

## IBM System Storage DCS9900



IBM System Storage DCS9900

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### Highlights

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- **NEW – Support for SAS/SATA intermix in the same enclosure**
- **NEW – Support for 3-enclosure configuration**
- **NEW – Even higher-performance sequential I/O: Now reads and writes at up to 5.9 GBps with no RAID 6 write penalty**
- **NEW – Improved temperature reporting fault handling and ability to shutdown all drives with one command**
- **Dense packaging and capacity: Up to 600 TB in a single rack and 1.2 PB in just two floor tiles using a 4U 60-bay high-density enclosure design**
- **Extreme reliability: Data transfer rates sustained independent of disk or enclosure failures, on-the-fly detection and correction of SATA silent data-corruption errors, and RAID 6 reliability**
- **High availability: Data access assured independent of disk, enclosure or controller failures**
- **Simplified management: Up to 1.2 PB in a single management point**
- **Flexibility: Supports SATA drives for capacity and SAS drives for performance – in the same enclosures**
- **Energy efficient: Fewer controllers, fans and power supplies per TB of storage**
- **Sleep Mode for power savings**
- **Infiniband host connectivity**

### High-performance storage for streaming I/O applications

The IBM® System Storage™ DCS9900 Storage System is designed for applications with high-performance streaming data requirements served by Deep Computing systems, IBM System p® High Performance Computing (HPC) systems and System x® 1350™ Linux® Cluster systems.

Applications such as those in HPC, rich media, life sciences and government research require high-performance, reliable access to streaming data and extreme capacity and density to simplify management and reduce cost. Examples of such applications include weather forecasting, seismic processing, reservoir modeling, high definition (HD) creation and distribution, proteomics, structural analysis, fluid dynamics and gene sequencing. With its parallel storage solution architecture the DCS9900 is specifically designed to address those needs.

### **World-class read and write performance for the most demanding applications**

Through its parallel, non-blocking architecture the DCS9900 delivers up to 5.9 GBps data streaming bandwidth from/to disk media whether reading or writing data. As a result, HPC applications can write results to disk as they are generated and reduce wait time during checkpointing, and rich media applications are able to ingest streams and write at full frame rate, even for multiple 4K HD streams.

With hardware-enabled RAID 6 and inline parity checking and correction, performance is assured even in the event of disk drive or enclosure failures. Silent data errors are fixed on the fly, and disk rebuilds and even missing enclosures are handled without an impact on performance.

### **Floor space and energy savings**

The DCS9900 saves floor space by supporting up to 1.2 PB in just two racks and saves energy by doing so with just with one controller. Other systems would require many more racks, power supplies, fans and controllers—which means more floor space and energy consumption.

In addition, the DCS9900's optional Sleep Mode allows designated disk drives to spin down after a user-defined inactivity period to save additional power and cooling.

### **Increased reliability through innovative data protection and availability**

The DCS9900 incorporates on-the-fly parity checking and correction on all reads, and its unique hardware-enabled RAID 6 is designed to help protect data in the event of a double disk failure in the same redundancy group without adversely affecting data availability or system performance. The DCS9900 also includes other high-availability features such as dual disk and host path connectivity, RAID protection for disk and cache, and full disk chassis and path redundancy.

### **Simplified management**

The DCS9900 simplifies management by supporting up to 1.2 PB per controller management point, and its consolidated functionality includes block-level virtualization.

The DCS9900 also has the ability to virtualize storage through LUN aliasing, WWN masking/filtering and port zoning, which helps allow for easy deployment and ongoing system management of very large storage pools. Additionally, a large variety of statistical data is

available and clearly presented to enable easy tuning, optimization and network troubleshooting. The DCS9900 offers a rich set of management tools designed to scale and manage a high-performance, high-capacity storage system.

### **Increased flexibility**

Customers can configure the DCS9900 with any combination of SAS or SATA drives. Enterprise-class SAS drives, spinning at higher RPMs, reduce latency and thus provide maximum performance for latency-sensitive applications. SATA drives allow for the greatest capacity at the lowest price.

With its advanced architecture, the DCS9900 provides the same maximum throughput, 5.9 GBps, with either SAS or SATA drives.

### **DCS9900 Controller**

The DCS9900 Controller comes in a 4U rack mount chassis, providing dual controllers with 5 GB cache (2.5 GB cache per controller), up to eight FC-8 or IB 4x DDR host ports and twenty 3 Gbps SAS disk expansion ports to support up to 1200 disk drives while supporting up to 1.2 physical PB storage capacity and 1,024 LUNs per DCS9900 system.

The DCS9900 Controller Model CP2 attaches to up to 20 disk expansion units.

#### **DCS9900 storage expansion units**

The DCS9900 Controller can be configured with 3, 5, 10 or 20 storage expansion units of SAS and/or SATA disk drives, allowing the system to scale as needed.

The DCS9900 Storage Expansion Unit Model 3S1 is a 4U rack-mounted enclosure that includes slots for up to 60 SAS or SATA disk drives, two hot-swappable power supplies, and two hot-swappable cooling fans.

#### **In summary**

The IBM System Storage DCS9900 Storage System provides outstanding performance, saves energy and floor space, simplifies management and increases flexibility for applications with high-performance streaming data requirements.

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### **IBM System Storage DCS9900 at a glance**

<b>RAID controller</b>	Dual active
<b>Cache per dual controller</b>	5 GB per dual controller
<b>Host interface</b>	Eight FC8 or IB 4x DDR
<b>Supported drives</b>	SAS: 146 GB, 300 GB & 450 GB SATA: 500 GB, 750 GB & 1 TB
<b>RAID levels</b>	RAID 6 (8+2)
<b>Partitions</b>	1,024
<b>Maximum drives supported</b>	1,200
<b>Fans and power supplies</b>	Fully redundant, hot-swappable
<b>Rack support</b>	42 or 45 EIA units
<b>Management software</b>	Standard features: LUN Mapping and Masking by WWN and/or Port Zoning; PowerLUNs; Real-Time Data Verification; Background Data Scrubbing; LUN in Cache; Place Holder LUNs; Intelligent Stream Detection, Read-only LUNs, Advanced A/V Modes, LUN Caching, DirectAPI. Optional features: Java™-based GUI management software, Sleep mode MAID capability.
<b>Warranty</b>	One-year 24 x 7 parts and labor
<b>Dimensions</b>	Height: 207 cm (81.5 in) – 42U; 221 cm (86.8 in) – 45U Depth: 105 cm (42 in) Width: 71.1 cm (28 in)
<b>Weight</b>	Minimum configuration (controller + 3 enclosures + 150 drives + 42U rack): 534 kg (1150 lb) Maximum configuration (controller + 20 enclosures + 1200 drives + 2@45U racks): 2,773 kg (6,100 lb)



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## IBM System Storage DCS9900 at a glance

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<b>Environment</b>	Air temperature: 5 to 35° C Humidity: 20 to 80%, non-condensing
<b>Heat output</b>	Minimum configuration (controller + 3 enclosures + 150 750-GB SATA drives+ 42U rack): 11,710 Btu/hr Maximum configuration (controller + 20 enclosures + 1200 300-GB SAS 15K RPM drives + 2@45U racks): 85,627 Btu/hr
<b>Supported systems</b>	For supported servers, operating systems, host bus adapters, clustering applications, SAN switches and directors, consult your IBM sales rep.

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### For more information

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[ibm.com/systems/storage/disk/dcs/  
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MB, GB and TB equal 1,000,000,  
1,000,000,000 and 1,000,000,000,000 bytes,  
respectively, where referring to storage capacity.  
Actual storage capacity will vary based upon  
many factors and may be less than stated.  
Some numbers given for storage capacities give  
capacity in native mode followed by capacity  
using data compression technology.

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