

**IBM Storage**

# IBM Storage product guide



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# Storage made simple

IBM Storage is the right foundation for your data-driven hybrid cloud.

# Introduction

Every day, you face a complex mix of events that can affect business outcomes, such as managing growing data and line-of-business (LOB) applications, maintaining core IT applications and uncovering competitive advantage. All of these demands put pressure on your storage infrastructure's performance, capacity and security.

Using a simplified approach to containerization, management and data protection, IBM® Storage simplifies your data infrastructure. The underlying software foundation strengthens and streamlines the storage in your hybrid cloud environment.

## What's possible with IBM Storage



### Storage for hybrid cloud

Reduce complexity with container-enabled enterprise storage, deployed seamlessly across on-premises and hybrid cloud storage environments.



### AI and data

Simplify your infrastructure with optimized efficiency to drive faster results that are massively scalable and globally available from edge to inference.



### Data protection and cyber resiliency

Maximize backup storage efficiency, data security and performance with maximum uptime and resilience while reducing costs.



### Storage for containers

Surpass your business goals with speed, productivity and agility, all enabled by a security-rich, persistent storage infrastructure with enterprise-class services for private cloud and Red Hat® OpenShift® Container Storage.

# IBM Storage portfolio

<p><b>Storage for data and AI</b></p> <p>IBM Spectrum® Scale IBM Cloud® Object Storage IBM Spectrum Discover IBM Elastic Storage® System</p>	<p><b>Storage for hybrid cloud</b></p> <p>IBM FlashSystem® family IBM SAN Volume Controller IBM Storage Insights IBM Spectrum Control IBM Spectrum Virtualize for Public Cloud IBM Spectrum Storage Suite IBM Storage Suite for IBM Cloud Paks IBM FlashWatch</p>	<p><b>Cyber resilience</b></p> <p>IBM Spectrum Protect IBM Spectrum Protect Plus IBM Spectrum Copy Data Management IBM Spectrum Archive IBM Tape Solutions</p>	<p><b>Storage for IBM Z</b></p> <p>IBM DS8000® Storage systems IBM TS7700 Virtual Tape Library IBM Spectrum Scale</p>
<p><b>Storage for SAP HANA</b></p> <p>IBM FlashSystem family IBM Spectrum Protect IBM Spectrum Copy Data Management</p>	<p><b>Storage for containers</b></p> <p>IBM Storage for Red Hat OpenShift IBM Storage Suite for IBM Cloud Paks IBM FlashSystem family IBM DS8000 Storage systems IBM Spectrum Virtualize for Public Cloud IBM Spectrum Scale IBM Cloud Object Storage IBM Spectrum Discover IBM Spectrum Protect Plus</p>	<p><b>Storage networking</b></p> <p>SAN b-type family SAN c-type family</p>	<p><b>Converged infrastructure</b></p> <p>VersaStack VersaStack for Hybrid Cloud</p>



# Storage for data and AI

## Challenges

AI is a journey that begins with data. Data is the fuel for AI, and AI cannot exist without an information architecture, or IA. Being able to gain business value and insights from data is not always easy. The best AI is built on a foundation of data that's collected and organized as carefully as it's analyzed, and finally infused into the business. Organizations are challenged with gaining insights from their data for many reasons. Traditional infrastructure is inadequate for AI workloads, and data silos make it difficult to get a holistic view of all your information, limiting the value of AI. Current infrastructure that wasn't built for AI isn't flexible enough to respond to new demands without adding complexity.

## Why IBM?

IBM Storage for data and AI is more than a set of storage products and solutions. It consists of a storage strategy to help you on your journey to AI and the hybrid cloud. Our solutions provide a flexible, high-performance IA that modernizes your infrastructure. IBM global data access and services are easier to manage, faster to access and optimized to scale, with cost efficiencies to drive down expenses and bring more value to your organization.

## Join a winning team

The [Mercedes-Benz Stadium](#) is a destination venue for fans of major sports, concerts and other live events. IBM solutions provide a wide array of technologies integrated into a single, seamless, state-of-the-art system that provides fans with a unique, personalized experience that enhances the action on the field or stage. The system includes both on-premises and cloud-based IBM Storage solutions. IBM and Flagship Solutions Group created a powerful hybrid storage landscape built around IBM Elastic Storage Server with IBM Spectrum Scale, IBM FlashSystem 7300 and IBM Cloud Object Storage.

## Benefits

### *Global data access*

Access data anywhere for agility and faster insights.

### *Global data services*

Protect and secure your most valuable resources—your data.

### *Accurate insights and analytics*

Employ a consolidated interface to more precisely manage data insights.

## *Increased efficiency*

Support integrated lifecycle management and tiering to cloud.

## *Increased performance*

Gain a high-performance architecture with parallel access to data and optimized cache for remote data.

## *IA for AI and hybrid cloud*

Provide storage solutions optimized for the AI journey and agile for hybrid cloud.

## *Scalable AI infrastructure*

Take advantage of the ability to start small and scale with virtually no limits.

## *Enhanced data flow efficiency*

Reduce costs with built-in data lifecycle management and policy-based optimization.

## *Simplify data access*

Get fast and easier deployment with container-native storage.

## Offerings

IBM Spectrum Scale  
IBM Cloud Object Storage  
IBM Spectrum Discover  
IBM Elastic Storage System®  
IBM Elastic Storage System 3000

# Storage for data and AI

## Offerings

### IBM Spectrum Scale

IBM Spectrum Scale is a highly scalable, data efficient, high-performance storage solution with enterprise security and a global parallel file system for both file and object storage data access. IBM Spectrum Scale enables the unification of data across a hybrid cloud into a single scale-out storage solution for the entire data center, from edge to core to public cloud. IBM Spectrum Scale delivers the global data services applications require.

[Learn more about IBM Spectrum Scale →](#)

### IBM Cloud Object Storage

IBM Cloud Object Storage is designed to support exponential data growth with simplicity, high durability, security and efficiency for cloud-native and object-based workloads. This solution provides industry-leading software-defined hyperscale and cost-effective storage for data on the edge, the core data center, or the private or public cloud. With a unique shared-nothing parallel architecture, Cloud Object Storage can help you maintain and improve performance. As the solution grows from terabyte to petabyte or even to exabyte configurations, it's designed to never go down with geographically dispersed data protection. Commonly deployed as a storage solution for large data deployments with multiple concurrent applications or users, Cloud Object Storage is also used for data archiving and backup for many traditional applications.

[Learn more about IBM Cloud Object Storage →](#)

### IBM Spectrum Discover

IBM Spectrum Discover is a multisource data catalog that automatically and continuously indexes objects and files whenever changes are made using the metadata in real time. IBM Spectrum Discover also helps ease the burden of data orchestration across the hybrid cloud.

[Learn more about IBM Spectrum Discover →](#)

# Storage for data and AI

## Offerings

### IBM Elastic Storage System

IBM Elastic Storage System is a modern implementation of software-defined storage (SDS). The IBM Elastic Storage System 3200 and IBM Elastic Storage System 5000 make it easier for you to deploy fast, highly scalable storage for AI and big data. With the low latency and high-performance Non-Volatile Memory Express (NVMe) storage technology and 8Y global file system and global data services of IBM Spectrum Scale, the IBM Elastic Storage System 3200 and 5000 nodes can grow to over YB configurations and be integrated into a federated global storage system.

[Learn more about IBM Elastic Storage System →](#)

#### IBM Elastic Storage System 3200

IBM Elastic Storage System 3200 is the next-generation storage built for high-performance AI and the hybrid cloud. It brings greater integration with hybrid cloud and high-performance AI to increase data agility and drive faster business results. It is designed to meet and beat the challenge of managing data for analytics. Using all NVMe storage, this offering can help accelerate time to insights. Each 2U system delivers 80 GB per second of data throughput and is available in a wide range of capacities, from tens to hundreds of terabytes. Capacity and throughput can be quickly scaled by adding more servers to the system.

[Learn more about IBM Elastic Storage System 3200 →](#)

#### IBM Elastic Storage System 5000

IBM Elastic Storage System 5000 is the storage system for data lakes with market-leading performance, density and scalability. It combines the software-defined IBM Spectrum Scale storage with IBM POWER9™ processor-based I/O-intensive servers. By consolidating storage requirements across your organization onto IBM Elastic Storage System 5000 and the NVMe-based 3200, you can reduce inefficiency and acquisition costs and support the demanding AI, HPC, analytics or high-capacity storage requirements that are typical in the fields of healthcare, media, government or financial services. With IBM Spectrum Scale, you can eliminate data silos and bottlenecks, simplify storage management and get faster access to data.

[Learn more about IBM Elastic Storage System 5000 →](#)

#### Did you know?

IBM Elastic Storage System 3200 is one of the simplest ways to deploy IBM Spectrum Scale. [Learn more about IBM Spectrum Scale.](#)



# Cyber resilience

## Challenges

Several major trends are reshaping data resilience requirements. Massive data growth is causing enterprises to rethink data retention strategies. Application modernization is driving companies to seek more agile and efficient application architectures. Cyberattacks are forcing businesses to prioritize cybersecurity initiatives.

## Why IBM?

IBM's data resilience solutions are rapidly evolving to meet these challenges. Data resilience solutions help companies adapt to new environments, such as container management platforms and hybrid cloud services to keep data safe, no matter where it lives. Data resilience solutions also support cost-effective data retention and cyber resilience through integration with SDS, immutable object storage, and tape offerings. Equally important, new data protection solutions greatly simplify data management by unifying workload protection and automating the data protection processes.

## Join a winning team

The [Computational Medicine Center at Jefferson](#) is breaking new ground in the understanding of disease by analyzing huge amounts of biological data with the help of high-performance computing. Founding Director Dr. Isidore Rigoutsos summarizes: "The resilience of the IBM solution was tested a little over a year ago when an accident severed a large portion of our storage system. With IBM Spectrum Protect, we were able to bounce back with no data loss. In a relatively short time, we recovered years' worth of data, which had been generated by dozens of people in the Center. And, before long, we were again able to shift our attention back to our research work. Built-in automation, high-availability features and seamless integration between the different components made that possible."

## Benefits

### *Reduce costs*

Minimize data retention costs with multiple simpler, efficient, flexible and cost-effective storage options.

### *Speed data backup and recovery*

Newer technologies are providing near-instant data recovery and a searchable global catalog of VMs, files, databases and applications.

### *Simplify management*

Reduce administrative burden by providing self-service data access and end-to-end SLA-based policies.

### *Seamless integration with the cloud*

Unify data protection for VMs, files, databases, applications and containers in hybrid cloud environments.

### *Faster deployment*

Accelerate deployment and lower maintenance with a virtual appliance and agentless architecture.

### *Protect with a plan*

Lock down data with security-rich object storage, or air-gap data on tape storage as part of a comprehensive cybersecurity plan.

## Offerings

IBM Spectrum Protect

IBM Spectrum Protect Plus

IBM Spectrum Copy Data Management

IBM Spectrum Archive

IBM Tape Solutions

# Cyber resilience

## Offerings

### IBM FlashSystem family

The IBM FlashSystem family is a portfolio of cloud-enabled storage systems designed to be easily deployed and quickly scaled to help optimize storage configurations, streamline issue resolution and reduce storage costs.

IBM FlashSystem is built with IBM Spectrum Virtualize software to help deploy sophisticated hybrid cloud storage solutions, accelerate infrastructure modernization, address security needs and maximize value by using the power of AI. And new IBM FlashSystem models deliver the performance to facilitate cybersecurity without compromising production workloads.

*Entry enterprise*

#### IBM FlashSystem 5000

IBM FlashSystem 5015 and IBM FlashSystem 5035 are designed to provide enterprise-grade functionalities without compromising affordability or performance.

Built with the rich features of IBM Spectrum Virtualize and the AI-powered predictive storage management and proactive support of Storage Insights, IBM FlashSystem 5000 helps make modern technologies such as AI accessible to enterprises of all sizes.

[Learn more about IBM FlashSystem 5000 →](#)

*Midrange enterprise*

#### IBM FlashSystem 5200

IBM FlashSystem 5200 is a compact, cost-efficient, security-rich and dense solution with the power of NVMe that addresses infrastructure transformation in only 1U. This solution includes IBM Spectrum Virtualize features, AI-powered predictive storage management and proactive support.

Providing cloud storage capacity, IBM FlashSystem 5200 uses AI to simplify management and affordability while enabling cloud applications in containers.

[Learn more about IBM FlashSystem 5200 →](#)

[Learn more about IBM FlashSystem 7300 →](#)

#### Tip

To help support hybrid cloud deployments, use IBM flash storage to deliver premier flash storage solutions with sophisticated functionality.

#### Did you know?

IBM FlashSystem 5000, 5200 and 7300 are available as all-flash and hybrid flash models to suit different workload mixes.

# Cyber resilience

## Offerings

### IBM FlashSystem family

*High-end enterprise*

#### IBM FlashSystem 9500

IBM FlashSystem 9500 combines the performance of robust NVMe with the reliability and security of IBM FlashCore technology and SCM for ultra-low latency. This solution includes IBM Spectrum Virtualize features, AI predictive storage management and proactive support by Storage Insights, all in a powerful 2U enterprise-class and fast storage all-flash array.

IBM FlashSystem 9500 is built for growing enterprises needing the highest capability and resilience. It offers twice the maximum performance, connectivity and capacity of IBM FlashSystem 9200 and up to 50% more cache (3 TB). It also supports additional snapshots, enabling more frequent Safeguarded Copy backups for greater granularity in recovery, while new security-rich boot capability helps protect the integrity of the system itself. IBM FlashSystem 9500 also supports 100 Gbps ethernet connection using RoCE v2.

Providing intensive data-driven cloud storage capacity, IBM FlashSystem 9500 helps you more easily add the cloud solutions that best support your most critical demands.

[Learn more about IBM FlashSystem 9500 →](#)

#### Did you know?

Clustering capability with IBM FlashSystem 5035, 5200, 7300 and 9500 enables you to add performance and capacity while maintaining the advantages of a single system to manage.

#### IBM FlashCore Modules

Generation 3 IBM FlashCore Modules (FCMs) in IBM FlashSystem 7300 and IBM FlashSystem 9500 deliver improved compression capability for a maximum of 116 TB per drive without impacting application performance. In addition, FCM 3 drives are self-encrypting and are planned to hold FIPS 140-3 certification.

#### Tip

The IBM FlashSystem storage family and IBM Spectrum Virtualize come with support for Red Hat Ansible. Find out more about [the Red Hat Ansible Collection for IBM Spectrum virtualize and FlashSystem](#).

# Cyber resilience

## Offerings

### **IBM Safeguarded Copy**

IBM FlashSystem also offers hardware encryption and IBM Safeguarded Copy, which provides immutable and isolated data copies to protect against cyber risks. Safeguarded Copy helps protect data recovery from user errors, malicious destruction or ransomware assaults, enabling uninterrupted data access.

When preparing a response, knowing the last snapshots with no evidence of an attack speeds determining which snapshot to use. And because Safeguarded Copy snapshots are on the same IBM FlashSystem storage as operational data, recovery is very fast using the same snapshot technology.

[Learn more about IBM Safeguarded Copy →](#)

### **IBM FlashSystem Cyber Vault**

Cyberthreats are constantly growing, and attacks burden organizations with a 21-day average recovery time. Building on IBM Safeguarded Copy, IBM FlashSystem Cyber Vault helps reduce cyberattack recovery times from days to hours.

IBM Cyber Vault is designed to help speed all phases of cyberattack detection and recovery. The solution runs continuously, monitoring snapshots that Safeguarded Copy automatically creates, checking them for corruption. When changes are observed that may indicate an attack, Cyber Vault also identifies the latest “clean” snapshot. This makes recovery to that point much simpler and faster.

IBM FlashSystem storage provides the performance to deploy these cyber resilience tools without compromising application capability.

# Cyber resilience

## Offerings

### IBM SAN Volume Controller

IBM SAN Volume Controller is an enterprise-class system that consolidates storage from over 500 IBM and third-party storage systems to improve efficiency, simplify management and operations, modernize existing storage with new capabilities, and enable a common approach to hybrid cloud, regardless of storage system type.

By helping effectively maximize the economics of massive volumes of data, IBM SAN Volume Controller helps improve data value, increase data security, enhance data simplicity and promote 100% availability with HyperSwap.

[Learn more about IBM SAN Volume Controller →](#)

### IBM Storage Insights

IBM Storage Insights provides a single pane of glass to monitor your storage environments, either on premises or in the cloud. Storage Insights helps you manage complex storage infrastructures, make cost-saving decisions and streamline support. It combines IBM data management leadership with proprietary AI-based analytics from IBM Research®.

[Learn more about IBM Storage Insights →](#)

[Try the live demo →](#)

*Tip*

Upgrade to [IBM Storage Insights Pro](#) for more detailed information, additional capabilities and support for non-IBM storage.

### IBM Spectrum Control

IBM Spectrum Control provides monitoring and analytics across multivendor file, object, block and SDS, cloud storage and SANs.

IBM Spectrum Control helps simplify storage management through data-driven capacity planning, performance tracking and reporting that can help reduce costs.

[Learn more about IBM Spectrum Control →](#)

# Cyber resilience

## Offerings

### IBM FlashWatch

The IBM FlashWatch program provides outstanding peace of mind for IBM FlashSystem and IBM SAN Volume Controller that gives you the confidence to purchase, own and upgrade your IBM storage.

#### *High availability guarantee*

Proven 99.9999% availability with an optional 100% guarantee when using HyperSwap deployed by IBM Lab Services

#### *Data reduction guarantee*

2:1 self-certified, up to 5:1 with workload profiling (requires signed contract)

#### *All-inclusive licensing*

All storage functions included in the licensing cost for internal storage

#### *Comprehensive care*

Up to 7 years of 24x7 support, with 3 years technical advisor, enhanced response times and managed code upgrades

#### *Cloud analytics*

IBM Storage Insights provides monitoring, reporting, alerting and troubleshooting for on-premises and cloud storage to detect configuration errors and alert users before they cause an issue

#### *Flash endurance guarantee*

Flash media is covered for all workloads while under warranty or maintenance.

#### *IBM Flash momentum*

Refresh your controller and storage every 3 years with full flexibility.

#### *Cloud-like pricing*

IBM Storage Utility pricing has monthly payments for only the storage you use.

#### *No-cost migration*

90-day, no-cost data migration from over 500 storage systems, both IBM and third party

[Learn more about flash storage guarantees →](#)

#### *Tip*

To learn more about the full benefits of IBM FlashWatch for your IBM flash storage, contact your IBM representative or IBM Business Partner for full details.

# Cyber resilience

## Offerings

### IBM Spectrum Protect

IBM Spectrum Protect is a proven data resilience solution for physical file servers, virtual environments and a wide range of applications. Thousands of organizations have benefited from its exceptional scalability, broad application support, cost-saving data reduction technologies, flexible data retention on tape and immutable object storage, and built-in support for cyber resilience.

[Learn more about IBM Spectrum Protect →](#)

### IBM Spectrum Protect Plus

IBM Spectrum Protect Plus is a modern data resilience solution for VMs, databases, applications, file systems, SaaS workloads, and containers in hybrid cloud environments. SLA-based policies automate the entire data protection process, including data backup, replication reuse and security-rich data retention on premises and in the cloud. This data retention includes IBM Cloud Object Storage WORM cyber-resilient retention vaults. Role-based access control (RBAC) and Representational State Transfer application programming interfaces (REST APIs) enable self-service data reuse and seamless integration with third-party tools and services.

[Learn more about IBM Spectrum Protect Plus →](#)

### IBM Spectrum Copy Data Management

IBM Spectrum Copy Data Management manages and orchestrates hardware snapshot copies of data. It makes copies available when and where users need them by cataloging and managing copy data across hybrid cloud infrastructure. Data owners can use a self-service portal to create the copies they need, enabling business agility. Copy processes and workflows, including data masking, are automated to ensure consistency and reduce complexity.

[Learn more about IBM Spectrum Copy Data Management →](#)

### IBM Spectrum Archive

IBM Spectrum Archive, a member of the IBM Spectrum Storage family, gives you direct, intuitive graphical access to data stored in IBM tape drives and libraries. IBM Spectrum Archive incorporates the Linear Tape File System (LTFS) format standard for reading, writing and exchanging descriptive metadata on formatted tape cartridges. Also, it eliminates the need for additional tape management and software to access data. IBM Spectrum Archive offers three software solutions for managing your digital files with the LTFS format: Single Drive Edition, Library Edition and Enterprise Edition.

[Learn more about IBM Spectrum Archive →](#)

# Cyber resilience

## Offerings

### IBM Tape Solutions

A simple and inexpensive data resilience solution virtually impervious to cyberattacks exists from one of the oldest technologies in the data center—tape. The solution requires users to simply remove the tapes storing their data from their networks and stack the tapes on the nearest shelf. The air gap thus created between the data and troublemakers provides a complete cyber-resilient defense that effectively prevents penetration by hackers. Air gaps are just one of several types of data protection that tape can offer. IBM tape-based data storage solutions provide a wide range of data protection features, including data encryption and compression, cloud-based disaster recovery, key management and WORM technology.

#### *Entry enterprise*

IBM entry-level tape products provide affordable data backup and protection designed for reliability.

[Learn more about IBM tape drives and autoloaders →](#)

#### *Midrange enterprise*

IBM midrange tape storage products can provide reliable and flexible data backup, archiving and management for today and into the future.

[IBM TS7700 Virtual Tape Library Rackless solution for mainframe environments →](#)

[IBM TS4300 Tape Library for open environments →](#)

#### *High-end enterprise*

IBM enterprise-class tape storage products are designed to offer the high performance, availability, reliability and capacity needed for mass storage, data archiving, data backup and disaster recovery.

[IBM TS7700 Virtual Tape Library for mainframe environments →](#)

[IBM TS4500 Tape Library for open environments →](#)

#### Did you know?

IBM Spectrum Archive on tape is a scalable, cost-effective archive solution.



# Storage for IBM Z

## Challenges

Operating in a mission-critical hybrid cloud environment is a reality and a challenge for most enterprises today. Enterprises need seamlessly integrated cloud platforms that are highly available to position themselves for greater competitive advantage and reduce costs.

## Why IBM?

Storage for IBM Z® provides a comprehensive portfolio of enterprise storage solutions designed to match the mission-critical capabilities of IBM Z, adding next-level performance, modern data protection, resiliency and high availability. These offerings help organizations maximize the potential of their mainframe environments across the hybrid cloud.

## Join a winning team

Brazil is changing. Rapid economic development has spurred demand for sophisticated banking and insurance solutions. This shift has also created the need for a new way of banking, focused on consumers and their needs for always-on mobile services. [Banco Bradesco](#) is poised to meet these needs with an innovative platform designed for reliability and security using IBM Z and IBM Storage systems.

IBM Z, in combination with IBM DS8900F, provides tools that help Bradesco offer a security-rich banking experience 100% of the time, including two-factor authentication. These solutions facilitate security of confidential information. In addition, Bradesco uses 12 two-way grids of TS7700 tape libraries, each with 240 TB cache, connected to tape libraries.

## Benefits

### *Maximize mainframe performance*

Optimize mainframe power across mission-critical hybrid cloud environments

### *Speed up your cloud-native app environment*

Accelerate tasks associated with developing, deploying and maintenance

### *Data encryption everywhere*

100% data protection wherever it resides by extending IBM z15™ pervasive encryption

### *Cyber resiliency*

Continuous enterprise protection despite user errors or ransomware attacks

### *Business continuity*

Provide the highest level of business uptime

### *Flexibility*

Flexible racked and rack-mounted configurations for organizations of different sizes with different needs

## Offerings

IBM DS8000 Storage systems  
IBM TS7700 Virtual Tape Library  
IBM Spectrum Scale

# Storage for IBM Z

## Offerings

### IBM DS8000

#### Storage systems

##### IBM DS8900F family

IBM DS8900F is the next generation of enterprise data systems, built with advanced POWER9 processor technology. Designed for data-intensive and mission-critical workloads, DS8900F adds next-level performance, data protection, resiliency and availability across your hybrid cloud solutions. It accomplishes this through ultra-low latency, better than 99.99999 (seven nines) availability, transparent cloud tiering and advanced data protection against malware and ransomware.

[Learn more about IBM DS8900F family →](#)

##### *Midrange enterprise*

This flexible storage solution can be integrated into z15 model T02, IBM LinuxONE III model LT2, or existing racks, providing powerful enterprise capabilities at the lowest entry family cost.

[IBM DS8910F 3D tour →](#)

##### **Did you know?**

IBM DS8900F can provide 100% data encryption at-rest, in-flight and in the cloud.

##### *High-end enterprise*

This enterprise class storage solution provides superior performance and higher capacity, enabling the consolidation of all your mission-critical workloads in just one place.

[IBM DS8980F 3D tour →](#)

##### *Tip*

Help improve business efficiency by consolidating all your mission-critical workloads for IBM Z servers, IBM Power Systems and distributed systems under a single all-flash storage solution with more than seven nines availability.

# Storage for IBM Z

## Offerings

### IBM TS7700 Virtual Tape Library

#### IBM TS7700 family

The IBM TS7700 virtual tape library helps ensure that data is protected and accessible anywhere, anytime on mission-critical workloads. IBM is the leader in tape virtualization, and the flagship TS7700 library's virtualization engine provides unique capabilities that are specifically tied to how IBM z/OS® operates and how typical tape workloads operate.

With no additional software required for integration and full access to the proprietary tape library command set, the TS7700 offers 8 times redundancy in terms of the data that's produced, complete z/OS compliance from a Data Facility Storage Management Subsystem (DFSMS) perspective, and full support for small-scale and large-scale data retention, backup and recovery.

The TS7700 is the only in-market virtual tape library that also supports physical tape. This provides the added data protection of true, best-in-class, hack-proof air gap recovery. Additionally, the TS7700 is built with some of the most advanced POWER9 processors. These are the main reasons why many of the world's top banks use this storage technology for their core business operations.

[Learn more about IBM TS7700 family →](#)

#### Did you know?

IBM TS7770 offers a cloud-native experience using transparent cloud tiering for long-term data retention with the serverless direct data transfer from TS7770 to a cloud.

#### Midrange enterprise

This 19 in. customer-provided rack-mountable solution can help meet advanced storage needs with powerful capabilities at a reduced cost.

#### High-end enterprise

This solution can protect data with up to 8 times redundancy in the grid for continuous and maximum availability.

[IBM TS7770 3D tour →](#)

### IBM Spectrum Scale

IBM Spectrum Scale can deliver superior performance while helping provide industry-leading disaster recovery capabilities and serverless direct data transfer to cloud environments. This offering can perform archive and analytics in place. By helping ensure security-rich, reliable and high-performance experiences, the solution can manage data and enable extreme scalability, data aware intelligence, global collaboration and data integrity.

[Learn more about IBM Spectrum Scale →](#)



# Storage for SAP HANA

## Challenges

Many SAP infrastructure leaders and application owners are concerned about migrating from traditional databases to an accurately sized SAP HANA in-memory database by 2027, without interrupting operations and data availability. Enterprises require persistent storage solutions that meet SAP HANA data demands deployed on premises, on SAP HANA cloud or across a hybrid cloud infrastructure. This helps IT leaders deliver on key performance indicators (KPIs) and SLAs for SAP applications running on SAP HANA.

## Why IBM?

The IBM Storage portfolio includes a comprehensive set of SAP HANA Tailored Datacenter Integration (TDI)-certified solutions to address the full range of data delivery, management, protection and budget requirements of modern enterprises. High availability configurations, integrated data resilience capabilities and built-in cyber-resiliency features help address the ever-increasing demands for greater data availability in mission-critical SAP environments.

## Join a winning team

[Blanc und Fischer IT Services GmbH](#) wanted to enable new, innovative business models across BLANC & FISCHER Family Holding. The company chose to optimize business operations by moving SAP Manufacturing Execution to SAP HANA on Red Hat Enterprise Linux, IBM Power® Systems, IBM FlashSystem and IBM Spectrum Virtualize.

IBM and SAP have a long-standing relationship, with IBM receiving many SAP Pinnacle Awards over the years. IBM continues to develop award-winning data storage solutions that can accommodate and even accelerate SAP HANA advantages.

## Benefits

### *Unparalleled flexibility*

Implement smarter storage that scales easily and affordably, is simple to manage and can match the price, capacity and performance needs of any SAP HANA data demand.

### *Increased resiliency*

Eliminate SAP application downtime with a broad set of high availability, cyber resiliency and next-generation data backup and recovery options for the most mission-critical SAP applications.

### *Open standards*

Ready your data infrastructure for any requirement with storage that can integrate easily and is designed for the complexities of hybrid cloud SAP HANA deployments.

### *End-to-end synergy*

Integrate with IBM Power Systems to deliver an SAP HANA-optimized data and compute infrastructure.

## Offerings

IBM FlashSystem family

IBM Spectrum Protect

IBM Spectrum Copy Data Management

# Storage for SAP HANA

## Offerings

### IBM FlashSystem family

IBM FlashSystem family is a portfolio of SAP TDI-certified, cloud-enabled storage systems designed to be easily deployed and quickly scaled to help optimize SAP configurations, streamline issue resolution and reduce storage costs. Built with IBM Spectrum Virtualize software to help increase the cloud readiness and mobility of data and including Storage Insights for AI predictive storage management and proactive support, these solutions help accelerate infrastructure modernization, address security needs and maximize the value of SAP HANA implementations.

#### Did you know?

The FlashSystem family provides numerous measures to eliminate SAP application downtime with six nines availability and active-active support designed to deliver peace of mind with the IBM FlashWatch guarantees.

#### *Entry enterprise*

##### **IBM FlashSystem 5000**

These highly flexible, virtualized all-flash or hybrid storage solutions are designed for ease of use and provide advanced functions that help overcome SAP HANA storage challenges through increased performance, functionality and cost-efficiency.

[Learn more about IBM FlashSystem 5000 →](#)

##### **IBM FlashSystem 5200**

This NVMe all-flash, compact entry enterprise-class storage solution is designed to deliver high performance that can lead to competitive advantage in SAP HANA environments.

[Learn more about IBM FlashSystem 5200 →](#)

#### *Midrange enterprise*

##### **IBM FlashSystem 7300**

These systems provide the foundation for a cost-efficient, high-performance SAP HANA storage infrastructure, allowing you to accelerate analytics and insights by boosting bandwidth and slashing latency while minimizing costs.

[Learn more about IBM FlashSystem 7300 →](#)

#### *High-end enterprise*

##### **IBM FlashSystem 9500**

IBM FlashSystem 9500 combines the performance of end-to-end NVMe with the rich features of IBM Spectrum Virtualize. Providing intensive data-driven cloud storage capacity for SAP HANA instances, FlashSystem 9500 allows you to seamlessly integrate with cloud resources to best support your SAP application needs.

[Learn more about IBM FlashSystem 9500 →](#)

# Storage for SAP HANA

## Offerings

### IBM Spectrum Protect

IBM Spectrum Protect can provide data protection for billions of SAP objects on physical file servers, applications and virtual environments. Use built-in data efficiency to help reduce backup infrastructure costs and migrate data on premises, off premises or in the cloud. Optimize existing investments for long-term data retention and disaster recovery of mission-critical SAP environments.

[Learn more about IBM Spectrum Protect →](#)

#### Did you know?

Moving to IBM Storage can reduce unplanned downtime by more than 4 hours per year over previous environments.

### IBM Spectrum Copy Data Management

IBM Spectrum Copy Data Management manages and orchestrates hardware snapshot copies of SAP HANA data. It makes copies available when and where users need them by cataloging and managing copy data across hybrid cloud infrastructure. Data owners can use a self-service portal to create the copies they need, enabling business agility. Copy processes and workflows, including data masking, are automated to ensure consistency and reduce complexity.

[Learn more about IBM Spectrum Copy Data Management →](#)

#### Did you know?

Automation features across the IBM Storage for SAP HANA portfolio reduce the effort needed from backup administrators by an average of 15%.



# Storage for containers

## Challenge

Providing developers with persistent self-service storage capabilities for faster, more flexible application delivery continues to be a challenge for enterprises. DevOps and hybrid cloud applications require persistent storage. IT leaders need standard service catalogs that automate and orchestrate while accelerating application development, testing and delivery, and protecting data across hybrid cloud deployments.

## Why IBM?

IBM Storage unifies traditional and container-ready storage and provides cloud-native agility, with the reliability, availability and security to manage enterprise containers in a production environment. As clients scale containerized applications beyond development, testing or departmental use, award-winning IBM Storage delivers enterprise data services to containers. This means mission-critical infrastructure is now possible, delivering shared-storage operational efficiency, price-performance leadership, and data resource and storage protection.

## Join a winning team

A key component of [ZF Friedrichshafen AG's](#) hybrid cloud strategy, the Hybrid Data Bridge is based on full virtualization and supports multiple providers in a public and private cloud. The Hybrid Data Bridge enables highly efficient transmission, storage and archiving of large amounts of data. Its cloud architecture is based on the Red Hat OpenShift hybrid cloud foundation to create and scale containerized applications, which speeds up data reception and video transformation. IBM Spectrum Scale stores the data. A scalable, high-performance data and file management solution, it provides integrated information lifecycle tools that manage petabytes of data and billions of files. Choose between flash, disk, tape or cloud object storage based on timing and budget needs.

## Benefits

### *Tight integration*

Deliver simplified deployment and management for an integrated experience

### *Higher enterprise availability and performance*

Harness six nines data assurance and resiliency and up to 2.5 times higher throughput for DevOps and database workloads

### *Data protection*

Automated enterprise backup and data reuse support for container environments

### *Simplified data access*

Containerized for fast and easy deployment with container-native access

### *Infrastructure agility*

Deploy a multicomputer architecture using Red Hat OpenShift and a storage portfolio with block, file and object storage for workload and infrastructure flexibility

## Offering

IBM Storage for Red Hat OpenShift  
IBM Storage Suite for IBM Cloud Paks  
IBM FlashSystem family  
IBM DS8000 Storage systems  
IBM Spectrum Virtualize for Public Cloud  
IBM Spectrum Scale  
IBM Cloud Object Storage  
IBM Spectrum Discover  
IBM Spectrum Protect Plus

# Storage for containers

## Offerings

### IBM Storage for Red Hat OpenShift

Engineered to open standards, IBM Storage for Red Hat OpenShift delivers persistent storage, bringing enterprise data services to containers. This enables customers to build and deploy enterprise class scale-out microservices applications where they couldn't before. The offering provides the infrastructure foundation and storage orchestration for a full-platform, on-premises hybrid cloud environment supporting the container storage interface (CSI) specifications while increasing productivity, security, enterprise availability and infrastructure agility.

[Learn more about IBM Storage for Red Hat OpenShift →](#)

### IBM Storage Suite for IBM Cloud Paks

IBM Storage Suite for IBM Cloud Paks is a flexible SDS solution. The suite is made up of members of the IBM Spectrum Storage family, IBM Cloud Object Storage, and open-source offerings from Red Hat. This brings unprecedented flexibility for enterprise data services to all container environments. The solution provides a highly flexible, comprehensive set of SDS offerings to satisfy almost any size workload requirement regardless of the need for block, file or object storage data resources.

[Learn more about IBM Storage Suite for IBM Cloud Paks →](#)

### IBM FlashSystem family

The IBM FlashSystem family is a portfolio of cloud-enabled storage systems designed to be easily deployed and quickly scaled to help optimize storage configurations, streamline issue resolution and reduce storage costs. These offerings support Red Hat OpenShift and Kubernetes container environments, accelerating deployment of persistent volumes with the IBM block storage CSI driver, certified by Red Hat and IBM.

[Learn more about IBM FlashSystem family →](#)

# Storage for containers

## Offerings

### IBM DS8000 Storage systems

#### IBM DS8900F family

IBM DS8900F is the next generation of enterprise data systems built with the most advanced POWER9 processor technology. Designed for data-intensive and mission-critical workloads, IBM DS8900F provides persistent storage for mission-critical containers with support for Container Storage Interface (CSI). IBM DS8900F also supports IBM Cloud Pak solutions to enhance and extend the functionality and capabilities of Red Hat OpenShift. The solutions are designed to give you an open, faster and more secure way to move core business applications to the cloud and container-based deployments. Additionally, IBM DS8900F is designed to provide next-level performance, security and resiliency across your hybrid cloud solutions through ultra-low latency, better than seven nines availability, transparent cloud tiering and advanced data protection against malware and ransomware.

[Learn more about IBM DS8900F family →](#)

### IBM Spectrum Virtualize for Public Cloud

IBM Spectrum Virtualize for Public Cloud is the public cloud-based counterpart of the software at the heart of IBM FlashSystem and IBM Spectrum Virtualize.

Existing data center architectures must be modernized, providing a single data fabric on a cloud-native architecture such as Red Hat OpenShift that can extend existing infrastructure into the latest AI and public cloud environments. The data fabric can provide a single control point with consistent enterprise-class performance and management along with a consistent user experience between on-premises clouds or public clouds such as Amazon Web Services (AWS) and IBM Cloud.

IBM Spectrum Virtualize for Public Cloud and IBM FlashSystem are container-ready storage for Red Hat OpenShift that can free enterprises from silos and modernize their infrastructure through virtualization.

[Learn more about IBM Spectrum Virtualize for Public Cloud →](#)

### IBM Spectrum Scale

IBM Spectrum Scale is a high-performance parallel file system for managing unstructured data for cloud, big data, analytics, objects and more. It offers a full-featured set of file data management tools, including advanced storage virtualization, global collaboration for data-anywhere access that spans storage systems and geographic locations, and intelligent storage tiering. IBM Spectrum Scale is now containerized and provides container-native storage access, bringing simplicity and reduced costs to data access for Kubernetes and hybrid cloud applications. It's designed to support a wide range of application workloads at scale using a variety of access protocols and has been proven extremely effective in large, demanding environments.

[Learn more about IBM Spectrum Scale →](#)

# Storage for containers

## Offerings

### IBM Cloud Object Storage

IBM Cloud Object Storage is a highly scalable cloud storage solution for unstructured data that provides both on-premises and cloud-based optimized application and container-based solutions. IBM Cloud Object Storage enables enterprises to store and manage massive amount of data more efficiently and securely, with 15 nines of system reliability and accessibility from any location. IBM Cloud Object Storage uses an innovative concurrent parallel access approach for cost-effectively storing large volumes of unstructured data. It delivers the capabilities required to provide continuous data with no downtime or data migrations. Customers can start with less than 100 TB and grow to hundreds of petabytes or even to exabyte configurations.

[Learn more about the IBM Cloud Object Storage solution story →](#)

### IBM Spectrum Discover

IBM Spectrum Discover is a data catalog and policy engine that helps organize the AI infrastructure and solve the data and AI puzzle faster. It continuously catalogs or indexes objects and files from multiple sources in real time for exabyte-scale unstructured heterogeneous storage. IBM Spectrum Discover can be easily deployed in Red Hat OpenShift environments, making its deployments more portable and flexible across clouds and in any environment supported by OpenShift. Red Hat OpenShift Container Storage is now integrated with real-time ingest into Spectrum Discover to help organize data in containerized environments.

[Learn more about IBM Spectrum Discover →](#)

### IBM Spectrum Protect Plus

IBM Spectrum Protect Plus delivers an all-in-one data protection solution that provides a user-friendly interface to manage VMs, databases, applications, file systems, SaaS workloads, and containers in hybrid cloud environments. Features include automated enterprise backup and data reuse support for containers. IBM Spectrum Protect Plus also provides the ability to store container data in security-rich, immutable IBM Cloud Object storage or air gap data using IBM Tape and IBM Spectrum Protect for increased cyber resilience.

[Learn more about IBM Spectrum Protect Plus →](#)



# Storage networking

## Challenge

Organizations of all sizes are challenged with efficiently managing their expanding volumes of data while making this data accessible across the entire enterprise. IT leaders are making storage a strategic investment priority to better enhance flexibility and scalability.

## Why IBM?

IBM SAN solutions help create smarter data centers by connecting servers and storage with a high-speed and intelligent network fabric. By implementing IBM SANs, the leading storage infrastructure, clients can achieve improved economics of IT.

IBM has one of the industry's broadest range of offerings, and IBM SAN solutions support virtualization, hybrid cloud and big data requirements.

## Join a winning team

With data volumes growing after the introduction of new digital services, the [General Treasury of the Kingdom of Morocco \(TGR\)](#) set out to ensure that it could recover critical data quickly if a system failure ever occurred.

To increase storage capacity and backup performance, TGR deployed two IBM Storage arrays in each of its three data centers—two located at its Rabat headquarters and a third in Tangier. TGR also uses IBM Storage Networking SAN24B-6 switches to connect its storage devices, with two switches installed in each of its three environments.

By simplifying and consolidating infrastructure management, IBM solutions can provide an operating environment that's designed to be smarter, faster, greener, open-source and easy to manage.

## Benefits

### *Flattened and converged data network*

Use an open, standards-based approach to implement the latest advances in the data center network.

### *Unified fabric architecture*

Deploy a high-speed, low-latency, unified fabric architecture across your hybrid cloud infrastructure.

### *Optimized and automated virtualization*

Advance virtualization awareness and help reduce the cost and complexity of deploying physical and virtual data center infrastructures.

### *Simplified and consolidated infrastructure management*

Employ data center networks that are designed to be easily deployed, maintained, scaled and virtualized.

## Offerings

SAN b-type family  
SAN c-type family

# Storage networking

## Offerings

### SAN b-type family

#### *Entry enterprise*

#### **Extension switch models**

These SAN extension switches can deliver capabilities ranging from connecting heterogeneous SAN fabrics to enabling distance extension using Fibre Channel over Internet Protocol. The switches help address disaster recovery and performance.

[IBM System Storage SAN18B-6 →](#)  
[IBM System Storage SAN42B-R →](#)

#### *Entry and midrange enterprise*

#### **SAN switch models**

These SAN switches are designed to provide affordable and scalable solutions for small and midsize businesses.

[IBM Storage Networking SAN128B-6 →](#)  
[IBM Storage Networking SAN96B-5 →](#)  
[IBM Storage Networking SAN64B-7 →](#)  
[IBM Storage Networking SAN64B-6 →](#)  
[IBM Storage Networking SAN24B-6 →](#)

#### *High-end enterprise*

#### **SAN director switch models**

Enterprise SAN directors can provide increased capacity, greater throughput and higher levels of resiliency for large enterprises.

[IBM Storage Networking SAN512B-6 and IBM Storage Networking SAN256B-6 →](#)  
[IBM Storage Networking SAN512B-7 and IBM Storage Networking SAN256B-7 →](#)

#### *Resources for SAN b-type family:*

[ESG Technical Validation: Solve Cyber Resilience Challenges with Storage Solutions →](#)  
[ESG White Paper: Maximizing Performance and Security of IBM Z Replication Solutions →](#)  
[IBM Redpaper: Introduction to Storage Area Networks →](#)

#### **Did you know?**

Complement IBM Z mainframes by offering the industry's fastest, most reliable and scalable FICON infrastructure along with unique, innovative features—all of which help deliver the greatest ROI. Gen7 directors with b-type extension enhance IBM's cyber resiliency initiatives. [Read the ESG Report.](#)

# Storage networking

## Offerings

### SAN c-type family

#### *Entry enterprise*

##### **SAN switch model**

The entry-level SAN switch model helps organizations deploy cloud-scale applications and deliver flexibility through a unique port expansion module designed to increase cost-effectiveness.

[IBM Storage Networking SAN32C-6 →](#)

##### **Extension switch model**

The extension switch model is an optimized platform that can deploy high-performance and cost-effective connectivity for open systems and mainframe environments.

[IBM Storage Networking SAN50C-R →](#)

##### **Did you know?**

SAN50C-R is an ideal solution for departmental and remote branch-office SANs, with its compact form factor and advanced capabilities, normally available on director-class switches exclusively.

In conjunction with the IBM Storage Networking SAN384C-6 Director, SAN50C-R is also a solution for large-scale SANs.

#### *Midrange enterprise*

##### **SAN switch models**

These SAN switch models are designed to address the requirements of a scalable and virtualized SAN infrastructure.

[IBM Storage Networking SAN96C-6 →](#)

[IBM Storage Networking SAN48C-6 →](#)

#### *High-end enterprise*

##### **SAN director switch models**

SAN director switch models are designed to provide the highest availability and scalability when deployed across large-scale storage networks.

[IBM Storage Networking SAN768C-6 →](#)

[IBM Storage Networking SAN384C-6 →](#)

[IBM Storage Networking SAN192C-6 →](#)



# Converged infrastructure

## Offerings

### VersaStack

Jointly developed by IBM and Cisco, VersaStack solutions help drive data center efficiency, boost performance and deliver dynamic resource allocation.

VersaStack solutions combine a comprehensive set of converged infrastructure and software-defined technologies from IBM and Cisco to help organizations accelerate digital transformation.

[Learn more about VersaStack →](#)

#### *Tip*

One of the key benefits of the IBM converged infrastructure solution, VersaStack, is that it can provide enterprises the ability to maintain consistency in both scale-up and scale-down models for greater performance and capacity.

### VersaStack for Hybrid Cloud

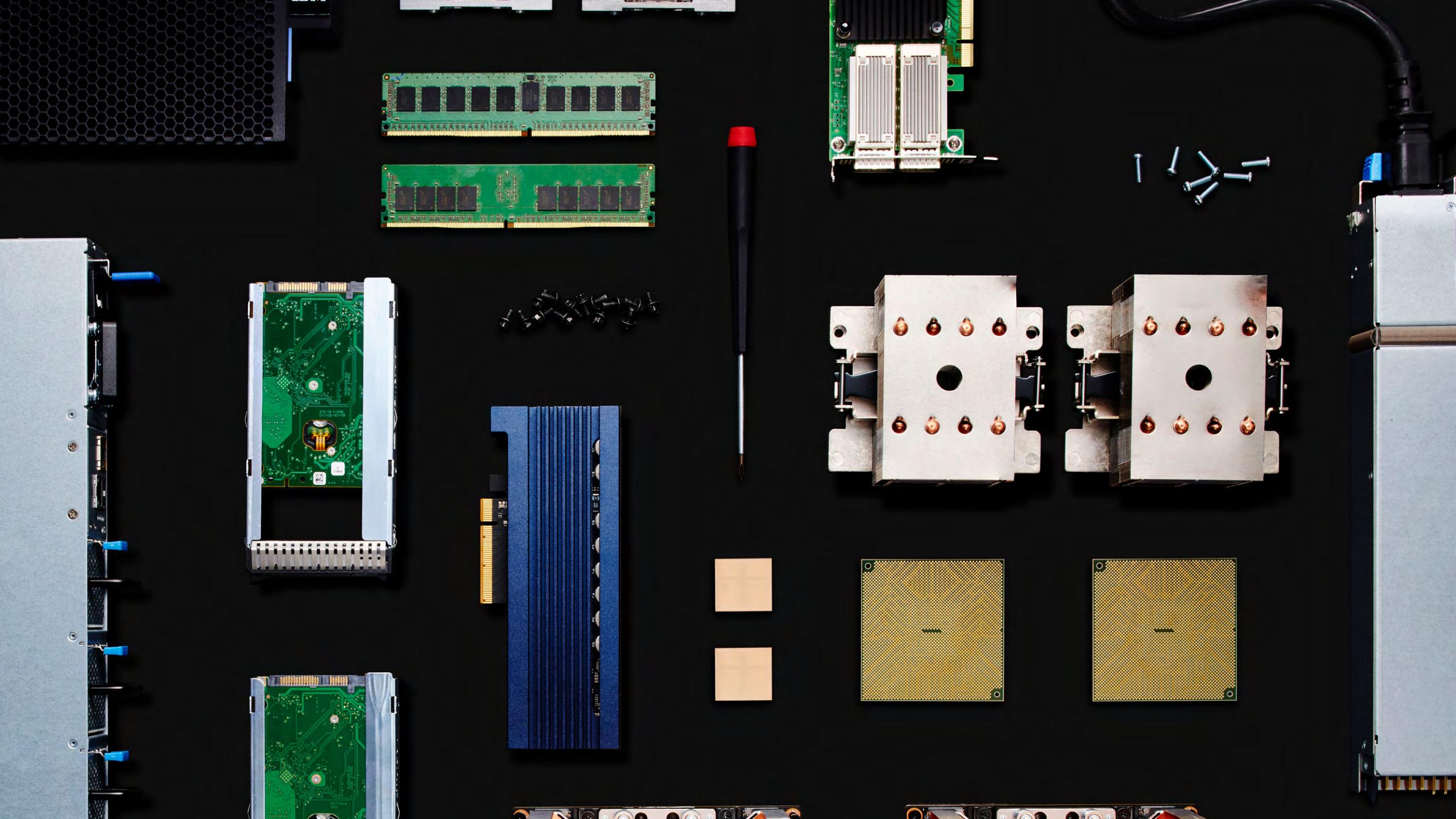
VersaStack for Hybrid Cloud can provide the flexibility to choose the best deployment option for a wide variety of enterprise IT workloads while freeing up resources in the data center for new-generation applications and cognitive workloads.

This solution is designed to help enable enterprises to easily and cost-effectively scale compute, network and storage capacity as needed.

[Download the data sheet →](#)

#### **Did you know?**

VersaStack for Hybrid Cloud uses simplified architecture and validated design to help reduce deployment time, increase asset use and reduce capital and operating expenses.



# IBM Services for storage

Experience 24x7 support  
across your enterprise

As IBM clients move toward the next chapter of digital transformation, IBM can provide the resources your team needs to support the reinvention of your organization through scalable AI and a security-rich hybrid cloud infrastructure. IBM works with you to integrate solutions designed for your needs that transform your business into a cognitive enterprise and provide 24x7 support across various service providers. IBM Services® can deliver deep technological expertise and rich industry insight to help you align your IT and business objectives with the following services:



## Technology consulting and services for enterprises

Expertise and innovative technology that enable digital transformation →



## Managed private cloud IaaS

Create a strong foundation for your hybrid cloud environment with private cloud infrastructure management. →



## Single-source technology support services for hybrid IT environments

Keep mission-critical systems running smoothly, including hardware and software from IBM and other OEMs. →



## IBM solutions for server, storage, middleware and service management

Plan, implement and optimize IT infrastructure and service management. →



## IBM Business Resiliency Services

Enable resilient models to mitigate risks and ensure business continuity. →



## IBM Systems Lab Services

Infrastructure services to help you build the foundation of a smart enterprise →



## IBM Garage™

A faster route to IT innovation with technical experts and the IT infrastructure to unlock your business's potential →



## IBM Global Financing

Flexible payment solutions for IBM and Red Hat products and services →

“During breakfast one morning at Think, one of IBM’s customers provided some telling insight into IBM’s allure.

‘We seriously considered buying from one of the storage industry’s hot upstarts,’ they said, ‘But it goes beyond technology. We have factories in hard-to-reach parts of the world. Downtime stops our business. It’s about choosing a technology partner who both has the right technology and can also take care of our needs, today and into the future. *IBM has never let us down.’*”

— Steve McDowell

Senior Technology Analyst covering storage technologies at Moor Insights & Strategy

[Learn more about IBM Storage offerings →](#)

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