

# IBM FlashSystem 7200

## Cost-efficient storage made simple for hybrid multicloud

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### Highlights

- Deploy enterprise-grade functionality
  - Leverage NVMe performance in one cost-efficient system
  - Build easy-to-manage, high-performance hybrid multicloud environments
  - Extend data services across more than 500 heterogeneous systems
  - Transform data economics using sophisticated data reduction
  - Leverage AI to optimize storage management and streamline issue resolution
  - Deploy leading-edge storage solutions with confidence using IBM FlashWatch
  - Increase cost-efficiency with IBM Storage Utility programs
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To take advantage of artificial intelligence (AI)-enhanced applications, real-time Big Data analytics, and multicloud architectures that require higher levels of system performance and storage capacity, enterprises around the globe are rapidly moving to modernize legacy IT infrastructures. But for many organizations, staff resources and expertise are not abundant, and cost-efficiency is a top priority. These organizations have important investments in existing infrastructure that they want to maximize. They need enterprise-grade solutions that optimize cost-efficiency while simplifying the pathway to modernization. The new IBM FlashSystem 7200 is designed specifically for these requirements and use cases.

Built with IBM Spectrum Virtualize software – part of the IBM Spectrum Storage family – IBM FlashSystem 7200 provides feature-rich, enterprise-grade storage solutions that help enterprises cost-effectively support the workloads and applications that are crucial to their business success. IBM FlashSystem storage arrays can handle massive volumes of data, enable rapid and flexible cloud services deployments, and deliver the performance needed to gain insights from the latest AI and analytics technologies with all-flash or hybrid-flash solutions.

IBM FlashSystem 7200 provides the foundation for implementing a cost-efficient storage infrastructure that also delivers extraordinary functionality and performance. Designed with new, large capacity IBM FlashCore technology and leveraging end-to-end Non-Volatile Memory Express (NVMe) protocol, IBM FlashSystem 7200 accelerates business-critical applications and real-time analytics.

The IBM Spectrum Virtualize foundation of IBM FlashSystem 7200 provides comprehensive data services across all managed systems, including encryption, automated tiering, and data reduction pools. In addition, the systems include powerful new technology that enables efficient, cost-effective hybrid cloud storage solutions.

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*IBM FlashSystem 7200*

## Highly scalable, high-performance storage

IBM FlashSystem 7200 is designed to deliver flexible, affordable scaling and performance. It features support for NVMe over Fabrics for the highest end-to-end storage performance. The solutions utilize IBM FlashCore-enhanced storage media that provides extraordinary flash density and storage capacity while achieving latency as low as 70 microseconds. Purpose-engineered FlashCore Modules (FCM) utilize powerful inline, hardware-accelerated compression technology that provides consistent data compression without performance impact across the full range of workloads. The FCMs are designed to support FIPS 140-2 Level 1 encryption with IBM Security Key Lifecycle Manager centralized key management and full hot-swap capabilities.

You can choose FCMs in multiple capacities or you can opt for industry-standard NVMe or new Storage Class Memory (SCM) drives, with the capability to support all three drive types simultaneously within the array. This means that using the always-on inline high-performance data compression in the FCMs or Data Reduction Pool (DRP) technology with the industry-standard drives, effective capacities can range up to four petabytes in a single 2U enclosure, with the ability to cluster, scale-out, or scale up capacity and performance to 32 petabytes and eight million input/output operations per second (IOPS).

The control enclosure leverages four 8-core Intel Cascade Lake processors, with 1.5TB memory cache available. Each controller contains a hardware compression accelerator based on Intel QuickAssist technology with an available second accelerator. Flexible host interface options include 16 Gbps or 32 Gbps Fibre Channel with FC-NVMe support, 25 Gbps Ethernet with iSCSI, iWARP, and RoCE support, and 10 Gbps iSCSI. Up to four IBM FlashSystem 7200 arrays can be clustered and operated as a single system, with 12G, 24G, and 92G SAS expansion enclosures available that can support up to 760 SAS drives per array controller and 96 NVMe and 2,944 SAS drives per 4-way clustered system.

## Cyber resiliency

As systems became linked with external networks, organizations adopted a “defense-in-depth” security mode so that if the perimeter was breached, there were additional layers of security to protect critical information.

IBM FlashSystem 7200 provides advanced capabilities that can help maximize data protection, security and high availability to significantly reduce the risk of disruption and financial losses due to user errors, malicious destruction or ransomware attacks.

In addition, physical isolation layers can be created by storing sensitive copies in immutable storage, cloud environments or off-line write-once read many (WORM) tape devices to provide true “air-gap” protection.



IBM FlashSystem provides modern data protection to efficiently prevent, detect and respond to cyberattacks.

## Enhanced functionality

IBM FlashSystem 7200 uses IBM Spectrum Virtualize technology that provides a wide range of market-leading data services to help ensure that applications run without disruption, even when changes are made to the storage infrastructure.

IBM FlashSystem 7200 also extends data services to more than 500 heterogeneous storage systems. When virtualized, data in an external storage system becomes part of the IBM FlashSystem solution and can be managed in the same way as internal drives. External systems inherit all the IBM Spectrum Virtualize functional richness and ease-of-use features, including advanced replication, high-performance thin provisioning, encryption, compression, deduplication, and IBM Easy Tier that improve administrator productivity and boost storage utilization while also enhancing and extending the value of existing storage investments.

IBM FlashSystem 7200 can accelerate efficiency and business value. Non-disruptive data migration shortens time-to-value from weeks or months to days, minimizes downtime for migration, eliminates the cost of add-on migration tools, and helps eliminate penalties and additional maintenance charges for lease extensions. The result can be real cost savings to your business.

## Hybrid multicloud

The challenge for organizations these days is how to take advantage of hybrid cloud technology without the expense of replacing current storage with cloud-capable storage systems. IBM Spectrum Virtualize in IBM FlashSystem 7200 enables the use of cloud storage for disaster recovery, dramatically speeds deployment of hybrid cloud configurations, and helps slash storage costs. IBM Spectrum Virtualize for Public Cloud enables new opportunities to migrate data between on-premises and public cloud storage. By leveraging IBM Spectrum Copy Data Management software, cloud storage may be used for data copies as well.

## Data reduction for enhanced efficiency

As well as inline hardware compression with FCM, the FlashSystem 7200 offers data reduction pools (DRP). When applied to new or existing storage systems, clients can significantly increase usable capacity while maintaining consistent application performance. These data reduction technologies can help eliminate or drastically reduce costs for storage acquisition, rack space, power, and cooling and can extend the useful life of existing storage assets.

In addition to the FCM inline hardware compression, DRP further offers:

- Block deduplication that works across all the storage in a data reduction pool to minimize the number of identical blocks
- Compression technology that provides consistent performance across application workload patterns
- SCSI UNMAP support, that de-allocates physical storage when operating systems delete logical storage constructs such as files in a file system.

## Tiered storage

Automated storage tiering with Easy Tier can help improve performance and lower costs by enabling the more efficient use of flash storage or multiple tiers of drives. Easy Tier automatically identifies more active data and moves that data to faster storage such as Storage Class Memory and FlashCore Modules. This helps organizations leverage flash storage for the data that can benefit the most. Easy Tier can use any supported flash storage to accelerate any other storage, including the new SCM drives. This approach delivers greater benefits from flash storage than tiering systems that are limited to just a single disk system.

## Advanced replication

The IBM Spectrum Virtualize functionality in IBM FlashSystem 7200 is designed to enable administrators to apply across all systems under management a single set of advanced network-based replication services that operate in a consistent manner, regardless of the type of storage being used.

When used with other IBM FlashSystem 7200 arrays, volumes can be replicated across 3 sites, offering both high availability and data recovery using synchronous and asynchronous data communication.

IBM FlashCopy functionality is designed to create an almost-instant copy (or “snapshot”) of active data that can be used for backup purposes or for parallel processing activities. Up to 256 copies of data may be created.

IBM Spectrum Protect Snapshot is designed to perform near-instant application-aware snapshot backups using FlashCopy local replication, but with minimal impact to IBM DB2, Oracle, SAP, VMware, Microsoft SQL Server, or Microsoft Exchange databases.

IBM FlashSystem 7200 also supports remote mirroring, enabling organizations to create copies of data at remote locations for disaster recovery. Replication can occur between any systems built with IBM Spectrum Virtualize and can involve any supported storage, including cloud. Support for VMware vCenter Site Recovery Manager helps speed disaster recovery.

For IP replication, IBM Spectrum Virtualize uses innovative Bridgeworks WANrockIT technology to optimize the use of network bandwidth and can compress data being transmitted to help reduce networking costs and improve remote replica currency.

## High availability

Moving data is one of the most common causes of planned downtime. The IBM Spectrum Virtualize technology within IBM FlashSystem 7200 enables data movement from one storage system to another, or between arrays while maintaining access to the data. This function can be used when replacing older storage with newer storage, as part of load-balancing work, or when moving data in a tiered storage infrastructure from disk drives to flash.

The IBM HyperSwap function supports storage and servers in three data centers. In this configuration, IBM FlashSystem solutions enable servers at each data center to access data concurrently, with automated switch-over in case of failure. When combined with server data mobility functions such as VMware vMotion or IBM PowerVM Live Partition Mobility, HyperSwap technology enables non-disruptive storage and virtual machine mobility between data centers that can be up to 300 km (186 miles) apart.

## Simplified management

IBM FlashSystem 7200 with IBM Spectrum Virtualize is designed to simplify hybrid multicloud storage environments from the very start. The systems utilize a modern user interface for centralized management. With this single interface, administrators can perform configuration, management, and service tasks in a consistent manner over multiple storage systems – even from different vendors – vastly simplifying management and helping reduce the risk of errors. Plug-ins to support Microsoft System Center Operations Manager and VMware vCenter help enable more efficient, consolidated management in these environments. The interface is consistent with other members of the IBM Spectrum Storage family, to simplify tasks for administrators and help reduce the risk of error.

## AI-powered storage visibility, insight, and control

IBM Storage Insights and Storage Insights Pro provide critical system analysis and optimization capabilities that enhance your IBM FlashSystem experience, such as:

- A single dashboard so you can see the status of all your block storage at a glance
- System information gathered from approximately 23 million data points so you can make better, more informed decisions
- AI-enhanced analytics that leverage knowledge from over two exabytes of storage under

management to better predict and help prevent problems before they impact your business

- When support is needed, the ability to easily open a ticket, upload log information and view open tickets
- Detailed configuration data available to IBM specialists to help close tickets quickly.

Delivered as a service from IBM Cloud at no charge, Storage Insights is quick and easy to set up and requires no ongoing software maintenance. IBM Storage Insights Pro is an upgrade that provides more detailed information and additional capabilities.

## Easier server virtualization and containerization

The IBM Spectrum Virtualize functionality in IBM FlashSystem 7200 complements server virtualization technologies such as PowerVM, Microsoft Hyper-V, VMware vSphere, Kubernetes, and Docker. Similar to provisioning virtualized servers, provisioning capacity with IBM FlashSystem 7200 is designed to become an almost entirely automated function.

Containers are an open-source technology that wraps applications with everything needed to run in any environment. Containerization is a key enabling technology for flexibly delivering workloads to private and public cloud and DevOps. IBM FlashSystem 7200 supports Red Hat OpenShift and Kubernetes container environments, accelerating the deployment of persistent volumes with the IBM block storage CSI driver, certified by Red Hat and IBM.

## Greater Confidence

To enhance the IBM FlashSystem 7200 acquisition, deployment, and operational experience, IBM offers a suite of programs collectively called IBM FlashWatch. This suite of programs includes high availability, data reduction, and flash endurance guarantees; all-inclusive licensing; comprehensive care and cloud-based analytics; cloud-like utility pricing; storage upgrade options; and free data migration for the first 90 days. IBM FlashWatch is driven by the concept – Storage Made Simple – and helps increase confidence in purchasing, owning, and upgrading IBM Storage solutions.



## IBM FlashSystem 7200 at a glance

<b>Models</b>	<ul style="list-style-type: none"> <li>Control enclosures: 2076 Models 824, U7C</li> <li>Expansion enclosures: 2076 Models 12G, 24G, 92G</li> </ul>
<b>Clustering</b>	Up to 4 FlashSystem 7200 control enclosures can be clustered and operated as a single system.
<b>Software</b>	<ul style="list-style-type: none"> <li>IBM Spectrum Virtualize</li> <li>IBM Storage Insights</li> </ul>
<b>Host interface</b>	Per control enclosure : <ul style="list-style-type: none"> <li>Up to 24 x 16 Gbps Fibre Channel (FC, NVMeoF)</li> <li>Up to 24 x 32 Gbps Fibre Channel (FC, NVMeoF)</li> <li>8 x 10 Gbps Ethernet (iSCSI)</li> <li>Up to 12 x 25 Gbps Ethernet (iSCSI, iWARP, RoCE)</li> </ul>
<b>User interface</b>	GUI, CLI, REST API
<b>Maximum drives supported</b>	<ul style="list-style-type: none"> <li>24 2.5" NVMe drives per control enclosure</li> <li>12 3.5" SAS drives per 12G expansion enclosure</li> <li>24 2.5" SAS drives per 24G expansion enclosure</li> <li>92 2.5" or 3.5" SAS drives per 92G expansion enclosure</li> <li>Up to a maximum of 760 SAS drives in expansion enclosures per control enclosure</li> </ul>
<b>Supported NVMe drives</b>	FlashCore Modules (FCM): <ul style="list-style-type: none"> <li>4.8 TB, 9.6 TB, 19.2 TB and 38.4 TB with hardware compression</li> </ul> Storage Class Memory (SCM): <ul style="list-style-type: none"> <li>375 GB, 750 GB, 800 GB, 1.6 TB</li> </ul> Industry Standard NVMe: <ul style="list-style-type: none"> <li>800 GB, 1.92 TB, 3.84 TB, 7.68 TB and 15.36 TB</li> </ul>
<b>Supported SAS drives</b>	2.5-inch SAS SSD: <ul style="list-style-type: none"> <li>800 GB, 1.6 TB, 1.92 TB, 3.84 TB, 7.68 TB, 15.36 TB, and 30.72 TB</li> </ul> 2.5-inch SAS HDD: <ul style="list-style-type: none"> <li>1.2 TB, 1.8 TB and 2.4 TB 10k SAS</li> <li>2 TB 7.2k nearline SAS</li> </ul> 3.5-inch disk drives supported: <ul style="list-style-type: none"> <li>4 TB, 6 TB, 8 TB, 10 TB, 12 TB, and 14 TB 7.2k nearline SAS</li> </ul>
<b>RAID levels</b>	DRAID 5 and 6 with dynamic DRAID expansion and TRAIT 1 and 10
<b>Maximum IOPS (4K read hit)</b>	2.3 million
<b>Minimum latency (4K read hit)</b>	<70 μs
<b>Maximum IOPS (4K read miss)</b>	700 k
<b>Maximum bandwidth (256Kb read miss)</b>	35 GB/s
<b>Processors</b>	<ul style="list-style-type: none"> <li>Four 8-core processors per control enclosure</li> <li>Up to sixteen 8-core processors in a 4-way clustered system</li> </ul>
<b>Cache</b>	<ul style="list-style-type: none"> <li>From 256 GB up to 1,536 GB per control enclosure</li> <li>Up to 6,144 GB in a 4-way clustered system</li> </ul>
<b>Fans and power supplies</b>	Fully redundant, hot swappable
<b>Rack support</b>	Standard 19-Inch
<b>Advanced features</b>	<ul style="list-style-type: none"> <li>Data reduction via thin provisioning, unmap, compression and deduplication</li> <li>Data-at-rest AES-XTS 256 encryption</li> <li>Easy Tier</li> <li>Data migration</li> <li>External virtualization</li> </ul>
<b>Replication features</b>	<ul style="list-style-type: none"> <li>IBM Storage Insights Pro</li> <li>IBM Spectrum Protect Snapshot</li> <li>IBM Spectrum Virtualize for Public Cloud</li> <li>IBM Spectrum Control</li> </ul>

<b>Warranty</b>	Hardware: <ul style="list-style-type: none"><li>• 3-year limited warranty</li><li>• Customer-replaceable units</li><li>• Next business day between 9 a.m. and 5 p.m.</li><li>• Warranty service upgrades available</li></ul> Software: <ul style="list-style-type: none"><li>• 1-year software maintenance</li><li>• Software maintenance extensions available</li></ul>
<b>Dimensions</b>	Control enclosures <ul style="list-style-type: none"><li>• Width: 483 mm (19.0 in.)</li><li>• Depth: 850 mm (33.5 in.)</li><li>• Height: 88 mm (3.5 in.)</li></ul>
<b>Weight, Control enclosure</b>	Fully configured (24 drive modules installed): 46.6 kg (102.5 lb)
<b>Supported systems</b>	For a list of currently supported servers, operating systems, host bus adapters, clustering applications and SAN switches and directors, refer to the IBM System Storage Interoperation Center: <a href="https://www.ibm.com/systems/support/storage/ssic/interoperability.wss">https://www.ibm.com/systems/support/storage/ssic/interoperability.wss</a>
<b>Independent software vendor (ISV) solutions</b>	For a list of high-quality solutions with our partner ISVs, including access to solution briefs and white papers, refer to the ISV Solutions Resource Library: <a href="https://www.ibm.com/partnerworld/wps/pub/systems/whyibm/programs">https://www.ibm.com/partnerworld/wps/pub/systems/whyibm/programs</a>

## Why IBM?

IBM offers a vast portfolio of hardware, software and services to help organizations cost-effectively address their IT infrastructure needs. These include robust data-storage solutions to enable always-on, trustworthy storage, and recovery from disaster. Because business needs shift, IBM solutions emphasize interoperability and the integration of new use cases or approaches, from analytics to multi-site backup to near-instant recovery. With IBM, organizations can create flexible, robust and resilient storage infrastructure to support critical operations for smooth operations and regulatory compliance.

High-performance hardware grounded in innovative technology and open standards, and a broad portfolio of software and services, are just a few of the reasons to consider storage solutions from IBM. IBM delivers some of the best storage products, technologies, services and solutions in the industry without the complexity of dealing with different hardware and software vendors—all backed by IBM with its recognized industry leadership.

## For more information

For more information about the FlashSystem family of data systems, please contact your IBM representative or IBM Business Partner, or visit:

<https://www.ibm.com/it-infrastructure/storage/flash>

Additionally, IBM Global Financing provides numerous payment options to help you acquire the technology you need to grow your business. We provide full lifecycle management of IT products and services, from acquisition to disposition. For more information, visit:

<https://www.ibm.com/financing/flash>

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