

IBM FlashSystem 900

Accelerate applications with the extreme performance of a low-latency, ultra-dense all-flash storage system

High-performance, highly efficient flash storage is a key enabler of hybrid cloud architectures, real-time analytics, and cognitive applications that modern enterprises are leveraging to gain greater insights from their data assets, help lower IT costs, and capture competitive advantage.

Highlights

- Accelerate key applications with consistent microsecond latency
 - Improve performance and lower costs with inline hardware data compression
 - Reduce capital and operational expenses with IBM-enhanced 3D TLC flash
 - Protect critical data assets with patented IBM Variable Stripe RAID
 - Power faster insights with IBM FlashCore technology
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IBM FlashSystem 900 all-flash storage arrays provide the consistent microsecond latency, cost-efficiency, increased data security, and extreme reliability required by today's businesses. The systems are the foundation of the IBM FlashSystem family and provide market-leading advantages such as:

- Up to 440 TB effective capacity in only 2U, thanks to IBM-enhanced 3D TLC NAND flash technology and inline hardware data compression
- Centralized encryption key management with IBM Security Key Lifecycle Manager (AES 256)
- Consistent storage response times with latency as low as 85 microseconds
- Enhanced endurance technology backed by a flash wear guarantee
- Leading-edge user experience that includes visualization of effective capacity and better capacity planning with IBM Comprestimator

Power insights in real time

IBM FlashCore technology refers to the IBM innovations that enable IBM FlashSystem 900 to deliver high performance, microsecond latency, extreme reliability, and a wide range of operational and cost efficiencies. IBM FlashCore innovations include a hardware-accelerated NVM architecture with essentially no software in the data path, which drives consistent ~100 microsecond latency, high input/output operations per second (IOPS), and high bandwidth even while compressing data. For business-critical applications, this means better application response times, faster batch processes, and highly scalable analytics capabilities.

The architecture includes redundant, non-blocking crossbar backplanes and hardware-based RAID controllers that enable IBM FlashSystem 900 to deliver very high availability. Advanced flash management features include Variable Stripe RAID technology, IBM-engineered error correction codes, overprovisioning capabilities, ultra-fast write buffers, and hardware-based data offloads. IBM FlashCore advanced flash management also includes proprietary garbage collection, relocation, and block-picking algorithms that not only increase flash endurance, but also increase performance while reducing latency.

IBM FlashSystem 900 arrays are composed of up to 12 IBM MicroLatency modules—massively parallel, custom-engineered flash arrays that deliver higher performance, better reliability, and superior flash endurance. The IBM-enhanced 3D TLC flash within each MicroLatency module delivers capacity from as low as 14 TB usable to as high as 180 TB usable (440 TB effective) in a single system.¹ The MicroLatency modules also support an offload AES-256 encryption engine with centralized key management using IBM Security Key Lifecycle Manager, high-speed internal interfaces, and full hot-swap capabilities that enable organizations to achieve lower cost per capacity with even better data security and flash reliability than before.¹

Accelerate data access with confidence

IBM FlashSystem 900 uses enterprise-class, two-dimensional flash RAID technology, leveraging both Variable Stripe RAID and system-level RAID 5 to deliver 99.999 percent availability.¹ Variable Stripe RAID maintains system performance and capacity in the event of partial or full flash chip failures, helping reduce downtime and forestall system repairs. System-wide RAID 5 with hot spare also helps prevent data loss and improves availability. These data protection and system reliability features are backed by a flash endurance guarantee that makes IBM FlashSystem 900 an ideal choice for deployment in mission-critical environments.



IBM FlashSystem 900

Boost efficiency for today's critical workloads

The systems introduce a new user interface (UI) with the same “look and feel” as other IBM FlashSystem solutions for a consistent management experience across all platforms. This interface has an improved overview dashboard that provides all information in an easy-to-consume format and allows visualization of effective capacity. Along with the IBM Comprestimator tool that estimates data compression rates for targeted workloads, the new UI enables easier storage planning and management.

¹ IBM internal measurements

IBM FlashSystem 900 at a glance																												
Model	9840-AE3, 9843-AE3																											
Flash type	IBM-enhanced 3D TLC																											
Capacity																												
Feature code	AF3J							AF3K							AF3L							AF3M						
IBM MicroLatency module type	Small (3.6 TB)							Medium (8.5 TB)							Large (18 TB)							XLarge (18 TB)						
Modules quantity	6		8		10		12		8		10		12		8		10		12		8		10		12			
Usable [TB TiB]	14.4	13	21.6	19.6	28.8	26.1	36.1	32.8	51.3	46.6	68.4	62.2	85.5	77.7	108	98.2	144	130.9	180	163.7	108	98.2	144	130.9	180	163.7		
Average effective (2:1) [TB TiB]	28.8	26.1	43.3	39.3	57.7	52.4	72.2	65.6	102.6	93.3	136.8	124.4	171	155.5	N/A	N/A	N/A	N/A	N/A	N/A	216	196.4	288	261.9	360	327.4		
Maximum effective [TB TiB]	43.9	39.9	65.9	59.9	87.9	79.9	109.9	99.9	131.9	119.9	175.9	159.9	219.9	199.9	131.9	119.9	175.9	159.9	219.9	199.9	263.8	239.9	351.8	319.9	439.8	399.9		
Minimum latency																												
Write	95 µs																											
Read	155 µs																											
Maximum IOPS 4 KB																												
Read (100%, random)	1,100,000																											
Read/write (70%/30%, random)	900,000																											
Write (100%, random)	600,000																											
Maximum bandwidth 64 KB																												
Read (100%, sequential)	10 GB/s																											
Write (100%, sequential)	4.5 GB/s																											
RAS features	<ul style="list-style-type: none"> • Two-dimensional flash RAID • Module-level Variable Stripe RAID • System-level RAID 5 across modules • Hot-swappable MicroLatency flash modules • Tool-less concurrent module installation/replacement • Concurrent code load • Remote access • Enhanced Call Home • GUI performance and event mapping • Redundant and hot-swappable controllers, interface cards, power supplies, batteries and fans • 99.999% availability* 																											
Encryption	Local key and IBM Security Key Lifecycle Manager (AES-XTS 256)																											
Connectivity options	16 x 16 Gb Fibre Channel (NVMe-of) 8 x 40 Gb quad data rate (QDR) InfiniBand (SRP, NVMe-IB protocols)																											
Power	625 Watts (nominal) 1,300 Watts (max)																											
Dimensions (H x W x D)	86.2 mm x 445.00 mm x 768.12 mm (3.39 in. x 17.50 in. x 30.24 in.)																											
Weight	34 kg (75 lb) fully loaded																											

Why IBM?

Building on decades of storage leadership, IBM offers a comprehensive portfolio of integrated, flash-optimized storage solutions that can propel organizations into the next era of IT. These proven, easily integrated flash solutions accelerate critical applications for faster decision making, come with best-in-class reliability, and deliver new efficiencies across the entire business environment for a faster return on investment. All-flash storage arrays from IBM provide organizations with the superior economics and endurance they need for long-term business success.

For more information

To learn more about IBM FlashSystem 900, please contact your IBM representative or IBM Business Partner, or visit: [ibm.com/us-en/marketplace/flash-storage](https://www.ibm.com/us-en/marketplace/flash-storage)

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: [ibm.com/financing](https://www.ibm.com/financing)



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