

# IBM System Storage DCS3700

*Maximize performance, scalability and storage density at an affordable price*



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## Highlights

- Gain fast, highly available, dense storage capabilities at an affordable price
  - Deliver simplified data protection management and automated recovery with Dynamic Disk Pooling (DDP)
  - Improve backup and restore capabilities with enhanced IBM® FlashCopy® technology
  - Achieve solid uptime, massive scalability and green efficiencies
  - Help optimize the flow of large, file-based data while retaining ease-of-data access
  - Leverage multi-level data protection using a mix of replication features
  - Ensure data integrity with support for the T10 Protection Information (T10-PI) standard
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The era of big data is here, driven by the need for more data and faster data access. Low-latency performance in applications such as real-time business analytics, life sciences research, rich-media entertainment, weather forecasting, social media feeds and stock market transactions require high-performance storage architectures. In addition, today's organizations need ways to improve operational efficiency while maintaining the same data center footprint, quality of service and high availability.

The IBM System Storage® DCS3700 storage system is ready to meet the challenge. Designed for applications with high-performance streaming data requirements, DCS3700 offers optimal space utilization, low power consumption and high performance. By combining proven IBM storage controllers with up to 60 drives in just 4U of rack space, DCS3700 can reduce operational costs for capacity-intensive applications.

DCS3700 provides a simple, efficient and flexible approach to storage that is based on seven generations of design knowledge and firmware development. DCS3700 can act as a cost-effective, fully integrated complement to IBM System x®, IBM BladeCenter® and IBM Power Systems™ servers for a wide variety of intensive computing environments.



## Offers performance option: DCS3700 with Performance Modules

IBM System Storage DCS3700 with Performance Modules delivers twice the performance and scalability of the standard DCS3700 storage system. Key design features include increased processor speeds and larger cache memory capacities for use in both general-purpose and high-performance computing environments.

DCS3700 with Performance Modules is built on a powerful hardware platform that features a 2.13 GHz quad-core processor and support for up to a 48 GB cache/controller pair with eight 8 Gbps Fibre Channel ports/controller pairs. An additional eight 8 Gbps Fibre Channel host ports, four 10 Gbps iSCSI or eight 6 Gbps SAS ports are supported with optional host interface cards. Drive density increases with up to 360 drives per system allowing more than 1 PB of raw capacity.

## Provides intuitive storage management without sacrificing control

IBM System Storage DS® Storage Manager software combines robustness with ease-of-use—two attributes not commonly found together in entry to mid-range storage systems. With its industry-unique dynamic capabilities and intuitive graphical user interface, System Storage DS Storage Manager supports on-the-fly reconfigurations without interrupting storage system input/output (I/O). For highly secure implementations, administrators can also use password settings to designate the users who can monitor the system, but who are unauthorized to make any changes.

With DDP technology, System Storage DS Storage Manager dramatically simplifies data protection setup and can virtually eliminate the need for unscheduled drive maintenance. DDP is a self-healing data protection technology that eliminates the need for complex RAID calculations, fully utilizes all of the disk drives in the array and delivers consistent system performance.



In addition to DDP, System Storage DS Storage Manager has fully integrated features that allow administrators to choose the method that best meets their data utilization and protection requirements:

- IBM Enhanced FlashCopy creates near-instantaneous, capacity-efficient, point-in-time volume images that provide logical volume for such uses as file restoration and backup
- Volume Copy creates a complete physical copy—or clone—of a volume within a storage system, and can be assigned to any host and used for application testing or development, information analysis or data mining
- Thin provisioning with DDP helps to create the appearance of more disk space than is actually available, which helps to consume less space; it also offers the flexibility to increase disk space as data grows
- Support for up to 128 partitions enables effective consolidation and virtualization
- With firmware level 7.84 and higher, the 128 partitions come standard, at no additional cost

Optional premium features deliver enhanced capabilities for DCS3700 and DCS3700 Performance Module systems:

- **Disaster Recovery option**—Provides 16 enhanced Remote Mirrors and 32 enhanced Global Mirrors for the base and 16 enhanced Remote Mirrors and 128 enhanced Global Mirrors for the performance module; offers multiple options for disaster recovery deployment to support replication over IP or Fibre Channel
- **Backup and Restore option**—Allows 512 Enhanced FlashCopy images on the base DCS3700 system and 2,048 FlashCopy images on the DCS3700 Performance Modules system
- **Performance Read Cache option**—Utilizes solid-state drives (SSDs) as a level-two data cache, significantly improving read performance from spinning media
- **Super Key option**—Combines all of these features into one single key for easy deployment and management

### Delivers unrelenting performance

With up to 4,000 MBps and 65,000 I/O operations per second (IOPS)<sup>1</sup> in sustained drive reads, the base DCS3700 storage system is fast. DCS3700 with Performance Modules is even faster, with 6,000 MBps and 150,000 IOPS in sustained drive reads. It's capable of delivering throughput to bandwidth-intensive applications providing IOPS to transactional applications such as databases and Microsoft Exchange. Using the multi-threaded Redundant Disk Array Controller failover feature, DCS3700 can also improve performance by removing the bottlenecks common on single-threaded systems.

The base DCS3700 system features 6 Gbps SAS direct attachment support and can be shared by multiple host servers. This system also supports additional 6 Gbps SAS ports or 8 Gbps Fibre Channel using optional host interface cards. The DCS3700 with Performance Modules system includes

eight 8 Gbps Fibre Channel host connections standard, with the option to add an additional eight 8 Gbps ports, four 10 Gb iSCSI or eight 6 Gb SAS through optional host-interface cards. With the various supported infrastructures, users can cost-effectively implement the DCS3700 connectivity options that best meet the demands of their data center environments.

In addition, DCS3700 can be cost-effectively configured to match drives to data requirements using target devices such as 15k rpm SAS drives or SSDs. With the Performance Read Cache Option, the DCS3700 system will automatically copy hot data into SSD cache in real time to improve application performance.

### Enables uptime all the time

The DCS3700 storage system ensures not only high-speed data access, but continuous access to the data as well. It carries on the IBM legacy of high-availability system design with redundant components, automated path failover and extensive online administration capabilities that maximize computational efficiency and productivity, ensuring there is virtually no single point of failure. This design helps keep these environments universally productive. DDP technology is standard on DCS3700 and virtually eliminates maintenance worries by self-tuning, rebalancing data and maintaining consistent performance even during drive failures.

### Scales to meet high-capacity demand

Today's storage demands not only call for performance and uptime, but also require solutions to keep up with continuous growth and meet the most demanding capacity requirements. DCS3700 can support an additional two DCS3700 expansion units for a total of 180 drives in just a 12U rack space. With support for up to 3 TB capacity-optimized nearline SAS drives, DCS3700 with Performance Modules doubles the scalability of the base system and can accommodate up to 360 drives when storage requirements call for this additional scalability.

As energy costs continue to rise, so does the demand to reduce power consumption. The DCS3700 storage system was developed with green requirements in mind. It offers power supplies designed to meet multiple efficiency standards and variable speed fans to help lower overall energy expenditures. In addition, with 60 drives housed in just 4U of rack space, the DCS3700 storage system has been optimized for maximum storage density, reducing its overall storage footprint. SSDs with low-power usage, high reliability and high performance further help to improve system efficiency.

### Includes VMware and heterogeneous operating system support

The DCS3700 storage system offers the scalability, availability and integration necessary to power VMware implementations of all sizes. Its heterogeneous operating system support provides flexibility to manage a wide range of storage needs. It also includes support for VMware vSphere application programming interface (API) for array integration. And two application-aware plugins enable vCenter and Storage Replication Adapter for efficient management.

### Enables T10 Protection Information

By enabling T10 Protection Information (PI) between the storage controller and its disk drives, administrators can help ensure data integrity at the drive level. T10 PI requires the use of PI-formatted disk drives. The drives are formatted at 520 bytes per sector, with 512 bytes for user data and 8 bytes for integrity metadata. The drives can be used with or without the T10 PI function enabled and can be intermixed within a storage enclosure or across storage systems with non-PI formatted drives. T10 PI can be used with any RAID level. To use the T10 PI function, all drives within the RAID array must be PI-formatted drives.

### Supports distributed, enterprise-wide and file-based storage

When combined with the IBM General Parallel File System (IBM GPFS™), DCS3700 becomes a holistic, policy-driven, shared-disk file management solution that can provide faster, more reliable access to a common set of file-based data. GPFS is designed for advanced business analytics, big data or technical computing applications that require application access to very large data files or very large numbers of data files. It's the ideal companion for the DCS3700 storage system.

#### IBM System Storage DCS3700 at a glance

<b>Models</b>	DCS3700 storage system DCS3700 with Performance Modules storage system DCS3700 expansion unit
<b>RAID controller</b>	Dual-active, intelligent controllers
<b>Cache per controller</b>	Base DCS3700 storage system: 4 GB cache (2 GB per controller) with field or plant upgrades to 8 GB (4 GB per controller) DCS3700 with Performance Modules storage system: 12, 24 or 48 GB (6, 12, 24 GB per controller)
<b>Host interface</b>	Base DCS3700 storage system: <ul style="list-style-type: none"> <li>• Two 6 Gbps SAS host ports per controller standard with the option to add a daughter card with additional connectivity</li> <li>• Two 6 Gbps SAS ports per optional host interface card</li> <li>• Four 8 Gbps Fibre Channel ports per optional host interface card (includes eight 8 Gb short-wave small form-factor pluggable transceivers)</li> <li>• Two 10 Gbps iSCSI ports per optional host interface card</li> </ul> DCS3700 with Performance Modules storage system: <ul style="list-style-type: none"> <li>• Four 8 Gbps Fibre Channel host ports per controller with the option to add daughter cards with additional connectivity</li> <li>• Four 8 Gbps Fibre Channel ports per optional host interface card (includes eight 8 Gb shortwave small form-factor pluggable transceivers)</li> <li>• Four 6 Gbps SAS ports per optional host interface card</li> <li>• Two 10 Gbps iSCSI ports per optional host interface card</li> </ul>
<b>Drive interface</b>	Two 6 Gbps SAS drive ports

<b>IBM System Storage DCS3700 at a glance</b>	
<b>Supported drives</b>	<p>6 Gbps SAS 3.5-inch drives:</p> <ul style="list-style-type: none"> <li>• 2 TB 7.2k rpm nearline</li> <li>• 3 TB 7.2k rpm nearline</li> </ul> <p>6 Gbps SAS 2.5-inch drives:</p> <ul style="list-style-type: none"> <li>• 300 GB 15k rpm</li> <li>• 600 GB 10k rpm</li> <li>• 900 GB 10k rpm</li> </ul> <p>SAS 2.5-inch SSDs:</p> <ul style="list-style-type: none"> <li>• 200 GB SSD</li> <li>• 400 GB SSD</li> </ul>
<b>Data protection levels</b>	RAID levels 0, 1, 3, 5, 6, 10 or DPP
<b>Software features</b>	<p>Base DCS3700 storage system: Thin provisioning with DDP, 128 storage partitions, 32 Enhanced FlashCopy images, host-attachment support for Microsoft Windows and Linux on x86/IBM POWER®, IBM AIX®, Mac OS and Solaris</p> <p>DCS3700 with Performance Modules: Thin provisioning with DDP, 512 storage partitions, 32 Enhanced FlashCopy images, host-attachment support for Windows and Linux on x86/POWER, AIX, Mac OS and Solaris</p>
<b>Maximum drives supported</b>	<p>Base DCS3700 storage system: Up to 180 drives per system with the attachment of two DCS3700 expansion units (60 drives per enclosure), 20 drives minimum drive quantity per enclosure*</p> <p>DCS3700 with Performance Modules: Up to 360 drives per system with the attachment of five DCS3700 expansion units (60 drives per enclosure), 20 drives minimum drive quantity per enclosure*</p>
<b>Fans and power supplies</b>	Two each per enclosure
<b>Rack support</b>	Slim 4U, 19-inch rack mount enclosure
<b>Management software</b>	System Storage DS Storage Manager
<b>Warranty</b>	One-year warranty, On-site service 24x7, 4-hour average and same-day response
<b>Size</b>	Fits in a standard 1,000 mm cabinet
<b>Environment</b>	Operating temperature range: 10°C – 35°C (50°F – 95°F)
<b>Heat output</b>	Storage System: 3,057 BTUs per hour Expansion Unit: 2,736 BTUs per hour
<b>Supported systems</b>	<p>System x, BladeCenter and Power Systems servers</p> <p>Operating systems supported: Mac OS, Solaris (W-SAS Single Drive), Linux, AIX, Microsoft Windows</p>

## Why IBM?

IBM is committed to helping you achieve measurable business value with the right combination of storage products to meet your needs. A market leader in the storage industry, IBM offers innovative technology, open standards, excellent performance, and a broad portfolio of storage-proven software, hardware and solution offerings. Technology and services from IBM help provide infrastructures to securely manage information, and can open the door to new insights and innovation for your business.

## For more information

To learn more about IBM System Storage DCS3700, please contact your IBM representative or IBM Business Partner, or visit: [ibm.com/systems/storage/disk/dcs3700](http://ibm.com/systems/storage/disk/dcs3700)

To learn more about IBM GPFS, the robust clustered file management solution from IBM, visit:

[ibm.com/systems/software/gpfs](http://ibm.com/systems/software/gpfs)



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Produced in the United States of America  
June 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.

<sup>1</sup> The standard DCS3700 storage system features up to 4,000 MBps in sustained drive reads. Up to 6,000 MBps is available with the Performance Modules option.

\* Limitation: A maximum of 20 SSDs are supported in DCS3700 controller enclosures.



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