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## Highlights

- Reduce business interruptions without sacrificing performance or usable capacity, with IBM® Variable Stripe RAID™ technology
  - Accelerate decision making across multiple applications, including online transactional processing (OLTP) and online analytical processing (OLAP) databases
  - Boost IT efficiency and gain high bandwidth and extreme input/output operations per second (IOPS) performance in exceptionally dense, 1U storage systems—without compromising on latency
  - Realize macro efficiencies with green storage for data centers, designed for fast data access at low wattage
  - Extract immediate value from your investment with quick time to deployment
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# IBM FlashSystem 820 and IBM FlashSystem 720

*Unleash business insights with highly available, extreme-performance flash storage*

To achieve a competitive advantage in a world of 24x7 continuous operations, organizations need to perform more frequent and complex analytics on vast volumes of data—including varying types of big data—and they cannot afford downtime. IBM flash storage offerings provide extreme IOPS and microsecond latency performance to turbocharge these new IT infrastructures. When compared to equivalent disk systems, IBM flash storage solutions deliver 6.7 times more capacity in a single rack, 19 times more cost efficiency in dollars/per IOPS, and are 115 times more energy efficient.<sup>1</sup>

IBM FlashSystem™ 820 and IBM FlashSystem 720 are designed to speed up the performance of multiple enterprise-class applications, including OLTP and OLAP databases, virtual desktop infrastructures, technical computing applications and cloud-scale infrastructures. These IBM systems deliver extreme performance per gigabyte, so organizations can quickly uncover business insights using traditional data analytics as well as new, big-data technologies. In addition, FlashSystem 820 and FlashSystem 720 eliminate storage bottlenecks with IBM MicroLatency™—that is, less than 100-microsecond access times—to enable faster decision making. With these low latencies, the storage disk layer can operate at speeds comparable to those of the CPUs, DRAM, networks and buses in the I/O data path.

## Delivering high availability and enterprise-class reliability

Featuring a “no-single-point-of-failure” architecture, FlashSystem 820 and FlashSystem 720 deliver high availability and enterprise-class reliability for the most demanding data centers. Patented Variable Stripe RAID technology helps reduce business interruptions by enhancing the



two-dimensional protection mechanism. In addition, two-dimensional RAID technology, hot-swappable flash modules and redundant components with built-in battery backup help boost data availability and IT productivity—enabling IT staff to spend more time on strategic initiatives, rather than managing and working around system failures.

### **Promoting space and power efficiency in the data center**

FlashSystem 820 and FlashSystem 720 also offer scalable performance in storage devices that are both space and power efficient. In fact, the 1U systems require fewer than 500 watts of power. By offloading heavy workloads to these flash storage systems, organizations can extend the life of their existing storage assets—and consolidate their legacy systems for “all-flash” macro efficiency. FlashSystem 820 can scale up to 20 TB in addressable storage capacity, while FlashSystem 720 supports up to 10 TB in capacity—in just 1U. When compared to traditional high-performance storage solutions, FlashSystem 820 and FlashSystem 720 provide cost efficiencies across power, cooling and “rack estate,” and do it all in a smaller footprint.

### **Leveraging next-generation, enterprise-grade, flash technology**

IBM flash storage solutions include the latest in industry-standard, solid-state flash memory technology. FlashSystem 820 uses enterprise multi-level cell (eMLC) flash technology, while FlashSystem 720 utilizes single-level cell (SLC) flash technology.

SLC flash technology provides the highest performance, lowest latency flash storage in the industry for customers looking for the ultimate in flash performance. At the same time, eMLC is revolutionizing the economics of flash by delivering extreme performance with greater density—and at low cost per terabyte—while maintaining IBM standards for reliability and durability.



Performance is a key reason that IBM flash storage solutions leverage SLC and eMLC technologies instead of commodity-based MLC flash technology. In fact, the eMLC flash technology in FlashSystem 820 is 10 times more reliable than commodity-based MLC flash technology at the chip level. IBM flash storage uses eMLC flash chips rated for 30,000 write/erase cycles to extend product life. In contrast, the equivalent consumer-grade MLC flash technology is typically rated for 1,000 - 3,000 write/erase cycles.

### **Optimizing the infrastructure through integration**

To deliver maximum performance with deep functionality, FlashSystem 820 and FlashSystem 720 integrate with IBM System Storage® SAN Volume Controller for an enterprise-class solution, as well as IBM System Storage Easy Tier® technology for intelligent data placement. Both flash storage systems also enable high-performance servers to operate at peak efficiency, so organizations can:

- Process vast amounts of data with high IOPS and bandwidth
- Accelerate individual application response times with MicroLatency—a core feature of and value to the IBM FlashSystem family—which encompasses high performance to accelerate the flash medium
- Rebalance the CPU-to-storage-utilization ratio, so that applications need fewer CPUs to handle the same workloads—which can lead to lower software licensing costs

**IBM Systems and Technology**  
Data Sheet

- Make decisions faster by accelerating multiple enterprise applications, across virtual and cloud infrastructures
- Improve operational efficiency, since database and system administrators no longer have to adjust configurations to boost performance
- Enrich the end-user experience, enabling users to spend less time waiting for applications to respond and more time on revenue-generating activities; this efficiency can also help enhance time to market for products and services, which can lead to greater satisfaction for end consumers
- Experience positive impacts to both top- and bottom-line expenses, thanks to higher CPU utilization, server consolidation and support for more transactions

**IBM FlashSystem 820 and IBM FlashSystem 720 at a glance\***

Series	IBM FlashSystem 820		IBM FlashSystem 720	
<b>Model</b>	9831-AE2		9831-AS2	
<b>Flash type</b>	eMLC		SLC	
	10 TB	20 TB	5 TB	10 TB
<b>Usable capacity (terabyte [TB]/ tebibyte [TiB])</b>	12.4 TB/11.3 TiB	24.7 TB/22.5 TiB	6.2 TB/5.6 TiB	12.4 TB/11.3 TiB
<b>Usable capacity RAID 5 (TB/TiB)</b>	10.3 TB/9.4 TiB	20.6 TB/18.8 TiB	5.2 TB/4.7 TiB	10.3 TB/9.4 TiB
<b>Raw maximum capacity (TB/TiB)</b>	16.5 TB/15 TiB	33 TB/30 TiB	8.3 TB/7.5 TiB	16.5 TB/15 TiB
<b>Minimum latency</b>				
<b>Write</b>	25 µs		25 µs	
<b>Read</b>	110 µs		100 µs	
<b>Read (from host)</b>	160 µs		145 µs	
<b>Maximum IOPS 4KB</b>				
<b>100% read</b>	525k		525k	
<b>Mixed 70/30% read/write</b>	430k		450k	
<b>100% write</b>	280k		400k	
<b>Maximum bandwidth 256 KB</b>				
<b>Read</b>	3.3 GB/s (Fibre Channel) 5 GB/s (InfiniBand)		3.3 GB/s (Fibre Channel) 5 GB/s (InfiniBand)	
<b>Write</b>	2.8 GB/s (Fibre Channel) 2.8 GB/s (InfiniBand)		3.3 GB/s (Fibre Channel) 4 GB/s (InfiniBand)	
<b>Power</b>	300 Watts		350 Watts	
<b>Cooling</b>	1023 BTU/hr.		1194 BTU/hr.	
<b>Reliability</b>	High-availability hardware configuration			
	Two-dimensional flash RAID <ul style="list-style-type: none"> <li>• Module-level Variable Stripe RAID</li> <li>• System-level RAID 5 across modules</li> </ul> Hot-swappable flash modules Redundant interfaces		Redundant, hot-swappable power supplies Redundant management control ports N+1 batteries 2n fans	
<b>Supported RAID levels</b>	0, 5			
<b>Connectivity options</b>	4 x 8 Gb/s Fibre Channel 4 x 40 Gb/s QDR InfiniBand			
<b>Client operating system support</b>	For a current list of platforms supported, please visit the IBM System Storage Interoperation Center ( <a href="#">SSIC</a> )			
<b>Enclosure dimensions (H x W x D)</b>	1U x 432 mm x 638 mm (1U x 17 in. x 25 in.)			
<b>Weight</b>	13.3 kg / 29.3 lb			

## 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 result in faster time to insights with microsecond latency and extreme performance for macro efficiency across your business.

As part of IBM Smarter Storage—a strategic approach to storage that enables organizations to harness the value of stored data—FlashSystem 820 and FlashSystem 720 empower organizations to take advantage of best-in-breed solutions to build a compelling business advantage. From real-time transactions to data analytics, cloud, and virtual infrastructures, these solutions can provide organizations with the storage performance they need to compete, innovate and grow.

## For more information

To learn more about IBM FlashSystem 820 or IBM FlashSystem 720, please contact your IBM representative or IBM Business Partner, or visit the following website:  
[ibm.com/storage/flash](http://ibm.com/storage/flash)



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Produced in the United States of America  
April 2013

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Actual available storage capacity may be reported for both uncompressed and compressed data and will vary and may be less than stated.

\*Performance specifications based on fully configured system

<sup>1</sup>Information calculated and scaled from a demonstration conducted at the IBM Almaden Research Lab



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