IBM System Storage DCS9550

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Highlights

- ***High performance streaming I/O—reads and writes at up to 2.8 GBps—no RAID6 write penalty***
- ***Dense packaging and capacity—up to 480 TB in a single rack and 960 TB in just two floor tiles***
- ***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 RAID6 reliability***
- ***High availability—data access assured independent of disk, enclosure or controller failures***
- ***Simplified management—up to 960 TB in a single management point***
- ***Flexibility—supports SATA drives for capacity or Fibre Channel drives for performance***
- ***Energy efficient—fewer controllers, fans and powers supplies per TB of storage***

High performance storage for streaming I/O applications

The IBM System Storage™ DCS9550 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 DCS9550 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 DCS9550 delivers up to 2.8 GBps data streaming bandwidth from/to disk media whether reading or writing data. As a result, HPC applications are able to write results to disk as they are generated and reduce wait time during check pointing while rich media applications are able to ingest streams and write at full frame rate, even for 4K HD.

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 impacting performance.

Floor space and energy savings

The DCS9550 saves floor space by supporting up to 960 TB in just two racks and saves energy by doing so with just 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 DCS9550's Sleep Mode allows designated disk drives to spin down after a user-defined inactivity period to save additional power and cooling. The controller portion of the drive, however, remains in an active state so that the drive can be activated quickly for access to data that's stored there.

Increased reliability through innovative data protection and availability

The DCS9550 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 DCS9550 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 DCS9550 simplifies management by supporting up to 960 TB per controller management point and its consolidated functionality includes block level virtualization.

The DCS9550 also has the ability to virtualize storage through LUN aliasing, world wide name (WWN) masking/filtering and port zoning, helping to allow for very 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 DCS9550 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 DCS9550 with either Fibre Channel or SATA drives. Fibre Channel 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 DCS9550 provides the same maximum throughput, 2.8GBps, with either Fibre Channel or SATA drives.

DCS9550 Controller

The DCS9550 Controller consolidates and fully integrates a parallel, non-blocking architecture, guaranteeing access to all data through any path. It has dual controllers with 5 GB cache (2.5 GB cache per controller), eight 4 Gbps Fibre Channel host ports and twenty 2 Gbps Fibre Channel disk expansion ports in a 4U rack mount chassis. It attaches to up to 20 disk expansion units to support up to 960 disk drives, delivering up to 960 TB of raw storage capacity and 8192 LUNs per system.

The DCS9550 incorporates enterprise-class data protection features with on-the-fly parity checking on all read I/Os and hardware-enabled RAID 6, which is designed to help protect data in the event of double disk failure in the same redundancy group without adversely affecting data availability or system performance. Additionally, the DCS9550 includes block level virtualization, designed to virtualize storage deployment and system management through LUN aliasing, WWN masking/filtering or port zoning.

DCS9550 Disk Expansion Units

The DCS9550 Controller can be configured with 5, 10 or 20 expansion units of Fibre Channel or SATA disk drives, allowing the system to scale as needed.

- *DCS9550 Disk Expansion Unit Model 1F1 is a 3U rack mounted enclosure which includes slots for up to 16 Fibre Channel disk drives, one dual FC-2 drive loop, two 2 Gbps SFP interface modules, two hot swappable power supplies, and two hot swappable cooling fans.*
- *DCS9550 Disk Expansion Unit Model 1S1 is a 3U rack-mounted enclosure that includes slots for up to 16 SATA disk drives, one dual FC-2 drive loop, two 2 Gbps SFP interface modules, two hot swappable power supplies, and two hot swappable cooling fans.*
- *The DCS9550 Disk Expansion Unit Model 2S1 is a 4U rack-mounted enclosure that includes slots for up to 48 SATA disk drives, one dual FC-2 drive loop, two 2 Gbps SFP interface modules, three hot-swappable power supplies, and three hot-swappable cooling fans.*
- *The DCS9550 Disk Expansion Unit Model 2S2 is a 4U rack-mounted enclosure that includes slots for up to 48 SATA disk drives, one dual FC-2 drive loop, four 2 Gbps SFP interface modules, three hot-swappable power supplies, and three hot-swappable cooling fans.*

In summary

The IBM System Storage DCS9550 Storage System provides outstanding performance, saves energy and floor space, simplifies management, and increases flexibility for applications with high-performance streaming data requirements.

IBM System Storage DCS9550 at a glance

RAID controller	Dual active
Cache per dual controller	5 GB battery-backed cache per dual controller
Host interface	8 FC
Supported drives	FC-2: 300 GB/10K rpm FC-4: 146 GB/15K rpm , 300 GB/15K rpm SATA: 500 GB, 750 GB, 1 TB 7.2K rpm
RAID levels	RAID 6 (8+2)
Partitions	120 (max)
Maximum drives supported	960
Fans and power supplies	Fully redundant, hot-swappable
Rack support	42 and 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, DirectMirror LUN Caching, DirectAPI. Optional Features: Java™-based GUI, System Management Console, and DirectMonitor supporting SNMPTrap Display Utility, Logging, Remote Administration Utility, Pager and E-Mail Fault
Warranty	One-year 24 x 7 parts and labor
Dimensions	Height: 207 cm (81.5 in) – 42U or 221 cm (86.8 in) - 45U Depth: 105 cm (42in) Width: 71.1 cm (28 in)
Weight	Minimum configuration (controller + 5 enclosures + 10 500 GB SATA Drives): 449 kg (990 lb) Maximum configuration (controller + 20 enclosures + 960 300 GB Fibre Channel 15K rpm drives): 1769 kg (3,900 lb)
Environment	Air temperature: 5 to 35° C Humidity: 20 to 80%, non-condensing
Heat output	Minimum configuration (controller + 5 enclosures + 10 500 GB SATA Drives): 4,858 Btu/hr Maximum configuration (controller + 20 enclosures + 960 300 GB Fibre Channel 15K rpm drives): 78,393 Btu/hr
Supported systems	For a list of currently supported servers, operating systems, host bus adapters, clustering applications, SAN switches and directors, refer to the DCS9000 series Interoperability matrix available at **ibm.com**/systems/storage

For more information

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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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