

Lenovo Distributed Storage Solution for IBM Spectrum Scale

Take the complexity out of complex solutions

Complex Storage Made Simple

Deploying solutions for Technical Computing, High Performance Computing (HPC or AI), Analytics and Cloud environments can place a significant burden on IT. With the Lenovo Distributed Storage Solution for IBM® Spectrum Scale™ (DSS-G) clients can focus their efforts on maximizing user time instead of consuming valuable resources to design, optimize, install, and support the infrastructure required to meet user demands.

DSS-G is fulfilled through Lenovo Scalable Infrastructure (LeSI), leveraging decades of experience simplifying complex deployments for customers. With integrated, delivered, and fully-supported solutions that match best-industry components with optimized solution design, DSS-G provides scalable solutions that address the high-performance storage needs in the data center.

Powerful Combination

DSS-G combines the performance of Lenovo ThinkSystem servers and Lenovo disk enclosures with industry-leading Spectrum Scale software to deliver a high-performance, scalable building-block approach to modern storage needs. Lenovo DSS-G supports three editions of IBM Spectrum Scale:

- IBM Spectrum Scale Data Access Edition (DAE) provides base GPFS functions including Information Lifecycle Management (ILM), Active File Management (AFM), and Clustered NFS (CNFS) in Linux environments.
- IBM Spectrum Scale Data Management Edition (DME) provides all the features of the Data Access Edition plus advanced features like asynchronous multi-site disaster recovery, native encryption support, Transparent Cloud Tiering.



Lenovo

Optimized Design

DSS-G features industry-leading ThinkSystem servers with powerful AMD EPYC™ 9004 Series processors, Lenovo 24Gbps SAS storage enclosures and drives, software, and networking components that allow for a wide choice of technology within an integrated solution, available in a pre-integrated rack or deployed in an existing customer rack.

Each solution is tested and optimized for reliability, interoperability, and maximum performance, so clients can quickly deploy the system and get to work achieving their business goals. With DSS-G high-storage density and I/O performance, you gain all the reliability, integration, and interoperability of a high-capacity Spectrum Scale-based storage architecture.

Increase Results

Clients are expanding the use of Technical Computing and HPC/AI to solve complex problems. These environments need high-capacity storage with low-latency data access as well as quick rebuild times in the event of disk failure to maintain data integrity and system availability.

As an integral part of the Lenovo Scalable Infrastructure (LeSI) portfolio, the declustered RAID capability of Lenovo DSS-G provides extreme performance, reliability, and data integrity, with rebuild times up to 8x faster than controller-based storage. DSS-G offers a modular building-block approach to Spectrum Scale with nearly linear performance and capacity scaling, while maintaining a global namespace that enables users to view everything as a single storage cluster. These features allow users to quickly put the system to work, and easily grow with new storage demands, and increase their overall productivity.

End-to-end Support

Lenovo DSS-G is built, tested, delivered, and supported as part of an overall LeSI deployment. You receive single point-of-contact, solution-level support that includes components to deliver maximum system availability throughout the life of the system. This enables you to spend less time deploying and maintaining systems and more time delivering results.

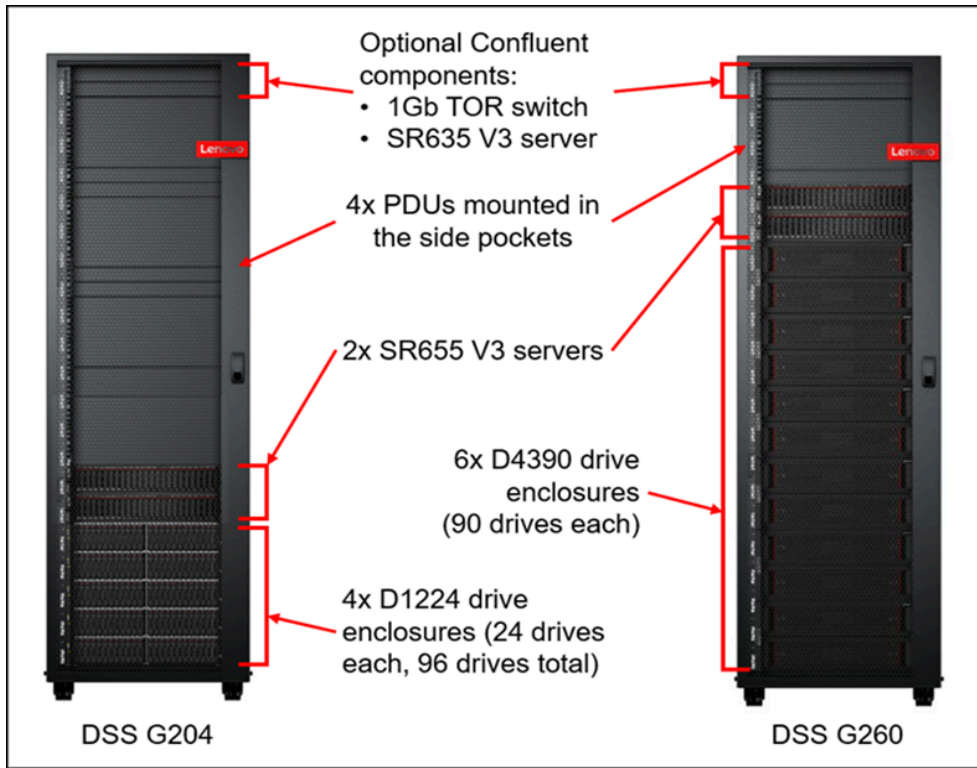
Lenovo DSS-G Features

- Scalable building block approach to high-performance storage
- Multiple configurations to optimize for capacity and performance
- Powerful AMD EPYC™ 9004 Series processors
- Lenovo D4390 high-density storage enclosures with 90x 12, 14, 16, 18, 20, 22, 24TB NL SAS drives (3.5" form factor)
- Lenovo D1224 storage enclosures (2.5" form factor) with 24x SSDs (15.36TB)
- Choice of 10GbE/25GbE/40GbE/100GbE/200GbE/400GbE, or HDR100, HDR, NDR200, NDR400 Latest Generation InfiniBand
- Declustered RAID for sustained, predictable performance and rapid rebuilds
- No hardware controllers—disk management and RAID performed by the Spectrum Scale RAID feature
- Outstanding capacity and performance

DSS Product Overview

Distributed Storage Solution Configurations for IBM Spectrum Scale

The following figure shows two of the configurations available, the G204 (2x SR655 V3 and 4x D1224) and the G260 (2x SR655 V3 and 6x D4390). See the model section for all available configurations.



DSS-G with ThinkSystem V3 is more than doubling the performance over the previous generation and supports up to 25% more capacity in a single building block. It can be licensed by the number of drives installed or alternatively the usable capacity, rather than the number of processor cores or the number of connected clients, so there are no added licenses for other servers or clients that mount and work with the file system.

Distributed Storage Solution - Model Examples

Lenovo DSS-G is available in the configurations listed in the following table. Each configuration is installed in a 42U rack, although multiple DSS-G configurations can share the same rack.

Naming convention: The three numbers in the **Gxyz** configuration number represent the following:

- **x** = Number of servers (SR655 V3)
- **y** = Number of D4390 drive enclosures
- **z** = Number of D1224 drive enclosures

Table 1. Lenovo DSS-G configurations

Configuration	SR655 V3 servers	D4390 drive enclosures	D1224 drive enclosures	Number of drives (max total capacity)	PDUs	SR635 V3 (Mgmt)	SN2201 switch (for Confluent)
DSS G201	2	0	1	24x 2.5" (386TB)*	2	1 (optional)	1 (optional)
DSS G202	2	0	2	48x 2.5" (737TB)*	2	1 (optional)	1 (optional)
DSS G203	2	0	3	72x 2.5" (1105TB)*	2	1 (optional)	1 (optional)
DSS G204	2	0	4	96x 2.5" (1474TB)*	2	1 (optional)	1 (optional)
DSS G211	2	1	1	24x 2.5" + 88x 3.5" (368TB + 2113TB) [†]	2	1 (optional)	1 (optional)
DSS G212	2	1	2	48x 2.5" + 88x 3.5" (737TB + 2113TB) [†]	2	1 (optional)	1 (optional)
DSS G221	2	2	1	24x 2.5" + 176x 3.5" (368TB + 4224TB) [†]	2	1 (optional)	1 (optional)
DSS G222	2	2	2	48x 2.5" + 176x 3.5" (737TB + 4224TB) [†]	2	1 (optional)	1 (optional)
DSS G231	2	3	1	24x 2.5" + 264x 3.5" (368TB + 6336TB) [†]	2	1 (optional)	1 (optional)
DSS G232	2	3	2	48x 2.5" + 264x 3.5" (737TB + 6336TB) [†]	2	1 (optional)	1 (optional)
DSS G241	2	4	1	24x 2.5" + 352x 3.5" (368TB + 8448TB) [†]	2	1 (optional)	1 (optional)
DSS G242	2	4	2	48x 2.5" + 352x 3.5" (737TB + 8448TB) [†]	2	1 (optional)	1 (optional)
DSS G251	2	5	1	24x 2.5" + 440x 3.5" (368TB + 10,560TB) [†]	2	1 (optional)	1 (optional)
DSS G252	2	5	2	48x 2.5" + 440x 3.5" (737TB + 10,560TB) [†]	2	1 (optional)	1 (optional)
DSS G261	2	6	1	24x 2.5" + 528x 3.5" (368TB + 12,672TB) [†]	2	1 (optional)	1 (optional)
DSS G262	2	6	2	48x 2.5" + 528x 3.5" (737TB + 12,672TB) [†]	2	1 (optional)	1 (optional)
DSS G271	2	7	1	24x 2.5" + 616x 3.5" (363TB + 14,784TB) [†]	2	1 (optional)	1 (optional)
DSS G210	2	1	0	88x 3.5" (2112TB)**	2	1 (optional)	1 (optional)
DSS G220	2	2	0	176x 3.5" (4224TB)**	2	1 (optional)	1 (optional)
DSS G230	2	3	0	264x 3.5" (6336TB)**	2	1 (optional)	1 (optional)
DSS G240	2	4	0	352x 3.5" (8448TB)**	2	1 (optional)	1 (optional)
DSS G250	2	5	0	440x 3.5" (10,560TB)**	2	1 (optional)	1 (optional)
DSS G260	2	6	0	528x 3.5" (12,672TB)**	2	1 (optional)	1 (optional)
DSS G270	2	7	0	616x 3.5" (14,784TB)**	2	1 (optional)	1 (optional)
DSS G280	2	8	0	704x 3.5" (16,896TB)**	2	1 (optional)	1 (optional)

* Capacity is based on using 15.36TB 2.5" SSDs.

** Capacity is based on using 24TB 3.5" HDDs in all but 2 of the drive bays in the first drive enclosure; the remaining 2 bays must have 2x SSDs for Storage Scale internal use.

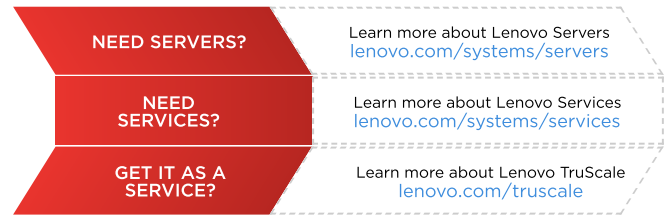
† These models are a hybrid configuration that combines HDDs and SSDs in one building block. The number of drives and capacities are given in terms of HDD and SSD count.

About Lenovo

Lenovo (HKSE: 992) (ADR: LNVGY) is a US\$62 billion revenue global technology powerhouse, ranked #171 in the Fortune Global 500, employing 77,000 people around the world, and serving millions of customers every day in 180 markets. Focused on a bold vision to deliver smarter technology for all, Lenovo is expanding into new growth areas of infrastructure, mobile, solutions and services. This transformation is building a more inclusive, trustworthy, and sustainable digital society for everyone, everywhere.

For More Information

To learn more about the Lenovo Distributed Storage Solution for IBM Spectrum Scale, contact your Lenovo representative or Business Partner or visit: <https://www.lenovo.com/us/en/servers-storage/solutions/hpc>. For detailed specifications, go to the [DSS-G product guide](#).



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