IBM System Storage DCS9900

Extending IBM leadership in high-performance streaming I/O

Highlights

- New—2 TB SATA disk drive (7200 RPM)

- New 600 GB SAS disk drive (15000 RPM)

- Support for SAS/SATA intermix in the same enclosure

- Support for 3-enclosure configuration

- High-performance sequential I/O: Reads and writes at up to 5.9 GBps with no RAID 6 write penalty

- Dense packaging and capacity: Up to 1.2 PB in a single rack and 2.4 PB in just two floor tiles

- High availability: Data access assured independent of disk, enclosure or controller failures

- 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-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.

Making the world work better

The DCS9900 can analyze large amounts of data and turn that data into actual decisions and actions that make the world work better. DCS9900 users are leaders in research, design, computer modeling, government, entertainment and business whose environments all have one thing in common—they demand more from their storage system. *Users can make smarter decisions as mountains of data becomes readily available at high performance speeds.*

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 2.4 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 2.4 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, up to 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 2.4 physical PB storage capacity and 1,024 LUNs per DCS9900 system.

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

IBM System Storage DCS9900 at a glance

RAID controller	Dual active
Cache per dual controller	5 GB per dual controller
Host interface	Eight FC8 or IB 4x DDR
Supported drives	SAS: 450 GB & 600 GB SATA: 1 TB & 2TB (7200 RPM) SATA: 2 TB (5400 RPM)
RAID levels	RAID 6 (8+2)
Partitions	1,024
Maximum drives supported	1,200
Fans and power supplies	Fully redundant, hot-swappable
Rack support	42 or 45 EIA units
Management software	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.
Warranty	One-year 24 x 7 parts and labor
Dimensions	Height: 207 cm (81.5 in) – 42U; 221 cm (86.8 in) – 45U Depth: 105 cm (42 in) Width: 71.1 cm (28 in)
Weight	Minimum configuration (controller + 3 enclosures + 150 drives + 42U rack): 522 kg (1150 lb) Maximum configuration (controller + 20 enclosures + 1200 drives + 2@45U racks): 2,773 kg (6,100 lb)
Environment	Air temperature: 5 to 35° C Humidity: 20 to 80%, non-condensing
Heat output	Minimum configuration (controller + 3 enclosures + 150 1 TB SATA drives+ 42U rack): Maximum configuration (controller + 20 enclosures + 1200 450-GB SAS 15K RPM drives + 2@45U racks):
Supported systems	For supported servers, operating systems, host bus adapters, clustering applications, SAN switches and directors, consult your IBM sales rep.

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.

For more information

To learn more about the IBM System Storage DCS9900 Storage System, please contact your IBM representative or IBM Business Partner, or visit:
ibm.com/systems/storage/disk/dcs/dcs9900/

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