IBM FlashSystem Portfolio

Technical Specifications

The high-speed IBM FlashSystem® primary data storage platform provides enterprise-class data solutions for businesses, large and small. The platform offers built-in AI and interoperability while enabling a fast response to cyber threats and data breaches. From hybrid storage to performant nonvolatile memory express (NVMe) all-flash arrays and both on-premises and cloud-based workloads, IBM FlashSystem meets even the most demanding data storage requirements.

The IBM FlashSystem primary data storage platform is comprised of:

- **FlashSystem 5015** is an affordable and easy-to-use solution with powerful scale-up features, offering various storage options and using IBM Storage Virtualize features.

- **FlashSystem 5045** provides greater functionality, including powerful encryption capabilities, data reduction pools with compression, deduplication, thin provisioning, and the ability to cluster for scale-up and scale-out.

- **FlashSystem C200** is a high-capacity and energy-efficient storage solution designed for applications that don't require ultra-low latency but can benefit from significant performance improvements over disk solutions and considerable operating cost savings like media streaming, archives, backups, and other data repositories. It offers the lowest all-flash TCO while featuring the same enterprise-grade security and availability services as the rest of the FlashSystem family, making it the perfect target for disaster recovery copies.

- **FlashSystem 5600** is an entry-level NVMe all-flash solution that provides exceptional cybersecurity features, impressive density, and outstanding performance. Designed for customers with small, mixed workloads demanding a combination of performance, scalability, and security features.

- **FlashSystem 7600** is a cost-effective storage solution that supports all the advanced capabilities of IBM FlashSystems and provides superior balance of performance, capacity and connectivity options for the modern enterprise: simple, smart, and secure—delivering incredible performance.

- **FlashSystem 9600** is the optimal solution for large, mixed, and consolidated workloads, delivering extreme speed and simplicity for the most demanding enterprise workloads.

IBM FlashSystem Family	FlashSystem 5015	FlashSystem 5045	FlashSystem C200	FlashSystem 5600	FlashSystem 7600	FlashSystem 9600
Machine Type	4680	4680	5202	5127	5075	5078
Controller Models	2P2 (12-drive) 2P4 (24-drive)	3P2 (12-drive) 3P4 (24-drive)	C25 (24-drive)	A20 (12-drive)	A30 (32-drive)	A40 (32-drive)
Expansion Models	12H (12-drive) 24H (24-drive) 92H (92-drive)	12H (12-drive) 24H (24-drive) 92H (92-drive)	-	12G (12-drive) 92G (92-drive)	-	-
Processors	2 Intel Xeon CPUs 2 cores each	2 Intel Xeon CPUs 6 cores each	4 Intel Xeon CPUs 8 cores each	2 Intel Xeon CPUs 12 cores each	2 AMD Epyc CPUs 16 cores each	2 AMD Epyc CPUs 48 cores each
Memory	32GB 64GB	32GB 64GB	256GB	256GB 512GB	768GB 1.5TB	1.5TB 3TB
Height	2U	2U	2U	1U	2U	2U
Connectivity (standard)	1 Gb/s iSCSI	10 Gb/s iSCSI	10 Gb/s iSCSI	25/10 Gb/s iSCSI or NVMe/TCP	N/A	N/A
Connectivity (optional)	16 Gb/s FC 10 Gb/s iSCSI 12 Gb/s SAS	16 Gb/s FC 10 Gb/s iSCSI 12 Gb/s SAS	32 Gb/s FC or NVMe/FC 25/10 Gb/s iSCSI or NVMe/TCP	64 Gb/s FC or NVMe/FC 32 Gb/s FC or NVMe/FC 100/40 Gb/s iSCSI or NVMe/TCP 25/10 Gb/s iSCSI or NVMe/TCP	64 Gb/s FC or NVMe/FC 32 Gb/s FC or NVMe/FC 100/40 Gb/s iSCSI or NVMe/TCP 25/10 Gb/s iSCSI or NVMe/TCP	64 Gb/s FC or NVMe/FC 32 Gb/s FC or NVMe/FC 100/40 Gb/s iSCSI or NVMe/TCP 25/10 Gb/s iSCSI or NVMe/TCP
Max I/O ports (optional)	8	8	16	16	32	32
Max IOPS (4K read hit)	400k	1.2M	1.5M	2.6M	4.3M	6.3M
Max bandwidth (256K read miss)	8 GB/s	12 GB/s	23 GB/s	30 GB/s	55 GB/s	86 GB/s
Warranty and Support	One-year 9x5 standard 1-5 Expert Care Basic, Advanced or Premium					
Dimensions **Control enclosure**	• Height: 8.7 cm (3.4 in.) • Width: 48.3 cm (19.0 in.) • Depth: 55.6 cm (21.9 in.)	• Height: 8.7 cm (3.4 in.) • Width: 48.3 cm (19.0 in.) • Depth: 55.6 cm (21.9 in.)	Height: 8.7 cm (3.4 in.) • Width: 48.3 cm (19.0 in.) • Depth: 85 cm (33.5 in.)	• Height: 4.3 cm (1.7 in.) • Width: 48.3 cm (19.0 in.) • Depth: 87.6 cm (34.5 in.)	• Height: 8.8 cm (3.5 in.) • Width: 48.3 cm (19.0 in.) • Depth: 86.8 cm (34.2 in.)	• Height: 8.8 cm (3.5 in.) • Width: 48.3 cm (19.0 in.) • Depth: 86.8 cm (34.2 in.)
Weight	Fully configured (12 drives): 28.3Kg Fully configured (24 drives): 27.3Kg	Fully configured (12 drives): 28.3Kg Fully configured (24 drives): 27.3Kg	46.6Kg	Fully configured (12 drives): 21.8Kg	Fully configured (32 drives): 44Kg	Fully configured (32 drives): 44Kg

Supported Media

	Capacities
NVMe FCM	6.6TB, 13.2TB, 26.4TB, 46TB*, 52.8TB, 105.6TB
NVMe SSD	1.92TB, 3.84TB, 7.68TB
SAS SSD	1.92TB, 3.84TB, 7.68TB, 15.36TB, 30.72TB
NL-SAS 7.2k RPM HDD	12TB, 20TB, 24TB

Refer to individual product Sales Manuals for drive availability under each product

*46TB FCM4 is only available in FlashSystem C200 and it is the only drive supported on FlashSystem C200.

FlashSystem grid

With the introduction of FlashSystem grid architecture, organizations can deploy a scalable, highly available data plane for monitoring and managing their storage architecture. Allowing them to reduce data silos and spend less time on storage management by easily automating and non-disruptively moving data between multiple connected storage systems. This provides data mobility to different data centers regionally and globally while rebalancing as workloads grow and regularly refreshing systems to keep your infrastructure consistently up to date. Resulting in a data storage architecture that guarantees your data and applications are always available, performant, and have the capacity needed to meet your organization's long-term storage objectives while freeing up people and capital to focus on new strategic projects. The FlashSystem grid can contain a mix of different supported systems and configurations for added versatility.

These specifications assume FlashSystem grid contains 32 devices with the same configuration, running IBM Storage Virtualize 9.1.0 or later. IBM FlashSystem grid can contain a mix of different models and configurations.

FlashSystem grid At a glance	FlashSystem C200	FlashSystem 5600	FlashSystem 7600	FlashSystem 9600
Machine Type	5202	5127	5075	5078
Max Memory	8TB	16TB	48TB	96TB
Height	64U	32U	64U	64U
Max I/O Ports	512	512	1024	1024
Max IOPS (4K read hit)	48M	83M	137M	201M
Max bandwidth (reads)	736GB/s	960 GB/s	1,760 GB/s	2,752 GB/s

IBM FlashCore® Module

Capacity Point	FlashCore Module 5					FlashCore Module 4
Capacity Point	Small	Medium	Large	X-Large	XX-Large	C200 X-Large
Flash Technology	SLC / QLC	SLC / QLC	SLC / QLC	SLC / QLC	SLC / QLC	SLC / QLC
Raw Capacity	6.6 TB	13.2 TB	26.4 TB	52.8 TB	105.6 TB	46.00 TB
Effective Capacity	33.6 TB	67.2 TB	134.4 TB	268.8 TB	438.0 TB	115.2 TB
Endurance	1 DWPD	1 DWPD	1 DWPD	1 DWPD	1 DWPD	1 DWPD
PCIe	Gen 4	Gen 4	Gen 4	Gen 4	Gen 4	Gen 4
Read Bandwidth	2,200 MB/s	2,500 MB/s	3,500 MB/s	3,500 MB/s	3,500 MB/s	1,000 MB/s
Write Bandwidth	770 MB/s	770 MB/s	1,500 MB/s	1,500 MB/s	1,500 MB/s	700 MB/s
Read IOPS (16K)	125k	150k	200k	200k	200k	150k
Power Envelope	Up to 35W	Up to 35W	Up to 35W	Up to 35W	Up to 35W	Up to 24W
Ransomware detection	Yes	Yes	Yes	Yes	Yes	Yes
Supported on	5600, 7600 and 9600				9600 only	C200 only

IBM Storage Virtualize

- Designed for "six nines" (99.9999%) data availability with over 20 years of market presence.
- Distributed RAIDs 1, 5, and 6 provide the flexibility to choose the level of data protection required.
- Virtualization of internal storage enables rapid, flexible provisioning and simple configuration changes.
- Thin provisioning optimizes efficiency by allocating disk storage space in a flexible manner among multiple users based on the minimum space required by each user at any given time. With thin provisioning, applications consume only the space they are actually using, not the total space that has been allocated to them.
- Data reduction pools increase existing infrastructure capacity utilization by leveraging the following efficiency functions:
- Automatically deallocate and reclaim capacity of thin-provisioned volumes containing deleted data and, for the first time, enable this reclaimed capacity to be reused by other volumes.
- Block deduplication for increased efficiency of storage usage by utilizing pointers in duplicate blocks rather than keeping multiple copies.
- Compression improves efficiency by storing more active primary data in the same physical disk space.
- Dynamic migration delivers efficiency and business value through a nondisruptive migration function.
- Policy-based snapshots and replication provide simplified configuration and management for storage replication by applying a policy to a set of volumes in a volume group.
- The graphic user interface delivers intuitive data management and is designed with point-and-click system management capabilities.

Refer to individual product documentation for software feature availability under each product

IBM Storage Expert Care

Services	Basic	Advanced	Premium
IBM Software Maintenance or Support Line for Storage	√	√	√
IBM Hardware Maintenance: 9x5 next-business-day onsite repair	√		
IBM Hardware Maintenance with enhanced service levels: 24 x 7 same-day onsite repair		√	√
Predictive support for Power, Storage and LinuxONE		√	√
Dedicated support from a Technical Account Manager (TAM)			√
Enhanced 30-minute response time for Severity 1 and 2 issues			√
Remote code loads (one time or twice yearly)			√

Additionally, with the provision of your system's Warranty or Expert Care Support contract, an endurance guarantee is extended to all your Flash Control Modules (FCMs). IBM assures the replacement of any failed FCM drive, irrespective of the workload type or the number of writes; this reflects the high level of confidence IBM holds in the reliability of FlashCore Module.

IBM SAN Volume Controller

	IBM SAN Volume Controller SV3
Machine Type	2145, 2147
Controller Models	SV3
Processors	2 Intel Xeon CPUs 24 cores each
Memory	Up to 1.5TiB
Height per node (min 2 nodes)	2U
Connectivity. **(optional)**	64 Gb/s FC or NVMe/FC 32 Gb/s FC or NVMe/FC 100 Gb/s iSCSI or NVMe/TCP 25/10 Gb/s iSCSI or NVMe/TCP
Max I/O ports (per node)	24
Warranty and Support	2145 – One year 24x7 2147 – Three years Enterprise Class Support (ECS)
Dimensions per node (min 2 nodes)	• Height: 8.7 cm (3.4 in.) • Width: 44.6 cm (17.6 in.) • Depth: 82.6 cm (32.6 in.)
Weight	25kg (55lb) – 30kg(65lb) depending on configuration

For more information

Visit our solutions page to learn more about the FlashSystem family of data systems, or contact your IBM representative or IBM Business Partner. If you need to be connected, fill out this form to schedule a consult with an IBM storage expert.