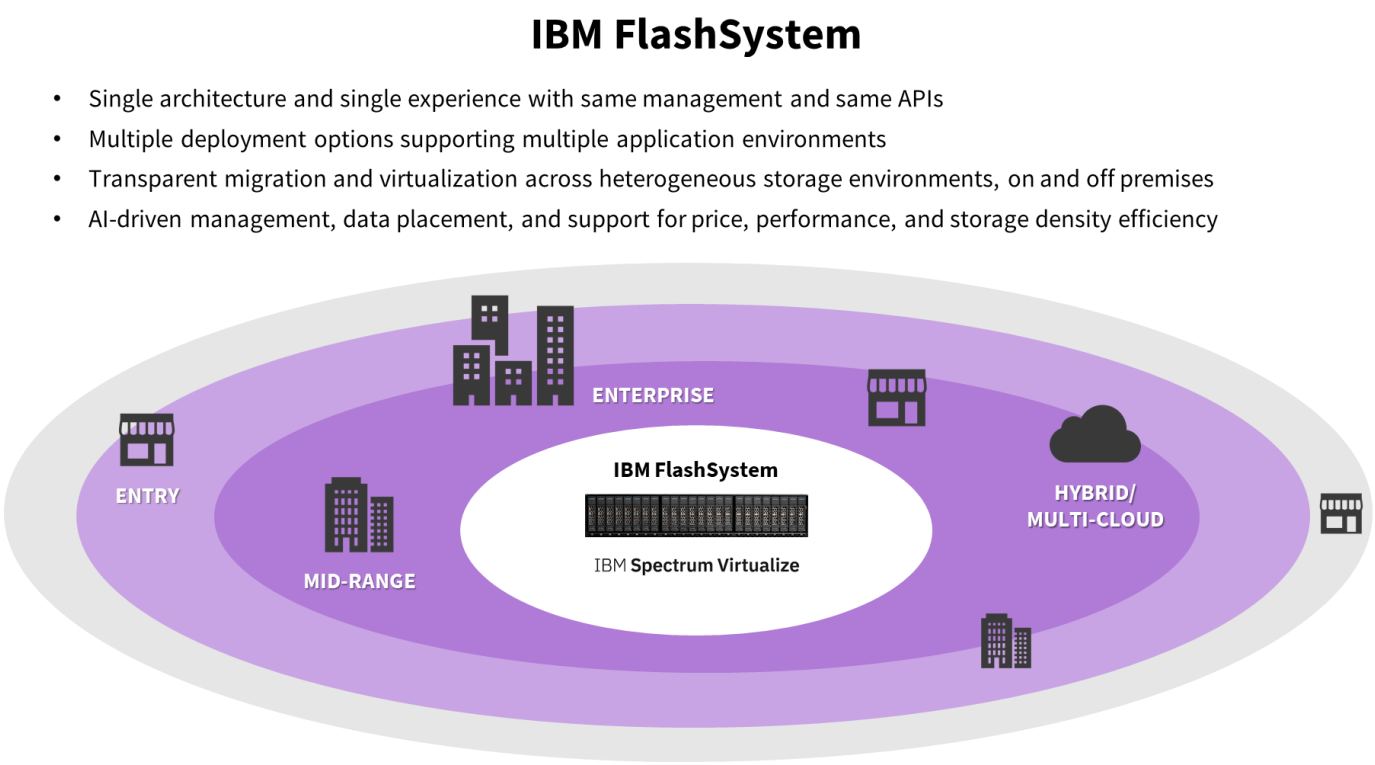
- A platform built on a single software architecture with the same APIs and management protocols.
- A platform that offers multiple deployment options—covering systems of multiple sizes, all-flash, and hybrid, and even seamlessly integrating into multi-cloud deployments.
- A platform that supports any application environment: bare metal, virtualized, container-based, and cloud-native.
- A platform with the ability to consolidate and virtualize existing heterogenous storage infrastructure investments.

IBM FlashSystem Technology: One Platform, Multi-application, Multi-environment

IBM FlashSystem provides all the benefits of that one-platform approach. IBM has delivered a single platform that serves all block-storage environments, from smallest to largest, from the data center, to the edge, to the hybrid cloud. All platform options use the same APIs, so IT admins can manage them all in the same way. This commonality of management empowers organizations to ease the burden on administrators, simplify and expedite test and development activities, and accelerate new technology and new infrastructure deployments. Systems within the data center and those serving as edge deployments work the same and will all be able to "talk" to each other (see Figure 2). IBM's latest addition to the portfolio, the IBM FlashSystem 5200, illustrates IBM's commitment to its one platform approach by extending its technology benefits into an incredibly dense form factor and providing the same enterprise-level features, performance, and availability.

[5] Source: ESG Master Survey Results, *2019 Technology Spending Intentions Survey*, March 2019.
[6] Source: ESG Master Survey Results, *2019 Data Storage Trends*, November 2019.

Figure 2. The IBM One-platform Strategy



This approach benefits users *and* helps IBM better serve its customers, making it easier to deliver a more efficient support experience, more efficient maintenance, and faster parts delivery. Additionally, IBM's storage division engineers focus their development efforts and resources on delivering new features and capabilities faster.

Benefits of IBM's One-platform Design

The FlashSystem capabilities can be grouped into three areas of efficiency, which relate to application operations, infrastructure, and personnel that is reflected in economic improvement.

Efficient Application Operations

Commonality simplifies IT, frees up human capital resources, and accelerates application development. The FlashSystem capabilities in this area include:

- Cloud deployments that work the same way as on-prem systems do. That means moving data back and forth is simpler.
- DevOps that are simpler, which helps to expedite application development schedules. A developer may design an application in one locale, and then that app can be easily deployed in a different locale.
- An ability to span applications residing on bare metal, virtualized, and container environments. IBM, which bought Red Hat in 2019, naturally embraces Red Hat® OpenShift® to further help enable DevOps projects. Additionally, FlashSystem provides extensive support for virtualized VMware and Hyper-V environments.

Efficient Infrastructure

For one platform to serve a wide variety of deployments effectively and efficiently, it needs to possess multiple next-generation storage capabilities, including:

- Next-generation levels of performance from an end-to-end NVMe-based storage architecture able to maximize the performance potential of flash and storage-class memory (SCM). IBM offers NVMe across its entry, midrange, and high-end storage, so users of all sizes can get the benefit of that performance and also the efficiency of NVMe-based IBM FlashCore® Modules (a family of high-performance flash drives in a standard 2.5" 15mm form factor). Finally, IBM supports NVMe over Fibre Channel and high-performance iSER over Ethernet networks.

  According to IBM, IBM FlashCore Modules offer 2.5x more usable capacity than industry-standard flash drives and 2x the data with the new 38.4TB capacity option. Not only are IBM FlashCore Modules designed to deliver superior capacity and performance density versus traditional SSDs, they also run advanced services, such as compression and encryption, with no performance impact.

- A highly efficient architecture that maximizes the performance and capacity potential of the infrastructure, leveraging advanced data reduction technologies suited to heterogeneous storage environments. In addition, the use of automated AI-based tiering both within and between arrays, coupled with the ability to seamlessly move data to a hybrid cloud target configuration, helps lower storage costs.

- Enterprise-level resiliency and availability features. FlashSystem delivers the enterprise-class data availability and resiliency features, such as snapshots, disaster recovery, and 3-site replication, essential for business-critical workloads. As a result, FlashSystem reduces the risk to the application environment while making life easier for administrators, who benefit from consistent functionality across the portfolio.

- Consumption-based pricing. The IBM Storage Utility model offers a cloud pricing program in which IBM customers pay only for the capacity they consume. As a result, organizations can simplify their IT architecture and design efforts by eliminating the need to forecast data needs out three or four years. By allowing organizations to only pay for the capacity used, the IBM Storage Utility model essentially eliminates the risk of being forced to shift technologies when requirements evolve and change.

Efficient Personnel Operations

FlashSystem dramatically simplifies IT management, thus freeing personnel. The efficiency features include:

- IBM Spectrum Virtualize™, with its ability to simplify storage management monitoring both on-premises and cloud infrastructure, as well as both IBM and non-IBM storage systems (Spectrum Virtualize supports over 500 different storage systems from IBM and others) as a single platform.

- Intelligent infrastructure technologies such as predictive analytics, along with extensive health-monitoring capabilities.

- Advanced security features including data-at-rest encryption and an ability to keep air-gapped copies for cyber resiliency, reducing risk to the organization.

- Six-nines availability or 100% availability with IBM HyperSwap® to reduce or effectively eliminate the risk of outage for business-critical and mission-critical applications.

- Integrated data migration/data movement, a capability that is highly valuable for workload movement across hybrid cloud environments (which are common for Kubernetes-based environments).

The Bigger Truth

It's hard to overstate the importance of enabling economic efficiency. Organizations want and need to be able to do more with the dollars they have to spend. Digital initiatives fuel business results. Maximizing the value of limited IT budgets, such as being able to reuse existing technology already on the floor, is essential to competitive success. The proactive monitoring capabilities of FlashSystem will also help IT admins—and therefore the whole organization—to be more efficient.

Efficiency isn't just equal to "opportunity." It's about risk protection, too. Doing more with less isn't always only about doing more; it also can mean doing the same (or more) with less. Right now, it is imperative that businesses standardize, consolidate, streamline, and optimize their storage environments to protect their operations today and to thrive in the future.

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

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