Flash storage buyer's guide

Build a flash storage strategy that will enable your digital transformation

IBM Storage
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Your storage strategy is critical to long-term business success

Storage is the foundation that supports your applications, workloads and IT environments. Whether on-premises, in the cloud or in a hybrid environment, your data must be secure and available for fast analysis and processing. Downtime, network latency, under-utilization of storage resources – these issues not only waste time and frustrate teams but also directly affect your bottom line. As such, your storage strategy is critical to long-term business success.

To meet modern digital demands, your storage solution should reduce IT complexity, provide fast and reliable data access, improve security and streamline data mobility across multiple environments.

This is where **flash storage** comes in. Flash is valued for its performance and cost efficiency as well as its versatility in meeting a wide range of requirements.

In this guide, we'll cover the benefits of flash storage and key capabilities to look for in a solution intended for modern hybrid cloud storage environments.

Here's what we'll cover:
— What is flash storage?
— Benefits of flash storage
— Capabilities for hybrid cloud and containerized environments
— Purchase considerations
— Next steps

What is flash storage?

Flash storage is a solid-state technology that uses flash memory chips for writing and storing data. As indicated by its name, flash memory can achieve very fast response times (microsecond latency), compared to hard drives with moving components. It uses non-volatile memory, which means that data is not lost when the power is turned off. Flash storage is highly available and uses less energy and physical space than mechanical disk storage.

Learn about the types, history and future of flash storage >

There are a variety of flash solutions on the market today designed to fit every size of business and budget, from entry-level to enterprise. But managing storage for a modern business environment involves more than just hardware. In fact, strategic storage choices are often more about the software foundation you select.

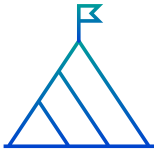
Look for a **software-defined flash solution** with an open, end-to-end architecture that can be deployed in any environment. This flexibility will help you modernize today's workloads and save time and money by reducing complexity of management, monitoring and virtualization.

Benefits of flash storage

Flash storage solutions offer a wide range of enterprise-grade features, protocols and data services that match and often surpass those of disk-based offerings. Some of the most often cited benefits of flash storage include high throughput, data center efficiency and the ability to increase usable capacity while significantly improving application performance.

Let’s explore a few of the top reasons why flash is increasingly considered to be the new storage standard:

High performance
Users need faster data access, the business needs top speeds for critical workloads, and your infrastructure needs to effectively manage increasing volumes of data. Flash storage addresses these challenges with ultra-low latency and high throughput. It can respond in microseconds to deliver data quickly and efficiently for faster decision making. The high speeds of flash storage, combined with end-to-end NVMe and Storage Class Memory (SCM) technology, provide the power to quickly mine deeper insights and respond to requests almost instantaneously — all while using fewer resources than disk-based arrays.

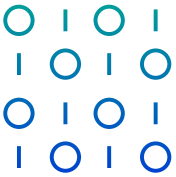


Application agility
To accelerate innovation and growth for the business, you need to deploy applications and data where they make sense. Modern flash storage solutions improve data mobility and scalability while maintaining continuous data access and provide a consistent experience across containerized and hybrid cloud deployments. Save money by choosing a storage solution with right-sized products for your workloads and near-term strategy goals. The solution should also deliver agility to help you easily manage data scalability needs and changing application demands.

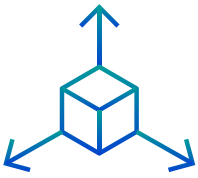
Data resilience
In today's world of relentless cyberattacks, you need to make sure your data is always available, encrypted and tamper-proof – on-premises or in the cloud – and that your organization complies with all data privacy and protection requirements. Look for flash solutions that support system-wide FIPS-140 encryption, securing data wherever it resides without affecting performance.

Resource efficiency
Flash storage technology is very dense, endurant and requires less space than most disk-based solutions to store the same amount of data, so you can deliver more work with fewer drives and lower cost. When you invest in flash, you can save money by cutting back on costs associated with additional space and management requirements. And because flash memory modules use fewer resources than hard drives, they incur lower energy expenses.

Data efficiency
Look for a flash solution with data reduction technologies, such as pattern removal, deduplication and compression. Thin provisioning and space-efficient snapshots are additional functions that make the most of your storage capacity. The first compression cycle should work well enough so a second one won't be needed. With the right **storage software foundation**, you can extend data reduction across all your heterogeneous storage, old and new, to store more data on the storage you already own without impacting performance.



Flexible acquisition
Limited budgets and ongoing pressures to optimize resources make cost a major factor in a storage strategy. Many vendors offer leasing and other flexible financing options to extend your budget, but don't overlook additional consumption models including utility and as-a-service options when you're evaluating how to get the most from your investment in flash storage solutions.



Capabilities for hybrid cloud and containerized environments

Overall, you'll reduce complexity and increase efficiency by choosing a software-defined flash storage solution that enables you to consistently manage and optimize heterogenous storage resources across a wide range of deployment models including on-premises, hybrid cloud, containerized or virtualized environments.

Supporting capabilities include:

Storage virtualization

Storage virtualization software centralizes management of storage resources across mixed environments, helping you uncover hidden capacity and increase data mobility. Look for solutions that extend data services – such as compression, deduplication, encryption, data reduction, and synchronous and asynchronous replication – to your existing storage whether those systems natively support them or not.

Data availability

Software-defined flash storage makes it easy to back data up to the cloud, providing disaster recovery and business continuity. Look for systems that offer cyber security data services – such as multi-site replication with instant recovery, tamper-proof immutable copies, copy data management, encryption – to ensure you're set up to recovery quickly in the event of human error, system failure, or cyberattack.

End-to-end NVMe

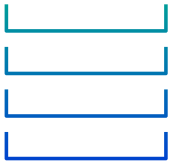
NVMe is well suited for real-time applications and analytics because it can pull information from multiple sources in microseconds. Its high speeds improve throughput by reducing I/O overhead between CPUs and storage while eliminating storage-related infrastructure bottlenecks. NVMe also saves computing resources and IT expenses by supporting larger workloads.

Predictive analytics and performance monitoring

Intelligent storage monitoring provides visibility across your entire storage environment and helps you make more informed decisions around system optimization. Platforms with predictive analytics can improve capacity planning and storage utilization as well as provide proactive alerts to preempt future service disruptions, helping you troubleshoot issues more quickly.

Storage for containers

In a container environment, the data behind applications and microservices needs to be persistent with consistent performance and able to respond to rapid workload shifts. The underlying storage infrastructure you choose should unify traditional and container workloads, provide data resiliency features, and be open and agile to support modern workloads, cloud-native applications and public cloud integration.



Purchase considerations

We've compiled a list of key takeaways from the benefits and capabilities discussed above. Keep the following in mind as you're evaluating flash storage solutions to ensure you choose the right foundation to support your hybrid cloud strategy:

1. Does this solution provide data and resource efficiency?
2. Does this solution deliver low latency and high performance?
3. What data protection and cyber security features does this solution offer?
4. Does this solution make it easy for me to monitor and manage storage on premises and across mixed environments?
5. Does the solution allow for easy data mobility and portability across on premises and cloud environments?
6. Does this solution provide storage virtualization to help enhance and modernize existing storage?
7. Is it possible to easily scale up or out to meet evolving capacity and performance demands?
8. Does this solution offer flexible capacity to help manage data growth?
9. Does this vendor offer flexible financing and consumption models that align with my needs?
10. Does this vendor's solution support our current and future strategic business goals?

Next steps

By now you should have a solid understanding of how to build a flash storage strategy that will enable your digital transformation. As you reflect on your storage needs, consider IBM's industry-leading portfolio of software-defined flash solutions: **IBM FlashSystem® family.**

IBM flash storage solutions are designed to fit a range of budgets, workloads and performance profiles. Benefits and capabilities of IBM FlashSystem include:

- **Unparalleled performance.** IBM FlashSystem arrays combine the performance of flash and end-to-end NVMe with the flexibility to leverage a variety of drives in the same system. Capabilities range from efficient **IBM FlashCore®** modules that deliver unparalleled durability and density, to industry-standard NVMe drives enabling faster business decisions with 70µs of latency and Storage Class Memory (SCM) to achieve even lower latency. For performance intensive, mission-critical workloads where every second counts, the IBM FlashSystem 9200 delivers up to 18M IOPS in only 8U.

- **AI-driven insights.** Pre-loaded on every FlashSystem model, **IBM Storage Insights**, simplifies monitoring for both IBM and non-IBM storage all through a single interface. Innovative data reduction options with compression, deduplication and automated thin provisioning significantly improve usable capacity and efficiency allowing you to store more in less space. AI-driven **IBM Easy Tier®** automatically migrates frequently accessed data to your high-performing flash storage, balancing cost and performance.

- **Advanced data services that maximize efficiency.** Built with **IBM Spectrum® Virtualize software**, the single platform IBM FlashSystem family reduces complexity while delivering enterprise-class data services that seamlessly extend to over 500 heterogeneous storage systems, both on premises and in the cloud.

— **Extend to the cloud with ease.** IBM FlashSystem enables data services across hybrid cloud and traditional environments with the flexibility to start small and scale up as business demands. These systems also support Red Hat® OpenShift® and Red Hat Ansible® Automation Platform as well as Kubernetes and Container Storage Interface.

— **Data resiliency.** A comprehensive set of safeguards ensure high availability and protection of your most valued data. These include six 9’s availability, a 100% data availability guarantee, multi-site replication, encryption and the ability to isolate immutable copies.

— **Affordability without compromise.** IBM FlashSystem 5200 delivers new levels of performance as the most affordable end-to-end NVMe system in the market with up to 1.7 PB of data, a maximum 1.5M IOPs, and 21 GB/s throughput all in just 1U.

— **Peace of mind.** **IBM FlashWatch** is a comprehensive suite of flash storage guarantee programs to help you purchase, own, and upgrade your IBM Storage with confidence.

— **Financial flexibility.** A variety of **flexible consumption models** including utility and as-a-service options, complemented by unmatched financing and leasing options, designed to optimize budgets to meet constantly evolving demands.

Read Enterprise Strategy Group's analysis of IBM FlashSystem >

Read Forrester's analysis of IBM Spectrum Virtualize, the software foundation of IBM FlashSystem >

Contact us for more information >

Fill out this form to schedule a consult with our storage experts or call sales at 1 877-426-4264. (Priority code: Storage).

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