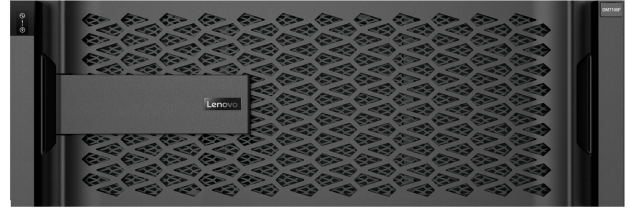


ThinkSystem DM Series All-Flash Array

Accelerate your business with all-flash NVMe transformation



The Challenge

Businesses must continually improve the speed and responsiveness of key business operations if they are to reduce time to market and increase customer satisfaction. One key ingredient of this effort is all-flash storage, which greatly accelerates critical workloads.

However, as all-flash becomes prevalent throughout the data center, it soon becomes apparent that enterprise-grade data management capabilities are critical in a shared environment. To deliver the ultimate solution, all-flash storage needs to offer robust data management, integrated data protection, and seamless scalability for hybrid cloud environments.

The Solution

To meet enterprise storage requirements, ThinkSystem All-Flash DM Series systems provide high performance, superior flexibility, best-in-class data management, and includes the industry first full end-to-end NVMe capabilities.

DM Series runs on ONTAP data management software, which gives customers unified storage across block, file, and object workloads. It accelerates your business while improving the efficiency, flexibility, and reliability of your IT operations.

This enterprise-class solution accelerates, manages, and protects your business-critical data. Customers who currently do not benefit from all-flash solutions should now consider as they simplify your data management now at the same or better cost as older traditional arrays.

ThinkSystem DM Series provides an easy and risk-free transition to all-flash. Customers can seamlessly cluster DM Series hybrid and flash as well as multi-generational systems together to ensure absolute investment protection. DM Series systems were purpose-built for flash to deliver industry leading performance, capacity, and density.

ThinkSystem Intelligent Monitoring is an intelligent and intuitive digital advisor which uses AI and predictive analytics to provide imperative insights, proactive care and optimization, and customized dashboards enabling users to manage multiple DM and DE Series systems in a single web-accessible platform. Preemptive system information and alerts will expose risk factors and prevent problems before they affect your business and cut down on support costs and engagements. Intelligent capacity and performance monitoring will allow you to stay ahead of the curve and plan accordingly to meet your business's growth needs.

Flexible management is also possible through XClarity support. With Lenovo XClarity management software, you can manage your Lenovo ThinkSystem servers, storage and networking together.

Lenovo

Accelerate Your Data

The DM Series all-flash systems are a feature rich and fast storage platform that will beat your expectations of how a storage system should be. They offer superior performance and investment protection and allow you to scale your system up and out as your needs grow.

When you use the NVMe over Fibre channel protocol you can reduce your latency up to 50%, eliminating the bandwidth bottlenecks inherent in other systems caused by flash storage exceeding the speed of the network.

With Lenovo's all-flash DM Series systems, you can:

Accelerate the speed of business while increasing operational efficiency:

- Experience up to 5M IOPS in one cluster using DM Series All-Flash Array systems
- Reduce latency by 50% when using end to end NVMe over FC infrastructure
- Tier cold data off your SSDs to lower cost object storage to optimize your flash performance

Simplify IT operations while transforming data center economics:

- All-flash arrays can slash support and performance-tuning costs by up to two-thirds versus hybrid systems
- Reduce rack space up to 38x and power consumption by 11x with deduplication and compression
- [Guaranteed 3:1 capacity reduction](#) with data reduction technologies
- Onboard volume encryption, software-based data-at-rest encryption, and multi-factor authentication capabilities
- Integrated Digital Advisor that uses AI and predictive analytics to provide essential insights, prescriptive guidance and proactive support to simplify your support experience and optimize your Lenovo Storage Environments.

Deploy flash everywhere with maximum flexibility while retaining the control and security of your data:

- Move data and applications to wherever they run best: on a DM Series system or in the cloud
- Get the broadest application ecosystem integration for enterprise applications, VDI, database, and server virtualization
- Integrate flash into your infrastructure nondisruptively, eliminating silos, and scale out as requirements grow

ThinkSystem DM Series All-Flash is ideal for performance-critical applications such as Oracle, Microsoft SQL Server, VDI, and server virtualization. It is also a great choice for a variety of common data center workloads in shared environments.

ThinkSystem DM Series includes a suite of powerful integrated data-protection software to help protect your competitive advantage. Key benefits include:

- Deduplication, compression, and compaction paired with cloning and Snapshot copies to reduce storage costs and minimize performance impact
- Application-consistent backup and recovery to simplify application management
- Zero data loss and transparent application failover with SnapMirror Business Continuity leveraging simple administration and platform flexibility to retain high performance and business resiliency.
- Synchronous replication with MetroCluster software — an industry leading capability for all-flash arrays that delivers zero recovery point objective (possible data loss) and near-zero recovery time objective for mission-critical workload
- The ability to meet all of your data compliance and retention requirements via Snaplock.

Optimize Your Data with Flexible Design

The inline data reduction technologies built into DM Series systems will provide 3x space savings, and the following benefits:

- **Inline data compaction** technology uses an innovative approach to place multiple logical data blocks from the same volume into a single 4KB block. It frees up substantial space for database workloads that have relatively small I/O sizes. When combined with inline compression, ONTAP customers have reported space savings as high as 67:1 for an Oracle database.
- **Inline compression** has a near-zero performance impact. Detection of incompressible data eliminates wasted cycles.
- **Enhanced inline deduplication** maximizes the space savings by eliminating redundant blocks. Some workloads, such as VDI OS patches, can achieve as much as a 70:1 reduction rate.

Whether your performance and capacity needs change or your cloud strategy evolves in the future, your investment is protected:

- DM Series has proven cloud connectivity. Easily tier data between the cloud and on-premises storage for maximum performance and return on your investment.
- Replicate your critical data to the cloud using Cloud Volumes ONTAP, enhancing data protection, security and compliance.
- Data can be tiered or replicated to multiple cloud vendors, ensuring the best value and cloud features with no vendor lock-in.
- All-flash systems seamlessly cluster with DM Series hybrid systems, enabling you to transparently move workloads between high-performance tiers and low-cost capacity tiers — eliminating any performance silos.
- DM Series enables you to grow and adapt as your business changes. It enables you to intermix different controllers, SSD sizes, and next-generation technologies so your investment is protected. DM Series also provides the industry's first full end-to-end NVMe solution.

Specifications

| | DM7100F | DM5100F DM5100F SAN | DM7000F | DM5000F DM5000F SAN |
|---|---|---|---|--|
| NAS Scale-out** | 12 High Availability pairs | | | |
| Maximum SSDs | 5760 (576 NVMe + 5184 SAS) | 576 NVMe | 4608 | 1728 |
| Maximum Raw Capacity: All Flash | 88PB* / 78.15PiB* | 8.84PB / 7.85PiB | 70.5PB / 62.6PiB | 24.1PB / 21.5PiB |
| Effective Capacity (based on 3:1) | 264PB / 234.45PiB | 26.43PB / 23.47PiB | 211.5PB / 187.84PiB | 72.3PB / 64.2PiB |
| Maximum Memory | 3072GB | 1536GB | 3072GB | 768GB |
| SAN Scale-out | 6 High Availability pairs | | | |
| Maximum SSDs | 2880 (288 NVMe + 2592 SAS) | 288 NVMe | 2304 | 864 |
| Maximum Raw Capacity | 44PB / 39.08PiB | 4.42PB / 3.92PiB | 35.3PB / 31.3PiB | 13.2PB / 11.7PiB |
| Effective Capacity | 132PB / 117.24PiB | 17PB / 15.1PiB | 105.9PB / 94PiB | 39.6PB / 35.17PiB |
| Maximum Memory | 1536GB | 768GB | 1536GB | 384GB |
| Cluster Interconnect | 2x 100GbE | 4x 25GbE | 4x 10GbE | 4x 10GbE |
| Per High Availability Array Specifications | Active-Active Controller | | | |
| Maximum SSDs | 480 (48 NVMe + 432 SAS) | 48 NVMe | 384 | 144 |
| Maximum Raw Capacity: All-Flash | 7.37PB / 6.55PiB | 737.28TB / 670.29TiB | 5.9PB / 5.2PiB | 2.2PB / 1.9PiB |
| Effective Capacity | 22.11PB / 19.65PiB | 2.11PB / 1.87PiB | 17.7PB / 15.7PiB | 6.6PB / 5.8PiB |
| Controller Form Factor | 4U chassis with two High Availability controllers | 2U chassis with two High Availability controllers and 24 NVMe SSD slots | 3U chassis with two High Availability controllers | 2U chassis with two High Availability controllers and 24 SSD slots |
| Memory | 256GB | 128GB | 256GB | 64GB |
| NVRAM | 32GB | 16GB | 16GB | 8GB |
| PCIe Expansion Slots (maximum) | 10 | 4 | 4 | Not applicable |
| FC Target Ports (32Gb autoranging, maximum) | 24 | 16 | 8 | Not applicable |

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| | DM7100F | DM5100F DM5100F SAN | DM7000F | DM5000F DM5000F SAN |
|---|--|--|--|--|
| FC Target Ports (16Gb autoranging, maximum) | 8 | Not applicable | 24 | 8 |
| 40GbE Ports (maximum) | Not applicable | Not applicable | 8 | Not applicable |
| 25 GbE Ports | 20 | 16 | Not applicable | Not applicable |
| 10GbE Ports (maximum) | 32 | Not applicable | 32 | 8 |
| 100GbE ports (40GbE autoranging) | 12 | 4 | Not applicable | Not applicable |
| 10GbE BASE-T Ports (1GbE autoranging) (maximum) | 16 | 4 | 12 | 8 |
| 12Gb / 6Gb SAS Ports (maximum) | 24 | Not applicable | 24 | 4 |
| Cluster Interconnect | 2x 100GbE | 4x 25GbE | 4x 10GbE | 4x 10GbE |
| Storage Networking Supported | FC, iSCSI, NFS, pNFS, SMB, NVMe/FC, S3 | DM5100F: FC, iSCSI, NFS, pNFS, SMB, NVMe/FC, S3 DM5100F SAN**: FC, iSCSI, NVMe/FC | FC, iSCSI, NFS, pNFS, SMB, NVMe/FC, S3 | DM5000F: FC, iSCSI, NFS, pNFS, SMB, S3 DM5000F SAN**: FC, iSCSI |
| OS Version | ONTAP 9.7 or later | ONTAP 9.8 or later | ONTAP 9.4 or later | ONTAP 9.4 or later |
| Shelves and Media | DM240N, DM240S | DM240N | DM240S | DM240S |
| Host/Client OSes Supported | Microsoft Windows, Linux, VMware ESXi | | | |
| DM Series All-Flash Software | The ONTAP 9 software bundle includes a set of products that delivers leading data management, storage efficiency, data protection, high performance, and advanced capabilities such as instant cloning, data replication, application-aware backup and recovery, and data retention. For more details, visit the ONTAP datasheet . | | | |

* SAS+NVMe SSD scale out

** An optional software license upgrade is available for the DM5100F SAN and DM5000F SAN models to enable NAS support (NFS, pNFS, SMB file and S3 object storage connectivity).

Why Lenovo

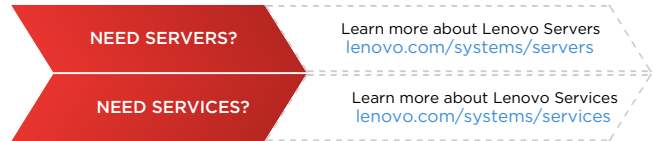
Lenovo is a leading provider of systems for the data center. The portfolio includes rack, tower, blade, dense, and hyperconverged systems, and provides enterprise-class performance, reliability, and security. Lenovo also offers a full range of networking, storage, software, and solutions, as well as comprehensive services that support business needs throughout the IT life cycle.

About Lenovo

Lenovo (HKSE: 992) (ADR: LNVGY) is a US\$60 billion Fortune Global 500 company, with 63,000 employees and operating in 180 markets around the world. Focused on a bold vision to deliver smarter technology for all, we are developing world-changing technologies that create a more inclusive, trustworthy and sustainable digital society.

For More Information

To learn more about the Lenovo DM Series All-Flash Array, contact your Lenovo representative or Business Partner, or visit lenovo.com/storage. Or for detailed specifications, read the [Product Guides](#).



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