

Lenovo ThinkSystem DG7000 Product Guide

Lenovo ThinkSystem DG7000 is a scalable, unified, all flash storage system that is designed to provide high performance, simplicity, capacity, security, and high availability for large enterprises. Powered by the ONTAP software, ThinkSystem DG7000 delivers enterprise-class storage management capabilities with a wide choice of host connectivity options, flexible drive configurations, and enhanced data management features, including end-to-end QLC AFA. The DG7000 is a perfect fit for a wide range of enterprise workloads, including big data and analytics, artificial intelligence, engineering and design, hybrid clouds, and other storage I/O-intensive applications.

The ThinkSystem DG7000 4U controller enclosure is shown in the following figure.



Figure 1. Lenovo ThinkSystem DG7000

Up to 12 DG7000 Storage Arrays can be combined into a clustered system in a NAS environment, or up to 6 DG7000 Storage Arrays can be combined into a clustered system in a SAN environment.

Did you know?

The ThinkSystem DG7000 offers end-to-end QLC (quad-level cell) Flash drive storage solution.

QLC increases flash storage density and reduces costs because it stores four bits per cell compared to Triple-level cell (TLC) drives which store three bits per cell.

QLC is ideal for replacing hard drive technology because it offers better performance, comparable cost, and better TCO due to increased density and lower power consumption.

Key features

A single ThinkSystem DG7000 Storage Array consists of the 4U rack-mount controller enclosure and one or more expansion enclosures. The controller enclosure includes two controllers, 256 GB RAM (128 GB RAM per controller), and 32 GB battery-backed NVRAM (16 GB NVRAM per controller). 25 GbE SFP28 NAS/iSCSI or 4/8/16 Gb Fibre Channel (FC) ports on the controller's mezzanine cards provide base host connectivity, with adapter card options for additional 1/10 GbE, 25 GbE, or 40/100 GbE NAS/iSCSI, 8/16/32 Gb FC, or 32 Gb NVMe/FC connections. The attachment of the Lenovo ThinkSystem DG240N 2U24 NVMe Expansion Enclosures to the controller enclosure provides scalability up to 96 QLC NVMe.

The Lenovo ThinkSystem DG7000 offers the following key features and benefits:

- All-flash array capabilities with end-to-end NVMe to meet the demand for higher storage performance at lower latency and provide higher IOPs and bandwidth with lower power usage and total cost of ownership than hybrid or HDD-based solutions.
- Scalability to up to 96 QLC NVMe solid-state drives with the attachment of the ThinkSystem DG240N 2U24 SFF expansion enclosures to satisfy growing needs for storage performance and capacity.
- Scalable, all flash storage with dual active/active controller configurations for high availability and performance.
- Improved performance and data protection with RAID-DP and RAID-TEC, as well as support for traditional RAID 4.
- Flexible host connectivity to match diverse customer needs with support for unified NAS and SAN storage protocols, including 1/10 GbE, 25 GbE, and 40/100 GbE NAS and iSCSI, 8/16/32 Gb Fibre Channel, and 32 Gb NVMe over Fibre Channel (NVMe/FC) connectivity.
- Rich set of standard storage management functions available at no extra cost, including snapshots, volume copy, quality of service, thin provisioning, compression, deduplication, encryption, disk-based backup, application- and virtual machine-aware backup, quick data recovery, clustering, synchronous replication, and asynchronous replication.
- Optional licensed object tiering to public or private clouds (FabricPool).
- Scale-out clustering of up to 12 ThinkSystem DG Series and DM Series storage systems for NAS connectivity or up to six DG Series and DM Series storage systems for SAN connectivity.
- Intuitive, web-based GUI for easy system setup and management.
- Designed for 99.9999% availability with redundant hot-swap components, including controllers and I/O modules, power supplies, system fans (4U controller enclosures), and non-disruptive firmware upgrades.

The Lenovo ThinkSystem DG7000 supports the 2.5-inch QLC NVMe SSDs and all drives are dual-port and hot-swappable. The DG7000 supports attachment of four DG240N 2U24 SFF expansion enclosure and drives are designed to be added dynamically, which helps to respond to ever-growing capacity demands quickly and seamlessly.

The Lenovo ThinkSystem DG7000 offers high levels of system and data availability with the following technologies:

- Dual-active controllers (high availability pair) with automatic load balancing and failover
- Mirrored, battery-backed controller NVRAM. NVRAM is battery-backed memory used to protect inbound writes as they arrive. This fact allows write operations to be safely acknowledged without having to wait for a disk operation to complete, greatly reducing write latency.
- Automatic drive failure detection and rebuild
- Redundant, hot-swappable and customer replaceable hardware components, including SFP+/QSFP+ transceivers, controller and I/O modules, power supplies, system fans (4U controller enclosure), and drives
- Automated failover for the data path between the host and the drives with multipathing

- Non-disruptive controller and drive firmware upgrades
- Scale-out clustering

Components and connectors

The following figure shows the front of the ThinkSystem DG7000 4U controller enclosure without a front bezel.

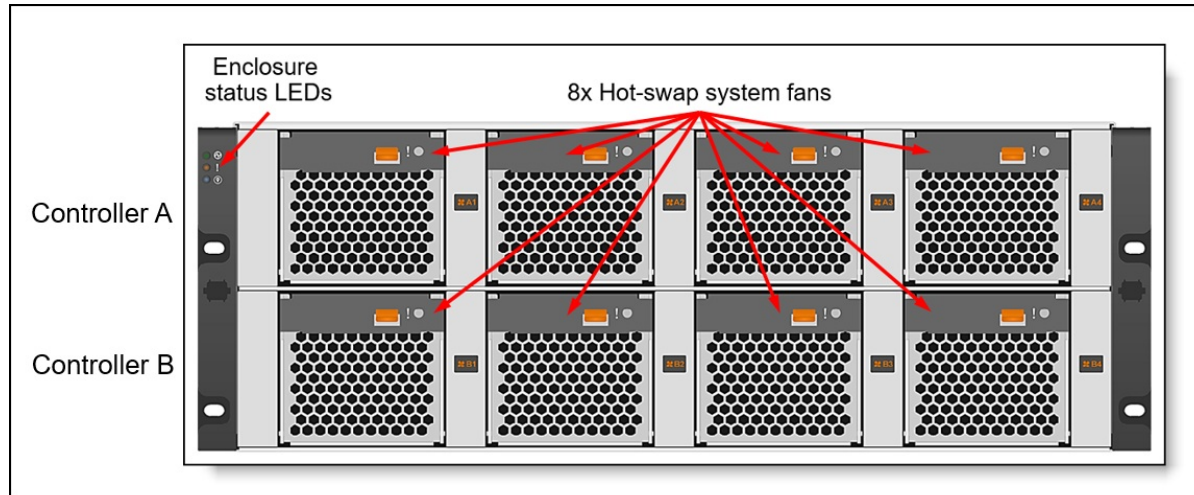


Figure 2. ThinkSystem DG7000 4U controller enclosure front view

The front of the ThinkSystem DG7000 controller enclosure includes the following components:

- 8x Redundant hot-swap system fans.
- Enclosure status LEDs.

The following figures show the rear of the ThinkSystem DG7000 4U controller enclosure.

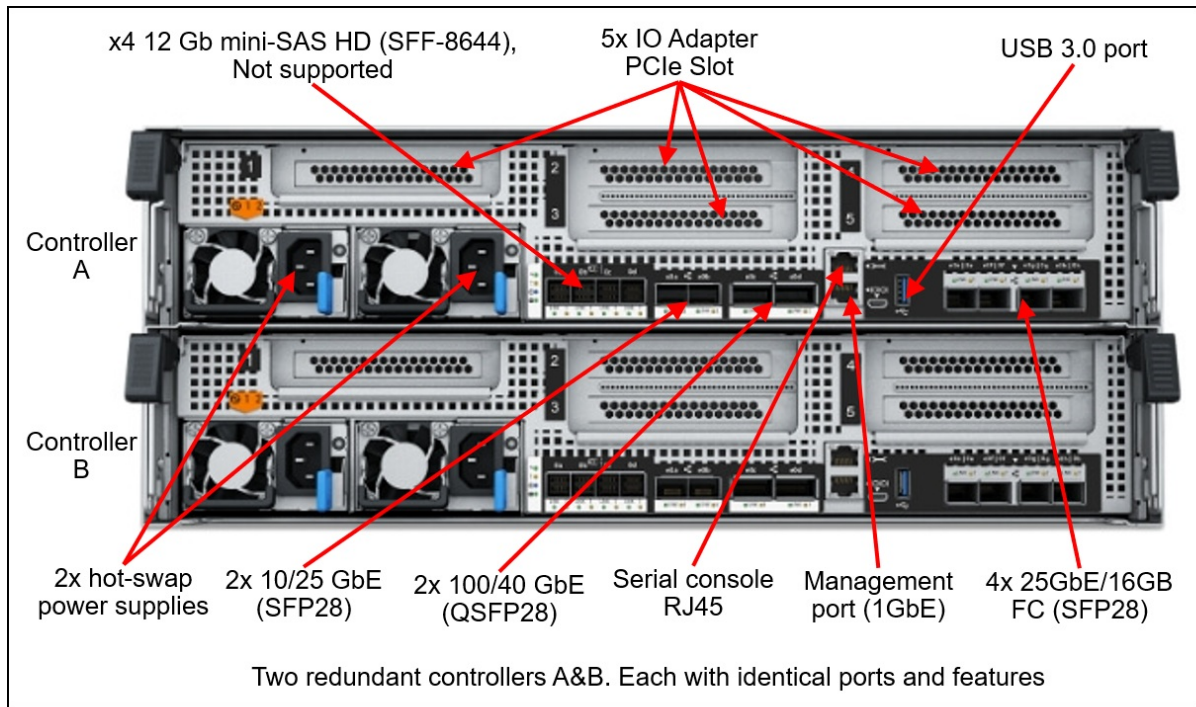


Figure 3. ThinkSystem DG7000 4U controller enclosure rear view: Ports

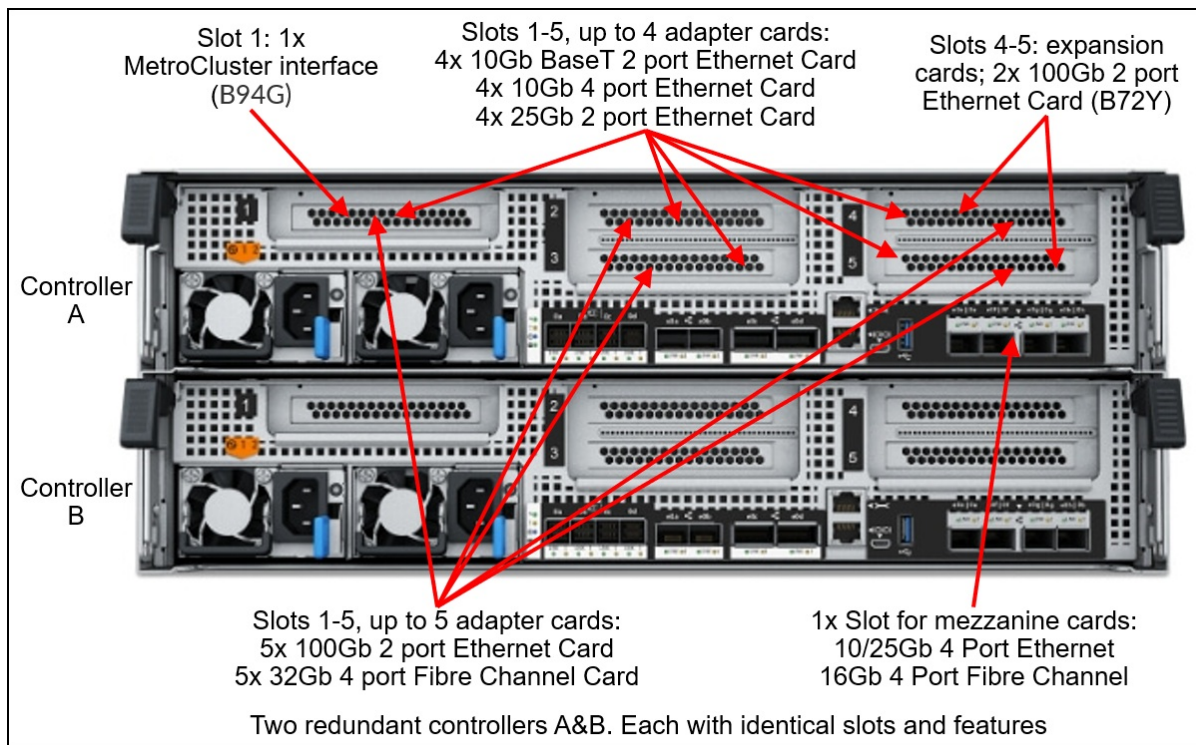


Figure 4. ThinkSystem DG7000 4U controller enclosure rear view: Slots

The rear of the ThinkSystem DG7000 4U controller enclosure includes the following components:

- Two redundant hot-swap controllers, each with the following ports:
 - Two 25 GbE SFP28 ports for direct-attach HA pair interconnect.
 - Two 40/100 GbE QSFP28 onboard ports for connections to the NVMe expansion enclosures.
 - A mezzanine slot for one of the following mezzanine cards (a mezzanine card is required):
 - 10/25Gb 4 Port Ethernet Mez Card (NAS or iSCSI).
 - 16Gb 4 Port Fibre Channel Mez Card (FC only).
 - Four slots for the following optional adapter cards (ports per adapter card):
 - Host ports:
 - 10Gb BaseT 2 port Ethernet Card
 - 10Gb 4 port Ethernet Card
 - 25Gb 2 port Ethernet Card
 - Five slots for the following optional adapter cards (ports per adapter card):
 - Host ports:
 - 100Gb 2 port Ethernet Card
 - 32Gb 4 port Fibre Channel Card
 - Expansion ports:
 - 100Gb 2 port Ethernet Card (QSFP28 RoCE). (Slots 4, 5)
 - MetroCluster ports:
 - 100Gb iWARP 2 Port Ethernet Card (QSFP28). (Slot 1)
 - One RJ-45 10/100/1000 Mb Ethernet port for out-of-band management.
 - Two serial console ports (RJ-45 and Micro-USB) for another means to configure the system.
 - One USB Type A port (read-only) for software updates.
 - Four redundant hot-swap 1600 W (100 - 240 V) AC power supplies (IEC 320-C14 power connector) with integrated cooling fans.
 - Controller status LEDs.

The following figure shows the front of the ThinkSystem DG240N 2U SFF NVMe expansion enclosure.

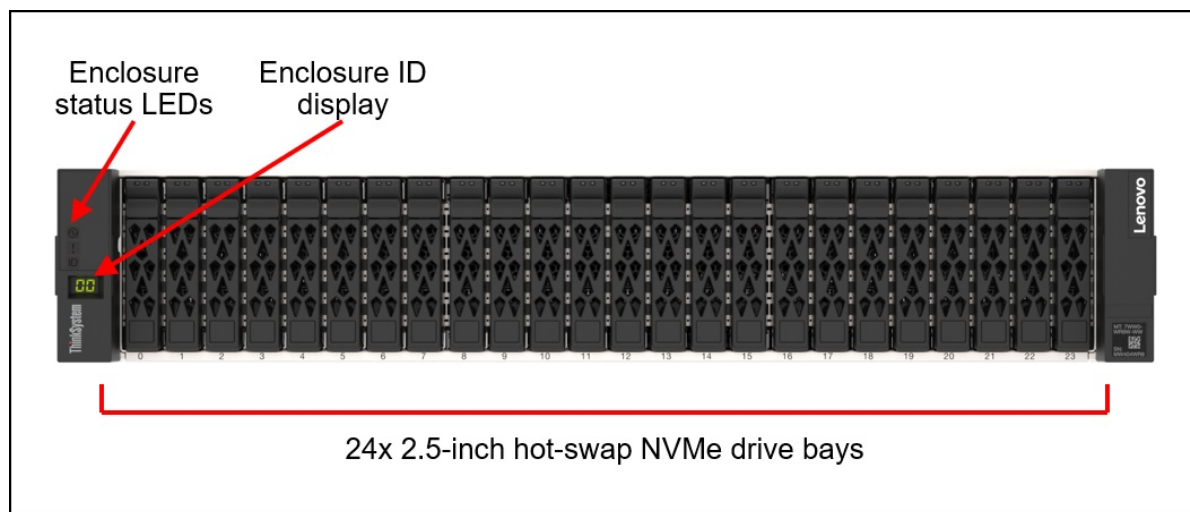


Figure 5. ThinkSystem DG240N 2U SFF NVMe expansion enclosure front view

The front of the ThinkSystem DG240N 2U SFF NVMe expansion enclosure includes the following components:

- 24 SFF hot-swap drive bays.

- Enclosure status LEDs.
- Enclosure ID LED.

The following figure shows the rear of the ThinkSystem DG240N 2U SFF NVMe expansion enclosure.

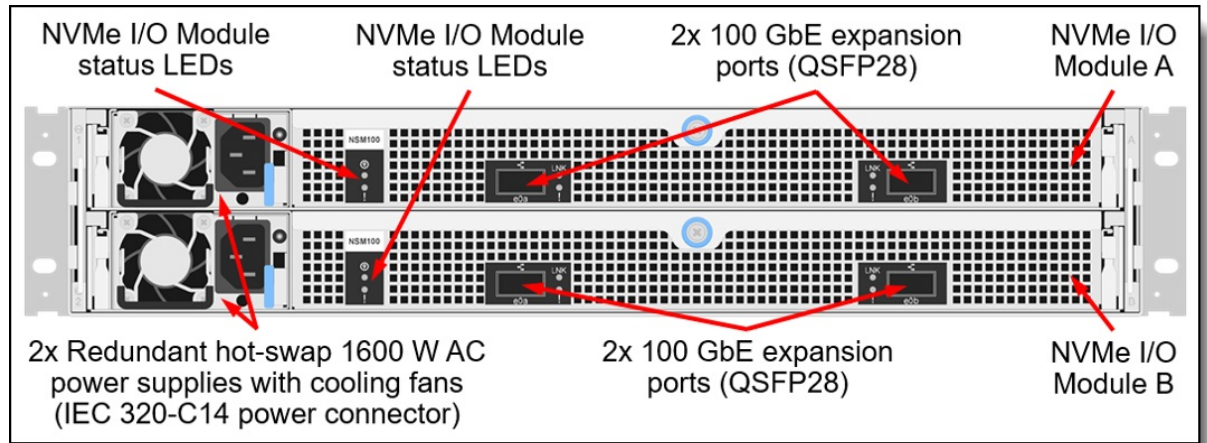


Figure 6. ThinkSystem DG240N 2U SFF NVMe expansion enclosure rear view

The rear of the ThinkSystem DG240N 2U SFF NVMe expansion enclosure includes the following components:

- Two redundant hot-swap NVMe I/O Modules; each NVMe I/O Module provides two 100 GbE QSFP28 expansion ports for connections to the controller enclosures.
- Two redundant hot-swap 1600 W (100 - 240 V) AC power supplies (IEC 320-C14 power connector) with integrated cooling fans.
- NVMe I/O Module status LEDs.

System specifications

The following table lists the Lenovo ThinkSystem DG7000 storage system specifications.

Note: The supported hardware options, software features, and interoperability listed in this product guide are based on the ONTAP software version 9.12.1 P4 or later. For details about specific software releases that introduced support for certain hardware options and software features, refer to the Change History for the particular software release for the Lenovo ThinkSystem DG7000 that can be found at:

<http://datacentersupport.lenovo.com>

Table 1. ThinkSystem DG7000 system specifications

| Attribute | Specification |
|----------------------------|---|
| Form factor | <ul style="list-style-type: none"> • DG7000 controller enclosure (machine type 7DE5): 4U rack mount. • DG240N 2U24 SFF expansion enclosure (machine type 7Y62): 2U rack mount. |
| Controller configuration | Dual active-active controller configuration (HA pair). Up to 6 HA pairs can be combined into a single SAN cluster, or up to 12 HA pairs can be combined into a single NAS cluster. |
| HA pair interconnect ports | 4x 25 GbE SFP28 onboard ports (DAC cables) (2 ports per controller). |
| Cluster interconnect ports | 4x 100 GbE QSFP28 ports (DAC cable or SW fiber optic cable, MPO) (2 ports per controller using onboard 100GbE QSFP28 ports). |
| MetroCluster connectivity | <ul style="list-style-type: none"> • MetroCluster IP: 4x 100 GbE QSFP28 ports (SW fiber optic cable, MPO) (2 ports per controller on the optional 100 GbE iWARP adapter cards). (requires ONTAP 9.12.1P4 or later) |

| Attribute | Specification |
|------------------------------|---|
| RAID levels | RAID-4, RAID-DP, RAID-TEC. Note: RAID-4 can be configured only through the CLI. |
| Controller memory | 256 GB RAM per system (128 GB per controller). 32 GB battery-backed NVRAM per system (16 GB per controller) mirrored between the controllers. |
| Drive bays | Up to 96 NVMe QLC drives using SN2100 switches as Storage scale out. |
| Drive technology | QLC NVME SSDs |
| Drive expansion connectivity | <ul style="list-style-type: none"> • 2x 100 GbE QSFP28 Using 100GbE RoCE adapter in slots 4 or 5. • 2x 100 GbE QSFP28 expansion ports on each of two NVMe I/O modules in the NVMe expansion enclosure for the attachment to the controller enclosure. |
| Drives | 15.36 TB QLC NVMe SSDs |
| Storage capacity | Up to 1.47 PB (96x 15.36 TB SSDs) |
| Storage protocols | <ul style="list-style-type: none"> • NAS (File access): NFS and CIFS/SMB. • SAN (Block access): iSCSI, FC, NVMe/FC. |
| Host connectivity | <p>Base ports on the mezzanine cards (two controllers):</p> <ul style="list-style-type: none"> • 8x 25 GbE SFP28 (DAC cable or SW fiber optic cable, LC) (4 ports per controller); or • 8x 16 Gb FC SFP+ (SW fiber optic cable, LC) (4 ports per controller). <p>Base ports (two controllers):</p> <ul style="list-style-type: none"> • 4x 10/25GbE (SFP28) • 4x 100/40 GbE (QSFP28) <p>Optional additional ports on up to four adapter cards (per controller):</p> <ul style="list-style-type: none"> • 4x 10Gb BaseT 2 port Ethernet Card • 4x 10Gb 4 port Ethernet Card • 4x 25Gb 2 port Ethernet Card <p>Optional additional ports on up to five adapter cards (per controller):</p> <ul style="list-style-type: none"> • 5x 100Gb 2 port Ethernet Card • 5x 32Gb 4 port Fibre Channel Card <p>Note: ONTAP does not support host direct attach for FC protocol.</p> |
| Host operating systems | Windows Server 2019, Windows Server 2022, RedHat, SuSE and VMware. |
| Performance* | Up to 650 000 random read IOPS (8 KB blocks). |

| Attribute | Specification |
|--------------------------|--|
| Configuration maximums** | <ul style="list-style-type: none"> ● Maximum raw storage capacity: 1.47 PB ● Maximum aggregate size: 800 TB ● Maximum number of FlexVol volumes per HA pair: 5000 ● Maximum volume size: 300 TB ● Maximum number of LUNs per controller: 8192 ● Maximum number of LUNs per FlexVol volume: 512 ● Maximum LUN size: 128 TB ● Maximum number of drives in a RAID group (data + parity drives): <ul style="list-style-type: none"> ○ RAID 4: 14 (13 + 1 SAS SSDs or NVMe SSDs) ○ RAID-DP: 28 (26 + 2 SAS SSDs or NVMe SSDs) ○ RAID-TEC: 29 (26 + 3 SAS SSDs or NVMe SSDs) ● Maximum number of initiators per HA pair: 8192 <p>Maximum number of snapshots per FlexVol volume: 1023</p> |
| Cooling | <p>Redundant cooling:</p> <ul style="list-style-type: none"> ● DG7000 4U: Eight hot-swap system fans. ● DG240N 2U24 SFF: Fans that are built into I/O modules and power supplies. |
| Power supply | Four 1600 W (100 - 240 V) (DG7000 4U controller enclosure), or two 1600 W (100 - 240 V) (DG240N 2U24 SFF expansion enclosure), redundant hot-swap Platinum AC power supplies. |
| Hot-swap parts | Controllers, I/O modules, drives, system fans (DG7000 4U only), power supplies, and SFP+/SFP28/QSFP+/QSFP28 transceivers and DAC cables. |
| Management ports | <ul style="list-style-type: none"> ● 1x 1 GbE port (UTP, RJ-45) per controller for out-of-band management. ● 2x Serial console ports (RJ-45 and Micro-USB) for system configuration. ● 1x USB Type A port (read-only) for software updates. |
| Management interfaces | ThinkSystem Storage Manager web-based GUI; SSH CLI; Serial console CLI; SNMP, email, and syslog alerts. |
| Security features | Secure Socket Layer (SSL), Secure Shell (SSH), user level security, role-based access control (RBAC), LDAP authentication. |
| Warranty and support | Three- or five-year customer-replaceable unit and onsite limited warranty with selectable service levels: 9x5 coverage with next business day (NBD) parts delivered (base warranty), 9x5 coverage with NBD onsite response (Foundation Service), 24x7 coverage with 4-hour onsite response (Essential Service), or 24x7 coverage with 2-hour onsite response or 6-hour committed repair (select areas) (Advanced Service). Premier Support is also available. Software support is included in the base warranty or Foundation, Essential, or Advanced Service for the duration of the warranty period. |
| Dimensions | <p>4U controller enclosure:</p> <ul style="list-style-type: none"> ● Height: 175 mm (6.9 in.) ● Width: 447 mm (17.6 in.) ● Depth: 828 mm (32.6 in.) <p>2U24 SFF NVMe expansion enclosure:</p> <ul style="list-style-type: none"> ● Height: 87 mm (3.4 in.) ● Width: 447 mm (17.6 in.) ● Depth: 543 mm (21.4 in.) |
| Weight | <ul style="list-style-type: none"> ● Controller enclosure (fully configured): 49.2 kg (108.5 lb) ● 2U24 SFF NVMe expansion enclosure (fully configured): 30.2 kg (66.7 lb) |

* Estimated theoretical performance based on the capacity planning for specific configurations and workloads.

** For a detailed list of configuration limits and restrictions for a specific version of the software, refer to the Lenovo Data Center Support website:

<http://datacentersupport.lenovo.com>

Controller enclosures

Factory-integrated models of the Lenovo ThinkSystem DG7000 are configured by using the Lenovo Data Center Solution Configurator (DCSC):

<http://dcsc.lenovo.com>

The following table lists the CTO base models for the Lenovo ThinkSystem DG7000.

Table 2. ThinkSystem DG7000 CTO base models

| Description | Machine Type/Model | Feature code |
|---------------------------|--------------------|--------------|
| Lenovo ThinkSystem DG7000 | 7DE5CTO1WW | B94E |

Configuration note: Two DG7000 controllers (feature code B94T) are pre-selected in the configurator.

The models of the ThinkSystem DG7000 ship with the following items:

- One chassis with the following components:
 - Two controllers
 - Four power supplies
- Rack Mount Kit
- 2 m USB Cable (USB Type A to Micro-USB)
- *Electronic Publications Flyer*
- Four customer-configured power cables

Controllers

The Lenovo ThinkSystem DG7000 controller enclosure ships with two DG7000 controllers. A *controller* provides interfaces for host connectivity, management, and internal drives in supported expansion enclosures, and it runs ONTAP storage management software. Each ThinkSystem DG7000 controller enclosure provides 256 GB RAM and 32 GB battery-backed NVRAM (128 GB RAM and 16 GB NVRAM per controller).

The ThinkSystem DG7000 controller enclosures ship with four HA interconnect 25 GbE SFP28 ports (two ports per controller) to cable a directly-connected dual-controller HA pair, and four cluster interconnect 100 GbE QSFP28 ports using the onboard 100GbE QSFP ports on each controller (two per controller) to cable a directly connected (one HA pair) or switched (multiple HA pairs) cluster. Up to six HA pairs can be combined into a single SAN cluster or up to 12 HA pairs can be combined into a single NAS cluster.

The ThinkSystem DG7000 controller enclosure provides four QSFP28 ports for 100 GbE NVMe expansion connectivity using the 100GbE RoCE adapter installed in slot 4 or 5, and it also has two mezzanine slots (one slot per controller) for mezzanine cards and eight available expansion slots (four slots per controller) for adapter cards.

Two controllers are required for selection and must have the same HIC adapters installed. The use of a DG240N expansion enclosure requires a 100GbE HIC for connectivity installed in port 4 or 5 in each controller.

The ThinkSystem DG7000 controller enclosure provides a choice of the following interfaces on the mezzanine cards for base host connectivity (ports per mezzanine card):

- 4x 25 GbE SFP28 ports for NAS or iSCSI connectivity (require optical transceivers or DAC cables that should be purchased for the mezzanine card).

- 4x 16 Gb FC SFP+ ports for FC connectivity (require SFP+ SW optical transceivers that should be purchased for the mezzanine card).

The following interfaces can be added to the ThinkSystem DG7000 controller enclosures with optional adapter cards (ports per adapter card):

- Host interfaces
 - 2x 1/10 GbE RJ-45 ports for NAS or iSCSI connectivity (require RJ-45 UTP Category 6 cables that should be purchased for the adapter card).
 - 4x 10 GbE SFP+ ports for NAS or iSCSI connectivity (require DAC cables that should be purchased for the adapter card).
 - 2x 25 GbE SFP28 ports for NAS or iSCSI connectivity (require optical transceivers or DAC cables that should be purchased for the adapter card).
 - 2x 40/100 GbE QSFP28 ports for NAS or iSCSI connectivity (require optical transceivers or DAC cables that should be purchased for the adapter card).
 - 4x 16 Gb FC SFP+ ports for FC connectivity, or NVMe/FC with 32 Gb ports (SW SFP+ transceivers with LC connectors included).
- Expansion interfaces:
 - 2x 100 GbE RoCE QSFP28 ports for NVMe/RoCE expansion connectivity.
- MetroCluster interfaces:
 - 2x 40/100 GbE iWARP QSFP28 ports for MetroCluster IP connectivity (require optical transceivers that should be purchased for the adapter card).
 - 2x 16 Gb FC SFP+ ports for MetroCluster FC connectivity (require SFP+ SW optical transceivers that should be purchased for the adapter card) (planned for the future).

Configuration notes:

- A pair of the mezzanine cards is required for selection.
- The optional adapter cards should be installed in pairs: Up to four pairs of the adapter cards are supported per controller enclosure (up to four adapter cards per controller), including a combination of the adapter card pairs.
- Both controllers must have matching configurations of the mezzanine ports (type and physical connections) and adapter cards (type, quantity, slot location, and physical connections).
- The optional adapter cards should be installed in the controller's expansion slots in the following order: Slot 2, Slot 4, Slot 1, Slot 5.
Note: In the configurations with two DG240N expansion enclosures, a pair of additional 100 GbE RoCE adapter cards is required for dual HA direct connectivity to the expansion enclosures, and these cards must be installed in the Slot 5 of the DG7000 controllers.

The following table lists the controller for the Lenovo ThinkSystem DG7000 and supported connectivity options.

Table 3. DG7000 controller and connectivity options

| Description | Part number | Feature code | Maximum quantity per controller enclosure |
|--|-------------|--------------|---|
| Controllers | | | |
| Lenovo ThinkSystem DM7100/DG7000 NVMe Controller with Platinum PSU | None* | B94T | 2 |
| Mezzanine cards: Base host interfaces | | | |
| Lenovo ThinkSystem Storage 10/25Gb 4 Port Ethernet Mez Card | 4XC7A60826 | B94J | 2 |

| Description | Part number | Feature code | Maximum quantity per controller enclosure |
|---|-------------|--------------|---|
| Lenovo ThinkSystem Storage 16Gb 4 Port Fibre Channel Mez Card | 4XC7A60827 | B94K | 2 |
| Adapter cards: Additional host interfaces | | | |
| Lenovo ThinkSystem Storage 10Gb BaseT 2 port Ethernet Card | 4XC7A60794 | B94F | 8 |
| Lenovo ThinkSystem Storage 10Gb 4 port Ethernet Card | 4XC7A38329 | B730 | 8 |
| Lenovo ThinkSystem Storage 10/25Gb 2 port Ethernet Card**† | 4XC7A38328 | B72Z | 8 |
| Lenovo ThinkSystem Storage 32Gb 4 port Fibre Channel Card | 4XC7A38326 | B72X | 10 |
| Adapter card: Additional expansion interface | | | |
| Lenovo ThinkSystem Storage 100Gb 2 port Ethernet Card** | 4XC7A38327 | B72Y | 10 |
| Adapter card: MetroCluster interface (gen 3) | | | |
| Lenovo Thinksystem Storage 100Gb iWARP 2 Port Ethernet Card | 4XC7A60795 | B94G | 2 |
| SFP+ transceivers for 10Gb 4 port Ethernet Card (4XC7A38329) | | | |
| 10Gb Ethernet, SFP+, Intel Transceiver | 4TC7A69991 | BQAS | 32 |
| SFP+ transceivers for 16 Gb FC mezzanine cards | | | |
| 16G Fibre Channel SFP+ Module 1 pack | 4XF7A14920 | B4KA | 8 |
| SFP+ and SFP28 transceivers for 25 GbE mezzanine cards and 25 GbE adapter cards † | | | |
| 10G SW Optical iSCSI SFP+ Module 1 pack | 4XF7A14919 | B4K9 | 24 |
| QSFP+/QSFP28 transceivers for 100 GbE adapter cards | | | |
| Lenovo 100Gb SR4 QSFP28 Ethernet Transceiver | 4M27A67042 | BFH1 | 24 |
| OM4 cables for 100 GbE QSFP28 transceivers | | | |
| Lenovo 5m MPO-MPO OM4 MMF Cable | 7Z57A03567 | AV25 | 24 |
| Lenovo 7m MPO-MPO OM4 MMF Cable | 7Z57A03568 | AV26 | 24 |
| Lenovo 10m MPO-MPO OM4 MMF Cable | 7Z57A03569 | AV27 | 24 |
| Lenovo 15m MPO-MPO OM4 MMF Cable | 7Z57A03570 | AV28 | 24 |
| Lenovo 20m MPO-MPO OM4 MMF Cable | 7Z57A03571 | AV29 | 24 |
| Lenovo 30m MPO-MPO OM4 MMF Cable | 7Z57A03572 | AV2A | 24 |
| OM4 cables for 16/32 Gb FC and 25 GbE SFP28 optical transceivers | | | |
| Lenovo 0.5m LC-LC OM4 MMF Cable | 4Z57A10845 | B2P9 | 52 |
| Lenovo 1m LC-LC OM4 MMF Cable | 4Z57A10846 | B2PA | 52 |
| Lenovo 3m LC-LC OM4 MMF Cable | 4Z57A10847 | B2PB | 52 |
| Lenovo 5m LC-LC OM4 MMF Cable | 4Z57A10848 | B2PC | 52 |
| Lenovo 10m LC-LC OM4 MMF Cable | 4Z57A10849 | B2PD | 52 |
| Lenovo 15m LC-LC OM4 MMF Cable | 4Z57A10850 | B2PE | 52 |
| Lenovo 25m LC-LC OM4 MMF Cable | 4Z57A10851 | B2PF | 52 |
| Lenovo 30m LC-LC OM4 MMF Cable | 4Z57A10852 | B2PG | 52 |
| OM3 cables for 16/32 Gb FC and 25 GbE SFP28 optical transceivers | | | |
| Lenovo 0.5m LC-LC OM3 MMF Cable | 00MN499 | ASR5 | 52 |
| Lenovo 1m LC-LC OM3 MMF Cable | 00MN502 | ASR6 | 52 |
| Lenovo 3m LC-LC OM3 MMF Cable | 00MN505 | ASR7 | 52 |
| Lenovo 5m LC-LC OM3 MMF Cable | 00MN508 | ASR8 | 52 |

| Description | Part number | Feature code | Maximum quantity per controller enclosure |
|---|-------------|--------------|---|
| Lenovo 10m LC-LC OM3 MMF Cable | 00MN511 | ASR9 | 52 |
| Lenovo 15m LC-LC OM3 MMF Cable | 00MN514 | ASRA | 52 |
| Lenovo 25m LC-LC OM3 MMF Cable | 00MN517 | ASRB | 52 |
| Lenovo 30m LC-LC OM3 MMF Cable | 00MN520 | ASRC | 52 |
| SFP+ DAC cables for 10 GbE SFP+ adapter cards | | | |
| 0.5m Passive DAC SFP+ Cable | 00D6288 | A3RG | 40 |
| 1m Passive DAC SFP+ Cable | 90Y9427 | A1PH | 40 |
| 1.5m Passive DAC SFP+ Cable | 00AY764 | A51N | 40 |
| 2m Passive DAC SFP+ Cable | 00AY765 | A51P | 40 |
| 3m Passive DAC SFP+ Cable | 90Y9430 | A1PJ | 40 |
| 5m Passive DAC SFP+ Cable | 90Y9433 | A1PK | 40 |
| SFP28 DAC cables for 25 GbE onboard ports, mezzanine cards, and adapter cards | | | |
| Lenovo 1m Passive 25G SFP28 DAC Cable | 7Z57A03557 | AV1W | 28 |
| Lenovo 3m Passive 25G SFP28 DAC Cable | 7Z57A03558 | AV1X | 28 |
| Lenovo 5m Passive 25G SFP28 DAC Cable | 7Z57A03559 | AV1Y | 28 |
| 100G QSFP28 to 4x25G SFP28 Breakout DAC Cables | | | |
| Lenovo 1m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable | 7Z57A03564 | AV22 | 6 |
| Lenovo 3m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable | 7Z57A03565 | AV23 | 6 |
| Lenovo 5m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable | 7Z57A03566 | AV24 | 6 |
| QSFP+ DAC cables for 100 GbE adapter cards (operating at 40 Gbps) | | | |
| Lenovo 1m Passive QSFP+ DAC Cable | 49Y7890 | A1DP | 20 |
| Lenovo 3m Passive QSFP+ DAC Cable | 49Y7891 | A1DQ | 20 |
| Lenovo 5m Passive QSFP+ DAC Cable | 00D5810 | A2X8 | 20 |
| QSFP28 DAC cables for 100 GbE adapter cards (operating at 100 Gbps) | | | |
| Lenovo 1m Passive 100G QSFP28 DAC Cable | 7Z57A03561 | AV1Z | 24 |
| Lenovo 3m Passive 100G QSFP28 DAC Cable | 7Z57A03562 | AV20 | 24 |
| Lenovo 5m Passive 100G QSFP28 DAC Cable | 7Z57A03563 | AV21 | 24 |
| UTP Category 6 cables for 1/10 GbE RJ-45 adapter cards and 1 GbE RJ-45 management ports | | | |
| 0.75m Green Cat6 Cable | 00WE123 | AVFW | 18 |
| 1.0m Green Cat6 Cable | 00WE127 | AVFX | 18 |
| 1.25m Green Cat6 Cable | 00WE131 | AVFY | 18 |
| 1.5m Green Cat6 Cable | 00WE135 | AVFZ | 18 |
| 3m Green Cat6 Cable | 00WE139 | AVG0 | 18 |

* Factory-installed only.

** RoCE QSFP28

† For 25G leverage: 4M27A67041 Lenovo 25Gb SR SFP28 Ethernet Transceiver

Expansion enclosures

The ThinkSystem DG7000 controller enclosure supports attachment of up to four ThinkSystem DG240N 2U24 SFF NVMe expansion enclosures. The expansion enclosures can be added to the system non-disruptively.

Note: The addition of the second DG240N NVMe expansion enclosure to the storage arrays that were previously configured with one DG240N NVMe expansion enclosure requires planned system downtime.

The following table lists the CTO base models for the expansion enclosures.

Table 4. CTO base models for the ThinkSystem DG Series expansion enclosures

| Description | Machine Type/Model | Feature code |
|--|--------------------|--------------|
| ThinkSystem DG240N 2U24 NVMe Expansion Enclosure (3-year warranty) | 7Y62CTO2WW | B6W6 |

Configuration notes:

- Two NVMe I/O expansion modules (feature code B73A) are pre-selected in the configurator for the DG240N 2U24 SFF expansion enclosures.

The model of the ThinkSystem DG240N 2U24 SFF expansion enclosures ship with the following items:

- One chassis with the following components:
 - Two I/O modules (NVMe)
 - Two power supplies
- Rack Mount Kit
- *Electronic Publications Flyer*
- Two customer-configured power cables

The following expansion connectivity topologies are supported:

- [NVMe expansion connectivity](#)

NVMe expansion topology

Each ThinkSystem DG240N expansion enclosure ships with two NVMe I/O expansion modules. Each *NVMe I/O expansion module* provides two external 100 GbE QSFP28 ports (labelled Ports A and B) that are used for direct-attach connections to the ThinkSystem DG7000 controller enclosures.

The ThinkSystem DG7000 controller enclosure supports direct attachment of up to two DG240N NVMe expansion enclosures for a total of up to 48 NVMe drives. You must add a 2-Port 100GbE QSPF28 adapter to connect the DG240N expansion. For two NVMe expansion enclosures, an additional 2-port 100 GbE QSFP28 adapter card is required for the DG7000 controller.

The example expansion connectivity topologies for one and two enclosures with dual-path HA (high availability) are shown in the following figures.

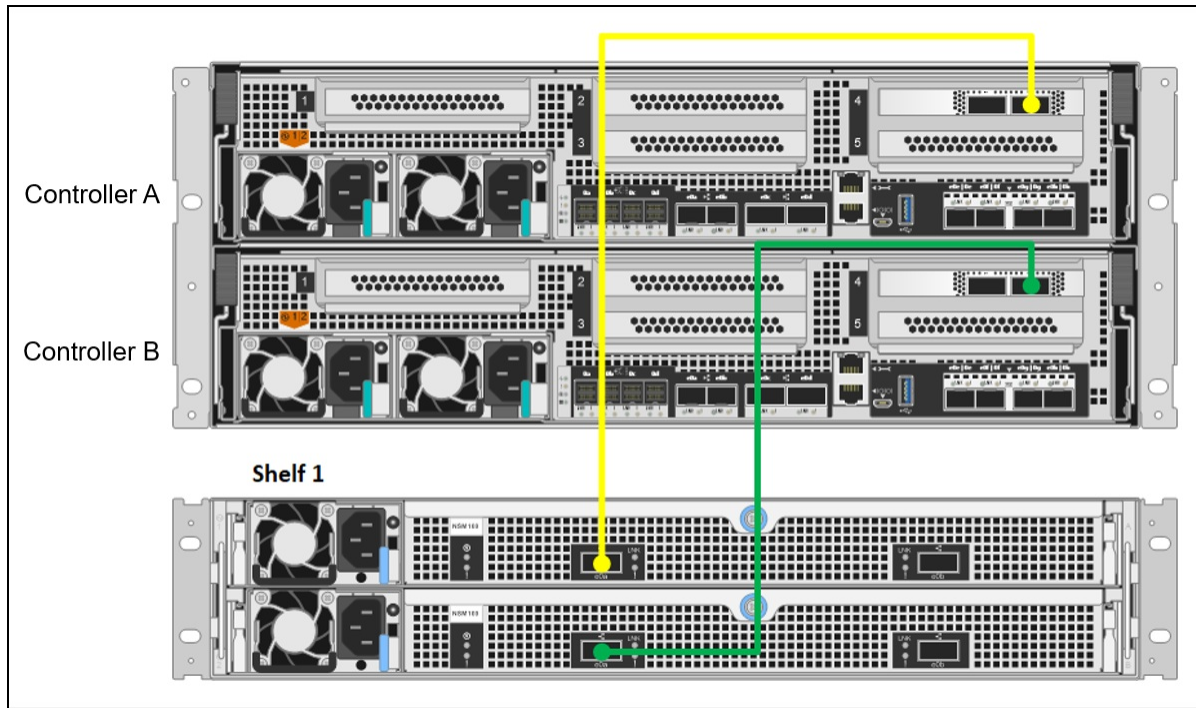


Figure 7. DG7000 NVMe expansion connectivity topology: One enclosure

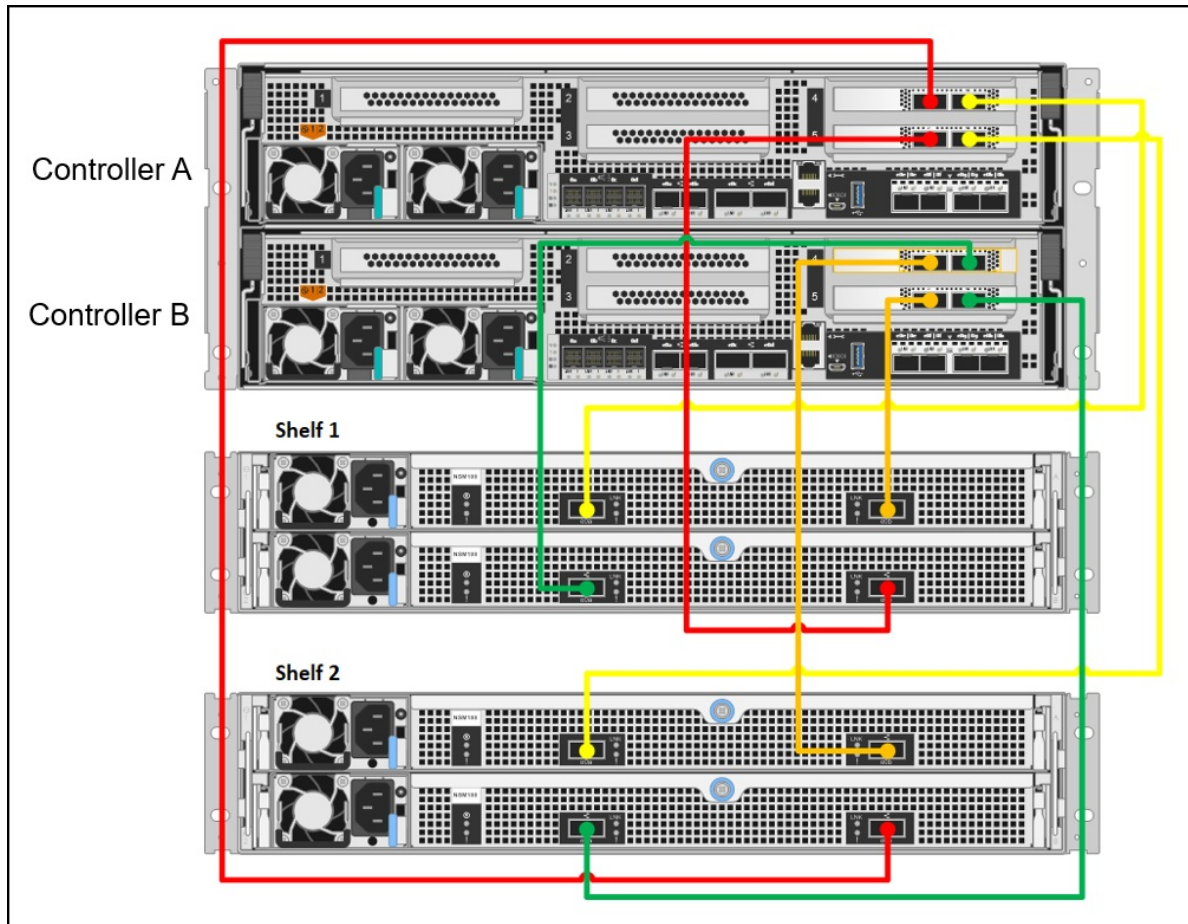


Figure 8. DG7000 NVMe expansion connectivity topology: Two enclosures

NVMe expansion cabling rules:

- On the Controller A, the Port 1 on the 100 GbE adapter card 1 (slot 4) is connected to the Port A on the NVMe I/O Module A in the second expansion enclosure, and the Port 2 on the 100 GbE adapter card is connected to the Port B in the NVMe I/O Module B in the first expansion enclosure.
- On the Controller B, the Port 1 on the 100 GbE adapter card 1 (slot 4) is connected to the Port A on the NVMe I/O Module B in the second expansion enclosure, and the Port 2 on the 100 GbE adapter card is connected to the Port B in the NVMe I/O Module A in the first expansion enclosure
- On the Controller A, the Port 1 on the 100 GbE adapter card 2 (slot 5) is connected to the Port A on the NVMe I/O Module A in the second expansion enclosure, and the Port 2 on the 100 GbE adapter card is connected to the Port B in the NVMe I/O Module B in the first expansion enclosure.
- On the Controller B, the Port 1 on the 100 GbE adapter card 2 (slot 5) is connected to the Port A on the NVMe I/O Module B in the second expansion enclosure, and the Port 2 on the 100 GbE adapter card is connected to the Port B in the NVMe I/O Module A in the first expansion enclosure.

The following is a high level topology with two switched DG240N expansion enclosures

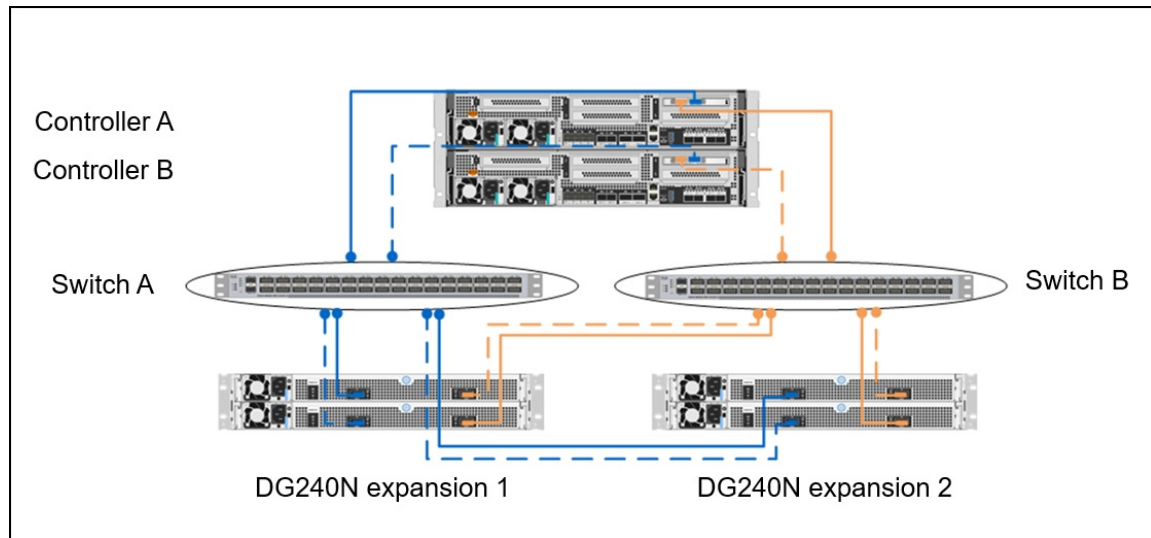


Figure 9. DG7000 NVMe expansion connectivity topology with two switched DG240N expansion enclosures (shelves)

The following table lists ordering information for the NVMe expansion enclosure connectivity options.

Table 5. NVMe expansion enclosure connectivity options

| Description | Part number | Feature code | Maximum quantity per one expansion enclosure |
|---|-------------|--------------|--|
| Lenovo 1m Passive 100G QSFP28 DAC Cable | 7Z57A03561 | AV1Z | 4 |
| Lenovo 3m Passive 100G QSFP28 DAC Cable | 7Z57A03562 | AV20 | 4 |
| Lenovo 5m Passive 100G QSFP28 DAC Cable | 7Z57A03563 | AV21 | 4 |

Configuration note: Four 100G QSFP28 DAC cables are needed per expansion enclosure for directly connecting the expansion enclosure to the controller enclosure.

Drives

The ThinkSystem DG7000 has no internal drives, however thru the supported DG240N expansion enclosures up to 24 SFF hot-swap drives, in packs of 2 drives are supported in each DG240N enclosure.

The following table lists supported drive packs for the controller and expansion enclosures.

Configuration notes:

- When ordering the systems, select the drives that match the ONTAP offering and bundle you are installing on the DM controller. Drive feature codes are specific to either the Unified Complete or Unified Essentials bundle. See the [Software](#) section for details.
- Drives are sold in packs. Supported quantities are as follows:
 - The DG240N 2U24 SFF expansion enclosure supports 8, 10, 12 etc up to 24 drives NVMe drives.
 - A minimum of 4 drive packs is required.
- For factory-installed drive packs, all drives in the enclosure must be of the same type and capacity.

- In DCSC, use "guided mode" to configure controller and add expansion/s accordingly. DCSC will auto display supported drives based on selected software bundle: unified complete or unified essential.

Field upgrades: Drive packs for field upgrades can be ordered via the CTO base 7D4FCTO5WW (BXFR), ThinkSystem DG Drive Pack Upgrades for DG5000/DG7000. These are for use in existing expansion enclosures that have not been fully populated with the factory-installed drive packs

Note that the feature code varies, based on the software license Unified Essentials or Unified Complete with Unified.

Table 6. DG240N enclosure drive pack options

| Part number | Feature code | Description | Maximum quantity per 2U enclosure |
|--------------|--------------|--|-----------------------------------|
| QLC NVMe SSD | | | |
| CTO only | BXG9* | Lenovo ThinkSystem 30.7TB (2x 15.36TB QLC NVMe SSD) Drive Pack for DG7000 - Unified Essential Bundle | 12 |
| CTO only | BXGA* | Lenovo ThinkSystem 30.7TB (2x 15.36TB QLC NVMe SSD) Drive Pack for DG7000 - Unified Complete Bundle | 12 |
| CTO only | BXJK** | Lenovo ThinkSystem 30.7TB (2x 15.36TB QLC NVMe SSD) Drive Pack for DG7000 | 12 |

*Drive packs for field upgrades can be ordered via the CTO base 7D4FCTO5WW (BXFR). A minimum of 1 drive packs is required. No mixing. Only available when DG7000 (FC BXFR) is selected.

**For Brazil geography

Software

In this section:

- [Feature bundles](#)
- [ONTAP software versions](#)
- [Extended ONTAP features](#)
- [Ansible playbooks for DG/DM Series](#)

ONTAP software unifies data management across flash, disk, and cloud to simplify the Lenovo DG/DM storage environment. It builds the foundation for a Data Fabric, making it easy to move the data where it is needed across flash, disk, and cloud resources.

Feature bundles

Controller software for the DG7000 is available in the following bundles of features:

Table 7. Software features and specifications summary

| Attribute | Unified Essential | Unified Complete |
|---|-------------------|------------------|
| Controller software feature code | BWU9 | BWU8 |
| RAID-4, RAID-DP, and RAID-TEC data protection | Included | Included |
| SAN (Block access): iSCSI, FC, NVMe/FC | Included | Included |
| NAS (File access): NFS, CIFS/SMB | Included | Included |

| Attribute | Unified Essential | Unified Complete |
|---------------------------------------|-------------------|------------------|
| All Flash Array (AFA) capability | Included | Included |
| Thin provisioning | Included | Included |
| Compression | Included | Included |
| Compaction | Included | Included |
| Deduplication | Included | Included |
| Snapshots | Included | Included |
| Encryption* | Included* | Included* |
| Balanced placement | Included | Included |
| Dynamic capacity expansion | Included | Included |
| Adaptive Quality of Service | Included | Included |
| SnapRestore | Included | Included |
| FlexClone | Included | Included |
| FlexVol | Included | Included |
| FlexCache | Included | Included |
| SnapMirror asynchronous replication | No | Included |
| SyncMirror data protection | Included | Included |
| Trusted Platform Module (TPM) support | Included** | Included** |
| MetroCluster IP | Included | Included |
| NVMe over FC Protocol | Included | Included |
| NVMe over TCP Protocol | Included | Included |
| SnapMirror Business Continuity (SMBC) | No | Included |
| SnapMirror synchronous replication | No | Included |
| FlexGroup | Included | Included |
| SnapVault disk-based storage backup | No | Included |
| SnapCenter | No | Included |
| ONTAP S3 | Included | Included |
| Autonomous Anti-ransomware Protection | No | Included |
| Multitenant Key Management | No | Included |
| SnapLock | No | Included |
| SnapMirror Cloud | No | Included |
| SnapMirror S3 | No | Included |
| FarbricPool | Optional | Optional |

* Requires the encryption version of ONTAP. See the [ONTAP software](#) section

** Not available in PRC

The features are summarized as follows:

- **RAID-4, RAID-DP, and RAID-TEC data protection** : Provides the flexibility to choose the level of data protection required and helps improve performance and availability with built-in spare capacity and by distributing data across all physical drives in the aggregate, sustaining to up to one (RAID-4), two (RAID-DP), or three (RAID-TEC) concurrent drive failures.
- **Thin provisioning**: Optimizes efficiency by allocating storage space based on the minimum space required by each application at any given time, so that applications consume only the space they are actually using, not the total space that has been allocated to them, which allows customers to purchase storage they need today and add more as application requirements grow.

- **Compression:** Provides transparent inline and post-process data compression to reduce the amount of storage that customers need to purchase and manage.
- **Deduplication:** Performs general-purpose deduplication for removal of redundant data to reduce the amount of storage that customers need to purchase and manage.
- **Snapshots:** Enables creation of read-only copies of data for backup, parallel processing, testing, and development, and have the copies available almost immediately.
- **Encryption:** Provides software-based encryption for data at rest for enhanced data security with the traditional drives and embedded key management (requires the encryption-capable version of the ONTAP software).
- **Balanced placement:** Provides automated workload distribution across the cluster to help increase utilization and performance.
- **Dynamic capacity expansion:** Allows the capacity of a volume or aggregate to be expanded by adding new physical drives.
- **Adaptive Quality of Service:** Simplifies operations and maintains consistent workload performance by defining QoS policies and automatically adjusting storage resources to respond to workload changes.
- **SnapRestore:** Enables quick recovery of data by reverting a local volume or file to its previous state from a particular snapshot copy stored on the file system.
- **FlexClone:** References snapshot metadata to create writable point-in-time copies of a volume.
- **FlexVol:** Provides abstraction layer between the logical volume and its physical location in the storage array.
- **FlexCache:** Speeds up access to data and offloads traffic from heavily accessed volumes for read-intensive workloads by placing frequently used data in cache locally or remotely (closer to the point of client access) and serving the data to the clients directly from cache without accessing the data source.
- **SnapMirror asynchronous replication:** Provides storage system-based data replication between the storage systems containing source (local) and destination (remote) volumes by using asynchronous (at specified regular intervals) data transfers over IP communication links.
- **SyncMirror data protection:** Adds extra level of data protection and availability by mirroring a pair of RAID aggregates.
- **Trusted Platform Module (TPM):** For encryption enabled systems. The encryption keys for the onboard key manager (OKM) are no longer stored in the boot device, but instead are stored in the physical TPM for systems so equipped, offering greater security and protection. Moving to the TPM is a nondisruptive process.
- **MetroCluster IP:** Provides storage system-based clustering with online, real-time data mirroring between the local and remote sites by using synchronous data transfers over IP communication links to deliver continuous availability with zero RPO and near-zero RTO. All storage systems in a MetroCluster IP configuration must be of the same model. New to ONTAP 9.11: MetroCluster with Storage Virtual Machine Disaster Recovery (SVM-DR) can now use a third site for the SVM-DR
- **NVMe over TCP Protocol:** Enables NVMe over TCP
- **Data Protection Optimized (DPO):** Increases the amount of concurrent SnapMirror sessions per node, as well as improving SnapMirror performance to the cluster.
- **SnapMirror synchronous replication:** Provides storage system-based data replication between the storage systems containing source (local) and destination (remote) volumes by using synchronous (as soon as the data is written to the source volume)
- **FlexGroup:** Enables a single volume to span across multiple clustered storage arrays to maximize storage capacity and automate load distribution. New to ONTAP 9.11: FlexGroups can now be created as SnapLock volumes.
- **SnapVault disk-based storage backup:** Enables data stored on multiple systems to be backed up

to a central, secondary system quickly and efficiently as read-only snapshot copies.

- **SnapCenter:** Provides application- and virtual machine-aware backup and restoration of data by using the Snapshots technology and leverages the SnapMirror capabilities of storage systems to provide onsite or offsite backup set mirroring for disaster recovery.
- **ONTAP S3:** Expands the DG/DM Series unified story and allows customers to manage, block, file, and object data from one interface. Customers can now natively store data in S3 buckets onboard the DG/DM Series.
- **SnapMirror S3 :** Enables you to protect buckets in ONTAP S3 object stores using familiar SnapMirror mirroring and backup functionality. Requires ONTAP 9.11 or later on both source and destination clusters. Requires the Unified Premium Bundle.
- **SnapMirror Cloud:** A backup and recovery technology designed for ONTAP users who want to transition their data protection workflows to the cloud. SnapMirror Cloud is an extension to the family of SnapMirror replication technologies. While SnapMirror is frequently used for ONTAP-to-ONTAP backups, SnapMirror Cloud uses the same replication engine to transfer Snapshot copies for ONTAP to S3-compliant object storage backups.
- **Multitenant Key Management (MTKM):** Provides the ability for individual tenants or storage virtual machines (SVMs) to maintain their own keys through KMIP for NVE. With multitenant external key management, you can centralize your organization's key management functions by department or tenant while inherently confirming that keys are not stored near the assets. This approach decreases the possibility of compromise.
- **Anti-ransomware:** Uses workload analysis in NAS (NFS and SMB) environments to proactively detect and warn about abnormal activity that might indicate a ransomware attack. When an attack is suspected, anti-ransomware also creates new Snapshot backups, in addition to existing protection from scheduled Snapshot copies. New to ONTAP 9.11: Optional multi-admin verification to approve administration functions that could result in data loss.

Optional Extended features also available via Feature on Demand (FoD) (see the [Extended ONTAP features](#) section)

- **FabricPool:** FabricPool is a hybrid storage solution that uses an all flash (all SSD) aggregate as the performance tier and an object store as the external capacity tier. Data in a FabricPool is stored in a tier based on whether it is frequently accessed or not. Using a FabricPool helps you reduce storage cost without compromising performance, efficiency, or protection.
- No license is required when tiering to StorageGRID or ONTAP S3.

ONTAP software versions

The following table lists the software selection options for the DG7000. The table also indicates which markets each version is available in.

Table 8. Software selection

| Feature code | Description | Availability |
|--------------|--|--------------|
| ONTAP 9.1x | | |
| BX90 | Lenovo ThinkSystem Storage ONTAP 9.12 Software Encryption - IPAv2 | All markets |
| BX91 | Lenovo ThinkSystem Storage ONTAP 9.12 Software NonEncryption - IPAv2 | All markets |
| BWUA | Lenovo ThinkSystem Storage ONTAP 9.13 Software Encryption - IPAv2 | All markets |
| BWUB | Lenovo ThinkSystem Storage ONTAP 9.13 Software NonEncryption - IPAv2 | All markets |
| C0S6 | Lenovo ThinkSystem Storage ONTAP 9.14 Software Encryption - IPAv2 | All markets |
| C0S7 | Lenovo ThinkSystem Storage ONTAP 9.14 Software NonEncryption - IPAv2 | All markets |

Software maintenance is included in the DG7000 warranty and support (see [Warranty and support](#) for details).

Extended ONTAP features

FabricPool is an optional extended feature. To obtain this feature license, order the part numbers as listed in the following table.

Note: Extended features are only available as field upgrades and are not orderable as part of a CTO configuration.

Table 9. Optional software features

| Part number | Feature code | Description | Quantity |
|-------------|--------------|--|------------------------------|
| 4P47A37057 | None* | DM Series FabricPool – 1TB Increment – 3 years | 1 per TB of storage capacity |
| 4P47A37288 | None* | DM Series FabricPool – 1TB Increment – 5 years | 1 per TB of storage capacity |

* Field upgrade only; no factory installation.

Configuration notes:

- The FabricPool feature is a cluster-wide, capacity-based license that is available for 3-year or 5-year subscription terms.
- No license is required when tiering to StorageGRID or ONTAP S3.

Ansible playbooks for DM/DG Series

Ansible Playbooks give customers the ability to quickly deploy and use DM/DG Series storage systems using a standard open source deployment tool. Each playbook executes a set of tasks to achieve a configuration/provisioning goal.

Lenovo has created playbooks that can be used with DM/DG Series storage systems to help with:

- Provisioning
- Configuring

To access the Ansible Playbooks for Lenovo ThinkSystem DM/DG Series storage systems, go to the following page:

<https://github.com/lenovo/ansible-dm-series-ontap>

Management

The Lenovo ThinkSystem DG7000 supports the following management interfaces:

- Lenovo ThinkSystem Storage Manager, a web-based interface via HTTPS for single-system management or centralized management of the cluster of systems, that runs on the storage system itself and requires only a supported browser (Microsoft Internet Explorer, Google Chrome, or Mozilla Firefox), so there is no need for a separate console or plug-in.
- Command line interface (CLI) via SSH or through serial console.
- Syslog, SNMP, and e-mail notifications.

Power supplies and cables

The ThinkSystem DG7000 4U controller enclosure ships with four redundant hot-swap 1600 W (100 - 240 V) Platinum AC power supplies, each with an IEC 320-C14 connector.

The ThinkSystem DG240N 2U24 SFF expansion enclosures ship with two redundant hot-swap 1600 W (100 - 240 V) Platinum AC power supplies, each with an IEC 320-C14 connector.

Each ThinkSystem DG Series enclosure requires the selection of two or four power cables, depending on the quantity of the power supplies in the enclosure.

The following table lists the rack power cable and line cord options that can be ordered for the DG7000 4U and DG240N 2U24 SFF enclosures (four or two power cords per enclosure).

Table 10. Power cables for DG7000 4U and DG240N 2U24 SFF enclosures

| Description | Part number | Feature code |
|--|-------------|--------------|
| Rack power cables | | |
| 1.0m, 13A/100-250V, C13 to IEC 320-C14 Rack Power Cable | 4L67A08367 | B0N5 |
| 1.2m, 16A/100-250V, 2 Short C13s to Short C20 Rack Power Cable | 47C2491 | A3SW |
| 1.5m, 13A/100-250V, C13 to IEC 320-C14 Rack Power Cable | 4L67A08368 | B0N6 |
| 2.0m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable | 4L67A08369 | 6570 |
| 2.5m, 16A/100-250V, 2 Long C13s to Short C20 Rack Power Cable | 47C2492 | A3SX |
| 2.8m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable | 4L67A08370 | 6400 |
| 2.8m, 16A/100-250V, 2 Short C13s to Long C20 Rack Power Cable | 47C2493 | A3SY |
| 4.1m, 16A/100-250V, 2 Long C13s to Long C20 Rack Power Cable | 47C2494 | A3SZ |
| 4.3m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable | 4L67A08371 | 6583 |
| Line cords | | |
| 2.8m, 10A/250V, C13 to AS/NZS 3112 Line Cord | 39Y7924 | 6211 |
| 2.8m, 10A/250V, C13 to BS 1363/A Line Cord | 39Y7923 | 6215 |
| 2.8m, 10A/250V, C13 to CEE7-VII Line Cord | 39Y7917 | 6212 |
| 2.8m, 10A/250V, C13 to CEI 23-16 Line Cord | 39Y7921 | 6217 |
| 2.8m, 10A/250V, C13 to CNS 10917-3 Line Cord | 81Y2375 | 6317 |
| 2.8m, 10A/250V, C13 to DK2-5a Line Cord | 39Y7918 | 6213 |
| 2.8m, 10A/250V, C13 to GB 2099.1 Line Cord | 39Y7928 | 6210 |
| 2.8m, 10A/250V, C13 to IRAM 2073 Line Cord | 39Y7930 | 6222 |
| 2.8m, 10A/250V, C13 to IS 6538 Line Cord | 39Y7927 | 6269 |
| 2.8m, 10A/250V, C13 to NBR 14136 Line Cord | 69Y1988 | 6532 |
| 2.8m, 10A/250V, C13 to NEMA 6-15P Line Cord | 46M2592 | A1RF |
| 2.8m, 10A/250V, C13 to SABS 164 Line Cord | 39Y7922 | 6214 |
| 2.8m, 10A/250V, C13 to SEV 1011-S24507 Line Cord | 39Y7919 | 6216 |
| 2.8m, 10A/250V, C13 to SI 32 Line Cord | 39Y7920 | 6218 |
| 2.8m, 12A/125V, C13 to JIS C-8303 Line cord | 46M2593 | A1RE |
| 2.8m, 12A/250V, C13 to JIS C-8303 Line Cord | 4L67A08357 | 6533 |
| 2.8m, 12A/250V, C13 to KS C8305 Line Cord | 39Y7925 | 6219 |
| 2.8m, 13A/125V, C13 to NEMA 5-15P Line Cord | 00WH545 | 6401 |
| 2.8m, 15A/125V, C13 to CNS 10917-3 Line Cord | 81Y2374 | 6402 |
| 4.3m, 10A/250V, C13 to AS/NZS 3112 Line Cord | 81Y2383 | 6574 |
| 4.3m, 10A/250V, C13 to BS 1363/A Line Cord | 81Y2377 | 6577 |
| 4.3m, 10A/250V, C13 to CEE7-VII Line Cord | 81Y2376 | 6572 |

| Description | Part number | Feature code |
|--|-------------|--------------|
| 4.3m, 10A/250V, C13 to CEI 23-16 Line Cord | 81Y2380 | 6493 |
| 4.3m, 10A/250V, C13 to CNS 10917-3 Line Cord | 81Y2389 | 6531 |
| 4.3m, 10A/250V, C13 to DK2-5a Line Cord | 81Y2382 | 6575 |
| 4.3m, 10A/250V, C13 to GB 2099.1 Line Cord | 81Y2378 | 6580 |
| 4.3m, 10A/250V, C13 to IRAM 2073 Line Cord | 81Y2384 | 6492 |
| 4.3m, 10A/250V, C13 to IS 6538 Line Cord | 81Y2386 | 6567 |
| 4.3m, 10A/250V, C13 to NBR 14136 Line Cord | 81Y2387 | 6404 |
| 4.3m, 10A/250V, C13 to NEMA 6-15P Line Cord | 4L67A08361 | 6373 |
| 4.3m, 10A/250V, C13 to SABS 164 Line Cord | 81Y2379 | 6576 |
| 4.3m, 10A/250V, C13 to SEV 1011-S24507 Line Cord | 81Y2390 | 6578 |
| 4.3m, 10A/250V, C13 to SI 32 Line Cord | 81Y2381 | 6579 |
| 4.3m, 12A/125V, C13 to JIS C-8303 Line Cord | 39Y7926 | 6335 |
| 4.3m, 12A/250V, C13 to JIS C-8303 Line Cord | 4L67A08362 | 6495 |
| 4.3m, 12A/250V, C13 to KS C8305 Line Cord | 81Y2385 | 6494 |
| 4.3m, 13A/125V, C13 to NEMA 5-15P Line Cord | 4L67A08360 | AX8A |
| 4.3m, 15A/125V, C13 to CNS 10917-3 Line Cord | 81Y2388 | 6530 |

Rack installation

The individually shipped ThinkSystem DG Series enclosures come with the following rail kits:

- DG7000: ThinkSystem Storage Rail Kit 4U60
- DG240N 2U24 SFF: ThinkSystem NVMe Rail Kit 4 post

The rack mount kits are listed in the following table.

Table 11. 4-post rack mount kit

| Description | Feature code | Quantity |
|---|--------------|----------|
| Lenovo ThinkSystem Storage Rail Kit 4U60 | BE28 | 1 |
| Lenovo ThinkSystem NVMe Rail Kit 4 post | B6Y6 | 1 |
| Lenovo ThinkSystem Storage Rack Mount Kit 2U24/4U60 | B38Y | 1 |

When the ThinkSystem DG Series enclosures are factory-integrated and shipped installed in a rack cabinet, the rack mount kits that support Ship-in-Rack (SIR) capabilities are derived by the configurator.

The SIR-capable rack mount kits are listed in the following table.

Table 12. 4-post SIR rack mount kits

| Description | Feature code | Quantity |
|---|--------------|----------|
| Lenovo ThinkSystem Storage Rail Kit 4U60 | BE28 | 1 |
| Lenovo ThinkSystem NVMe Adjustable Rail Kit (SIR) | B6Y7 | 1 |

The following table summarizes the rack mount kit features and specifications.

Table 13. Rack mount kit features and specifications summary

| Attribute | Screw-in fixed rail with adjustable depth | | | |
|---|--|---------------------------------------|---------------------------------------|---------------------------------------|
| | 2U24 NVMe | 2U24 NVMe SIR | 2U24 SAS SIR | 4U60 |
| Feature code | B6Y6 | B6Y7 | B6TH | BE28 |
| Enclosure support | DG240N | DG240N | DG240N | DM7100F |
| Rail type | Fixed (static) with adjustable depth | Fixed (static) with adjustable depth | Fixed (static) with adjustable depth | Fixed (static) with adjustable depth |
| Tool-less installation | No | No | No | No |
| In-rack maintenance | Yes* | Yes* | Yes* | Yes* |
| Ship-in-rack (SIR) | No | Yes | Yes | Yes |
| 1U PDU support | Yes | Yes | Yes | Yes |
| 0U PDU support | Limited** | Limited** | Limited** | Limited** |
| Rack type | IBM or Lenovo 4-post, IEC standard-compliant | | | |
| Mounting holes | Square or round | Square or round | Square or round | Square or round |
| Mounting flange thickness | 2 mm (0.08 in.) – 3.3 mm (0.13 in.) | 2 mm (0.08 in.) – 3.3 mm (0.13 in.) | 2 mm (0.08 in.) – 3.3 mm (0.13 in.) | 2 mm (0.08 in.) – 3.3 mm (0.13 in.) |
| Distance between front and rear mounting flanges [^] | 605 mm (23.8 in.) – 812.8 mm (32 in.) | 605 mm (23.8 in.) – 812.8 mm (32 in.) | 605 mm (23.8 in.) – 812.8 mm (32 in.) | 605 mm (23.8 in.) – 812.8 mm (32 in.) |

* The majority of the enclosure components can be serviced from the front or rear of the enclosure, which does not require the removal of the enclosure from the rack cabinet.

** If a 0U PDU is used, the rack cabinet must be at least 1000 mm (39.37 in.) deep for 2U24 enclosures, or at least 1200 mm (47.24 in.) deep for 4U enclosures.

[^] Measured when mounted on the rack, from the front surface of the front mounting flange to the rear most point of the rail.

Physical specifications

The ThinkSystem DG7000 controller enclosure has the following dimensions and weight (approximate):

- Height: 175 mm (6.9 in.)
- Width: 447 mm (17.6 in.)
- Depth: 828 mm (32.6 in.)
- Weight (fully configured): 49.2 kg (108.5 lb)

The ThinkSystem DG240N 2U24 SFF enclosures have the following dimensions and weight (approximate):

- Height: 87 mm (3.4 in.)
- Width: 447 mm (17.6 in.)
- Depth: 543 mm (21.4 in.)
- Weight (fully configured): 30.2 kg (66.7 lb)

Operating environment

The ThinkSystem DG7000 and DG240N 2U24 SFF enclosures are supported in the following environment:

- Air temperature:
 - Operating:
 - DG7000: 10 °C - 35 °C (50 °F - 95 °F)
 - DG240N 2U24 SFF: 5 °C - 45 °C (41 °F - 113 °F)
 - Non-operating: -40 °C - +70 °C (-40 °F - 158 °F)
 - Maximum altitude: 3050 m (10,000 ft)
- Relative humidity (non-condensing):
 - Operating:
 - DG7000: 8% - 80%
 - DG240N 2U24 SFF: 8% - 90%
 - Non-operating: 10% - 95%
- Electrical power:
 - DG7000
 - 100 to 127 (nominal) V AC; 50 Hz or 60 Hz; 16.12 A
 - 200 to 240 (nominal) V AC; 50 Hz or 60 Hz; 8.06 A
 - Maximum system power load: 1579 W
 - DG240N 2U24 SFF
 - 100 to 127 (nominal) V AC; 50 Hz or 60 Hz; 8.66 A
 - 200 to 240 (nominal) V AC; 50 Hz or 60 Hz; 4.33 A
 - Maximum system power load: 848 W
 - Heat dissipation:
 - DG7000: 5388 BTU/hour
 - DG240N 2U24 SFF: 2894 BTU/hour
- Acoustical noise emission:
 - DG7000: 8.5 bels
 - DG240N 2U24 SFF: 6.4 bels

Warranty and support

The DG7000 and DG240N expansion have a 3-year warranty based on the machine type of the system:

- DG7000 controller enclosure: 7DE5 (3-year warranty)
- DG240N expansion enclosure: 7Y62 (3-year warranty)

The standard warranty terms are customer-replaceable unit (CRU) and onsite (for field-replaceable units FRUs only) with standard call center support during normal business hours and 9x5 Next Business Day Parts Delivered.

Lenovo's additional support services provide a sophisticated, unified support structure for your data center, with an experience consistently ranked number one in customer satisfaction worldwide. Available offerings include:

- **Premier Support**

Premier Support provides a Lenovo-owned customer experience and delivers direct access to technicians skilled in hardware, software, and advanced troubleshooting, in addition to the following:

- Direct technician-to-technician access through a dedicated phone line
- 24x7x365 remote support
- Single point of contact service
- End to end case management
- Third-party collaborative software support
- Online case tools and live chat support
- On-demand remote system analysis

- **Warranty Upgrade (Preconfigured Support)**

Services are available to meet the on-site response time targets that match the criticality of your systems.

- 3, 4, or 5 years of service coverage
- 1-year or 2-year post-warranty extensions
- **Foundation Service:** 9x5 service coverage with next business day onsite response. YourDrive YourData is an optional extra (see below).
- **Essential Service:** 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select markets). Bundled with YourDrive YourData.
- **Advanced Service:** 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select markets). Bundled with YourDrive YourData.

- **Managed Services**

Lenovo Managed Services provides continuous 24x7 remote monitoring (plus 24x7 call center availability) and proactive management of your data center using state-of-the-art tools, systems, and practices by a team of highly skilled and experienced Lenovo services professionals.

Quarterly reviews check error logs, verify firmware & OS device driver levels, and software as needed. We'll also maintain records of latest patches, critical updates, and firmware levels, to ensure you systems are providing business value through optimized performance.

- **Technical Account Management (TAM)**

A Lenovo Technical Account Manager helps you optimize the operation of your data center based on a deep understanding of your business. You gain direct access to your Lenovo TAM, who serves as your single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time. In addition, your TAM will help proactively make service recommendations and manage your service relationship with Lenovo to make certain your needs are met.

- **Enterprise Server Software Support**

Enterprise Software Support is an additional support service providing customers with software support on Microsoft, Red Hat, SUSE, and VMware applications and systems. Around the clock availability for critical problems plus unlimited calls and incidents helps customers address challenges fast, without incremental costs. Support staff can answer troubleshooting and diagnostic questions, address product comparability and interoperability issues, isolate causes of problems, report defects to software vendors, and more.

- **YourDrive YourData**

Lenovo's YourDrive YourData is a multi-drive retention offering that ensures your data is always under your control, regardless of the number of drives that are installed in your Lenovo server. In the unlikely event of a drive failure, you retain possession of your drive while Lenovo replaces the failed drive part. Your data stays safely on your premises, in your hands. The YourDrive YourData service can be purchased in convenient bundles and is optional with Foundation Service. It is bundled with Essential Service and Advanced Service.

- **Health Check**

Having a trusted partner who can perform regular and detailed health checks is central to maintaining efficiency and ensuring that your systems and business are always running at their best. Health Check supports Lenovo-branded server, storage, and networking devices, as well as select Lenovo-supported products from other vendors that are sold by Lenovo or a Lenovo-Authorized Reseller.

Examples of region-specific warranty terms are second or longer business day parts delivery or parts-only base warranty.

If warranty terms and conditions include onsite labor for repair or replacement of parts, Lenovo will dispatch a service technician to the customer site to perform the replacement. Onsite labor under base warranty is limited to labor for replacement of parts that have been determined to be field-replaceable units (FRUs). Parts that are determined to be customer-replaceable units (CRUs) do not include onsite labor under base warranty.

If warranty terms include parts-only base warranty, Lenovo is responsible for delivering only replacement parts that are under base warranty (including FRUs) that will be sent to a requested location for self-service. Parts-only service does not include a service technician being dispatched onsite. Parts must be changed at customer's own cost and labor and defective parts must be returned following the instructions supplied with the spare parts.

Lenovo Service offerings are region-specific. Not all preconfigured support and upgrade options are available in every region. For information about Lenovo service upgrade offerings that are available in your region, refer to the following resources:

- Service part numbers in Lenovo Data Center Solution Configurator (DCSC):
<http://dcsc.lenovo.com/#/services>
- Lenovo Services Availability Locator
<http://lenovolocator.com/>

For service definitions, region-specific details, and service limitations, please refer to the following documents:

- Lenovo Statement of Limited Warranty for Infrastructure Solutions Group (ISG) Servers and System Storage
<http://pcsupport.lenovo.com/us/en/solutions/ht503310>
- Lenovo Data Center Services Agreement
<http://support.lenovo.com/us/en/solutions/ht116628>

Services

Lenovo Services is a dedicated partner to your success. Our goal is to reduce your capital outlays, mitigate your IT risks, and accelerate your time to productivity.

Note: Some service options may not be available in all markets or regions. For more information, go to <https://www.lenovo.com/services>. For information about Lenovo service upgrade offerings that are available in your region, contact your local Lenovo sales representative or business partner.

Here's a more in-depth look at what we can do for you:

- **Asset Recovery Services**

Asset Recovery Services (ARS) helps customers recover the maximum value from their end-of-life equipment in a cost-effective and secure way. On top of simplifying the transition from old to new equipment, ARS mitigates environmental and data security risks associated with data center equipment disposal. Lenovo ARS is a cash-back solution for equipment based on its remaining market value, yielding maximum value from aging assets and lowering total cost of ownership for your customers. For more information, see the ARS page, <https://lenovopress.com/lp1266-reduce-e-waste-and-grow-your-bottom-line-with-lenovo-ars>.

- **Assessment Services**

An Assessment helps solve your IT challenges through an onsite, multi-day session with a Lenovo technology expert. We perform a tools-based assessment which provides a comprehensive and thorough review of a company's environment and technology systems. In addition to the technology based functional requirements, the consultant also discusses and records the non-functional business requirements, challenges, and constraints. Assessments help organizations like yours, no matter how large or small, get a better return on your IT investment and overcome challenges in the ever-changing technology landscape.

- **Design Services**

Professional Services consultants perform infrastructure design and implementation planning to support your strategy. The high-level architectures provided by the assessment service are turned into low level designs and wiring diagrams, which are reviewed and approved prior to implementation. The implementation plan will demonstrate an outcome-based proposal to provide business capabilities through infrastructure with a risk-mitigated project plan.

- **Basic Hardware Installation**

Lenovo experts can seamlessly manage the physical installation of your server, storage, or networking hardware. Working at a time convenient for you (business hours or off shift), the technician will unpack and inspect the systems on your site, install options, mount in a rack cabinet, connect to power and network, check and update firmware to the latest levels, verify operation, and dispose of the packaging, allowing your team to focus on other priorities.

- **Deployment Services**

When investing in new IT infrastructures, you need to ensure your business will see quick time to value with little to no disruption. Lenovo deployments are designed by development and engineering teams who know our Products & Solutions better than anyone else, and our technicians own the process from delivery to completion. Lenovo will conduct remote preparation and planning, configure & integrate systems, validate systems, verify and update appliance firmware, train on administrative tasks, and provide post-deployment documentation. Customer's IT teams leverage our skills to enable IT staff to transform with higher level roles and tasks.

- **Integration, Migration, and Expansion Services**

Move existing physical & virtual workloads easily, or determine technical requirements to support increased workloads while maximizing performance. Includes tuning, validation, and documenting ongoing run processes. Leverage migration assessment planning documents to perform necessary migrations.

Regulatory compliance

The ThinkSystem DG Series enclosures conform to the following regulations:

- FCC Part 15, Class A; UL 60950-1
- ICES-003, Class A; CAN/CSA-C22.2 60950-1
- NOM
- CE Mark (EN55032 Class A, EN55024, IEC/EN60950-1, IEC/EN62368-1); ROHS Directive 2011/65/EU
- EAC
- CCC GB 4943.1, GB 17625.1, GB 9254 Class A; CELP; CECP
- VCCI, Class A
- CNS 13438, Class A; CNS 14336-1
- KN32/35, Class A
- AS/NZS CISPR 22 Class A

Interoperability

Lenovo provides end-to-end storage compatibility testing to deliver interoperability throughout the network. The Lenovo ThinkSystem DG7000 supports attachment to Lenovo servers by using NVMe over Fibre Channel (NVMe/FC), NAS (NFS and CIFS/SMB), iSCSI, and Fibre Channel storage connectivity protocols.

For end-to-end storage configuration support, refer to the Lenovo Storage Interoperation Center (LSIC): <https://datacentersupport.lenovo.com/us/en/lxic>

Use the LSIC to select the known components of your configuration and then get a list all other supported combinations, with details about supported hardware, firmware, operating systems, and drivers, plus any additional configuration notes. View results on screen or export them to Excel.

Cluster interconnect

The following table lists the Ethernet storage switch that can be used with the Lenovo ThinkSystem DG7000 for cluster interconnect and MetroCluster IP configurations.

Table 14. Ethernet storage switch

| Description | Part number |
|--|-------------|
| Mellanox SN2100 16 Port, QSFP28, 100GbE Switch, Rear to Front (PSE) Exhaust | 7DBUCTO1WW |
| Mellanox SN2100 16 port, QSFP28, 100GbE Switch, Front to Rear (oPSE) Exhaust | 7DBUCTO2WW |

For more information, see the NVIDIA SN2100 16-port 100Gb Ethernet Storage Switch Article: <https://lenovopress.lenovo.com/lp1756-nvidia-sn2100-100gb-ethernet-storage-switch>

Fibre Channel SAN switches

Lenovo offers the ThinkSystem DB Series of Fibre Channel SAN switches for high-performance storage expansion. See the DB Series product guides for models and configuration options:

- ThinkSystem DB Series SAN Switches:
<https://lenovopress.com/storage/switches/rack#rt=product-guide>

Rack cabinets

The following table lists the supported rack cabinets.

Table 15. Rack cabinets

| Part number | Description |
|-------------|--|
| 93072RX | 25U Standard Rack (1000mm) |
| 93072PX | 25U Static S2 Standard Rack (1000mm) |
| 7D6DA007WW | ThinkSystem 42U Onyx Primary Heavy Duty Rack Cabinet (1200mm) |
| 7D6DA008WW | ThinkSystem 42U Pearl Primary Heavy Duty Rack Cabinet (1200mm) |
| 1410-O42 | Lenovo EveryScale 42U Onyx Heavy Duty Rack Cabinet |
| 1410-P42 | Lenovo EveryScale 42U Pearl Heavy Duty Rack Cabinet |
| 93604PX | 42U 1200mm Deep Dynamic Rack |
| 93614PX | 42U 1200mm Deep Static Rack |
| 93634PX | 42U 1100mm Dynamic Rack |
| 93634EX | 42U 1100mm Dynamic Expansion Rack |
| 93074RX | 42U Standard Rack (1000mm) |
| 7D6EA009WW | ThinkSystem 48U Onyx Primary Heavy Duty Rack Cabinet (1200mm) |
| 7D6EA00AWW | ThinkSystem 48U Pearl Primary Heavy Duty Rack Cabinet (1200mm) |
| 1410-O48 | Lenovo EveryScale 48U Onyx Heavy Duty Rack Cabinet |
| 1410-P48 | Lenovo EveryScale 48U Pearl Heavy Duty Rack Cabinet |

For specifications about these racks, see the Lenovo Rack Cabinet Reference, available from: <https://lenovopress.com/lp1287-lenovo-rack-cabinet-reference>

For more information, see the list of Product Guides in the Rack cabinets category: <https://lenovopress.com/servers/options/racks>

Power distribution units

The following table lists the power distribution units (PDUs) that are offered by Lenovo.

Table 16. Power distribution units

| Part number | Feature code | Description | ANZ | ASEAN | Brazil | EET | MEA | RUCIS | WE | HTK | INDIA | JAPAN | LA | NA | PRC |
|---|--------------|---|-----|-------|--------|-----|-----|-------|----|-----|-------|-------|----|----|-----|
| 0U Basic PDUs | | | | | | | | | | | | | | | |
| 00YJ776 | ATZY | 0U 36 C13/6 C19 24A 1 Phase PDU | N | Y | Y | N | N | N | N | N | N | Y | Y | Y | N |
| 0U Switched and Monitored PDUs | | | | | | | | | | | | | | | |
| 00YJ783 | AU04 | 0U 12 C13/12 C19 Switched and Monitored 48A 3 Phase PDU | N | N | Y | N | N | N | Y | N | N | Y | Y | Y | N |
| 00YJ781 | AU03 | 0U 20 C13/4 C19 Switched and Monitored 24A 1 Phase PDU | N | N | Y | N | Y | N | Y | N | N | Y | Y | Y | N |
| 1U Switched and Monitored PDUs | | | | | | | | | | | | | | | |
| 4PU7A81117 | BNDV | 1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - ETL | N | N | N | N | N | N | N | N | N | N | N | Y | N |
| 4PU7A77467 | BLC4 | 1U 18 C19/C13 Switched and Monitored 80A 3P Delta PDU | N | N | N | N | N | N | N | N | N | Y | N | Y | N |
| 4PU7A77469 | BLC6 | 1U 12 C19/C13 switched and monitored 60A 3P Delta PDU | N | N | N | N | N | N | N | N | N | N | N | Y | N |
| 4PU7A77468 | BLC5 | 1U 12 C19/C13 switched and monitored 32A 3P WYE PDU | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y | Y |
| 4PU7A81118 | BNDW | 1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - CE | Y | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | N | Y |
| 1U Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets) | | | | | | | | | | | | | | | |
| 71763NU | 6051 | Ultra Density Enterprise C19/C13 PDU 60A/208V/3PH | N | N | Y | N | N | N | N | N | N | Y | Y | Y | N |
| 71762NX | 6091 | Ultra Density Enterprise C19/C13 PDU Module | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 1U C13 Enterprise PDUs (12x IEC 320 C13 outlets) | | | | | | | | | | | | | | | |
| 39Y8941 | 6010 | DPI C13 Enterprise PDU Module (WW) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 1U Front-end PDUs (3x IEC 320 C19 outlets) | | | | | | | | | | | | | | | |
| 39Y8938 | 6002 | DPI Single-phase 30A/120V Front-end PDU (US) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 39Y8939 | 6003 | DPI Single-phase 30A/208V Front-end PDU (US) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 39Y8934 | 6005 | DPI Single-phase 32A/230V Front-end PDU (International) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 39Y8940 | 6004 | DPI Single-phase 60A/208V Front-end PDU (US) | Y | N | Y | Y | Y | Y | Y | N | N | Y | Y | Y | N |
| 39Y8935 | 6006 | DPI Single-phase 63A/230V Front-end PDU (International) | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 1U NEMA PDUs (6x NEMA 5-15R outlets) | | | | | | | | | | | | | | | |
| 39Y8905 | 5900 | DPI 100-127V NEMA PDU | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| Line cords for 1U PDUs that ship without a line cord | | | | | | | | | | | | | | | |

| Part number | Feature code | Description | ANZ | ASEAN | Brazil | EET | MEA | RUCIS | WE | HTK | INDIA | JAPAN | LA | NA | PRC |
|-------------|--------------|---|-----|-------|--------|-----|-----|-------|----|-----|-------|-------|----|----|-----|
| 40K9611 | 6504 | 4.3m, 32A/380-415V, EPDU/IEC 309 3P+N+G 3ph wye (non-US) Line Cord | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 40K9612 | 6502 | 4.3m, 32A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 40K9613 | 6503 | 4.3m, 63A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 40K9614 | 6500 | 4.3m, 30A/208V, EPDU to NEMA L6-30P (US) Line Cord | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 40K9615 | 6501 | 4.3m, 60A/208V, EPDU to IEC 309 2P+G (US) Line Cord | N | N | Y | N | N | N | Y | N | N | Y | Y | Y | N |
| 40K9617 | 6505 | 4.3m, 32A/230V, Souriau UTG Female to AS/NZ 3112 (Aus/NZ) Line Cord | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |
| 40K9618 | 6506 | 4.3m, 32A/250V, Souriau UTG Female to KSC 8305 (S. Korea) Line Cord | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y | Y |

For more information, see the Lenovo Press documents in the PDU category:
<https://lenovopress.com/servers/options/pdu>

Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are offered by Lenovo.

Table 17. Uninterruptible power supply units

| Part number | Description |
|-------------|--|
| 55941AX | RT1.5kVA 2U Rack or Tower UPS (100-125VAC) |
| 55941KX | RT1.5kVA 2U Rack or Tower UPS (200-240VAC) |
| 55942AX | RT2.2kVA 2U Rack or Tower UPS (100-125VAC) |
| 55942KX | RT2.2kVA 2U Rack or Tower UPS (200-240VAC) |
| 55943AX | RT3kVA 2U Rack or Tower UPS (100-125VAC) |
| 55943KX | RT3kVA 2U Rack or Tower UPS (200-240VAC) |
| 55945KX | RT5kVA 3U Rack or Tower UPS (200-240VAC) |
| 55946KX | RT6kVA 3U Rack or Tower UPS (200-240VAC) |
| 55948KX | RT8kVA 6U Rack or Tower UPS (200-240VAC) |
| 55949KX | RT11kVA 6U Rack or Tower UPS (200-240VAC) |
| 55948PX | RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) |
| 55949PX | RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) |
| 55943KT† | ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets) |
| 55943LT† | ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets) |
| 55946KT† | ThinkSystem RT6kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output) |
| 5594XKT† | ThinkSystem RT10kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output) |

† Only available in China and the Asia Pacific market.

For more information, see the list of Product Guides in the UPS category:

<https://lenovopress.com/servers/options/ups>

Lenovo Financial Services

Lenovo Financial Services reinforces Lenovo's commitment to deliver pioneering products and services that are recognized for their quality, excellence, and trustworthiness. Lenovo Financial Services offers financing solutions and services that complement your technology solution anywhere in the world.

We are dedicated to delivering a positive finance experience for customers like you who want to maximize your purchase power by obtaining the technology you need today, protect against technology obsolescence, and preserve your capital for other uses.

We work with businesses, non-profit organizations, governments and educational institutions to finance their entire technology solution. We focus on making it easy to do business with us. Our highly experienced team of finance professionals operates in a work culture that emphasizes the importance of providing outstanding customer service. Our systems, processes and flexible policies support our goal of providing customers with a positive experience.

We finance your entire solution. Unlike others, we allow you to bundle everything you need from hardware and software to service contracts, installation costs, training fees, and sales tax. If you decide weeks or months later to add to your solution, we can consolidate everything into a single invoice.

Our Premier Client services provide large accounts with special handling services to ensure these complex transactions are serviced properly. As a premier client, you have a dedicated finance specialist who manages your account through its life, from first invoice through asset return or purchase. This specialist develops an in-depth understanding of your invoice and payment requirements. For you, this dedication provides a high-quality, easy, and positive financing experience.

For your region-specific offers, please ask your Lenovo sales representative or your technology provider about the use of Lenovo Financial Services. For more information, see the following Lenovo website:

<https://www.lenovo.com/us/en/landingpage/lenovo-financial-services/>

Seller training courses

The following sales training courses are offered for employees and partners (login required). Courses are listed in date order.

- 1. Lenovo Data Center Product Portfolio**
2024-04-22 | 20 minutes | Employees and Partners

This course introduces the Lenovo data center portfolio, and covers servers, storage, storage networking, and software-defined infrastructure products. After completing this course about Lenovo data center products, you will be able to identify product types within each data center family, describe Lenovo innovations that this product family or category uses, and recognize when a specific product should be selected.

Published: 2024-04-22

Length: 20 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW1110r7

2. **VTT Data Management How to sell storage - April 2024**

2024-04-10 | 60 minutes | Employees Only

In this course, you will know:

- Why do we sell storage?
- What are the basics you need to get an opportunity rolling?
- Why Lenovo for Storage?
- What is happening in the market today?
- How to determine traction?

Published: 2024-04-10

Length: 60 minutes

Employee link: [Grow@Lenovo](#)

Course code: DVDAT209

3. **ONTAP Technical Positioning**

2024-03-14 | 45 minutes | Employees and Partners

This course focuses on enabling you to interpret the technical market trends and challenges that ONTAP customers face. You also learn to ask qualifying questions that identify which industries, companies, and customer contacts are appropriate targets for ONTAP software. Module two covers explaining ONTAP features and functionality and enabling you to strengthen ONTAP marketing claims with technical details.

Learning Objectives:

- Interpret the technical market trends and challenges that ONTAP customers face
- Ask qualifying questions that identify which industries, companies, and customer contacts are appropriate targets for ONTAP software
- Explain ONTAP features and functionality
- Strengthen ONTAP marketing claims with technical details

Published: 2024-03-14

Length: 45 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DDMT200r2

4. **Data management Overview**

2024-03-14 | 25 minutes | Employees and Partners

After completing this course you will be able to:

1. Know more about the data management trends and challenges
2. Understand the data management portfolio
3. Find out how data drives business value

Published: 2024-03-14

Length: 25 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DSTOO201

5. **VTT ONTAP 9.14.1 and Bundle Change Update - February 2024**

2024-03-07 | 25 minutes | Employees Only

In this course, you will know more about:

- The new Features of ONTAP 9.14.1 update
- ONTAP Bundle Update

Published: 2024-03-07

Length: 25 minutes

Employee link: Grow@Lenovo

Course code: DVDAT207

6. **Family Portfolio: Storage**

2024-02-02 | 15 minutes | Employees and Partners

This course covers products in the Lenovo storage portfolio, from storage servers to direct-access storage through storage systems.

After completing this course about the Storage family, the learner will be able to identify products within the family, describe the features of this product family, and recognize when a specific product should be selected.

Published: 2024-02-02

Length: 15 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: SXSU1201r16

7. **VTT ONTAP 9.13.1 and Bundle Change Update - November 2023**

2023-11-14 | 60 minutes | Employees Only

In this course, you will know more about:

- The new Features of ONTAP 9.13.1 update
- ONTAP Bundle Update

Published: 2023-11-14

Length: 60 minutes

Employee link: Grow@Lenovo

Course code: DVDAT205

8. **VTT The Benefits of Scale Out Clustering with DM/DG - September 2023**

2023-09-12 | 60 minutes | Employees Only

In this course, you will know more about:

- What is scale out?
- Hardware benefits
- Administrative benefits
- Scale out Features

Published: 2023-09-12

Length: 60 minutes

Employee link: Grow@Lenovo

Course code: DVDAT204

9. **Partner Technical Webinar - Storage Portfolio Update DG\DM3010H and LSST**

2023-08-23 | 60 minutes | Employees and Partners

In this 60-minute replay, Mark Clayton, Lenovo Principal Storage Architect, discusses the new additions to the storage portfolio, the DG5000 / DG7000, and the DM3010H. Also, as a bonus, we cover the Lenovo Storage Sizing Tool affectionately known as LSST.

Published: 2023-08-23

Length: 60 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: 081823

10. **VTT The new ThinkSystem DG storage product - August 2023**

2023-08-16 | 60 minutes | Employees Only

Introduce and explore the new ThinkSystem DG storage product based on the NetApp DM. This product features QLC SSDs focused on improved sustainability standards and workload consolidation.

Published: 2023-08-16

Length: 60 minutes

Employee link: [Grow@Lenovo](#)

Course code: DVDAT203

11. **Lenovo Data Center Product Portfolio**

2023-07-21 | 15 minutes | Employees and Partners

This course introduces the Lenovo data center portfolio, and covers servers, storage, storage networking, and software-defined infrastructure products. After completing this course about Lenovo data center products, you will be able to identify product types within each data center family, describe Lenovo innovations that this product family or category uses, and recognize when a specific product should be selected.

Published: 2023-07-21

Length: 15 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW1110r6

Related publications and links

For more information, see the following resources:

- Lenovo ThinkSystem DG and DM Series product page
<https://www.lenovo.com/us/en/c/data-center/storage/unified-storage>
- Lenovo Data Center Solution Configurator
<http://dcsc.lenovo.com>
- ThinkSystem DG and DM Series documentation
http://thinksystem.lenovofiles.com/help/topic/ontap_software/overview.html
- ThinkSystem DG Series datasheet
<https://lenovopress.lenovo.com/datasheet/ds0170-thinksystem-dg-series>
- ONTAP Ransomware Protection
https://thinksystem.lenovofiles.com/storage/help/topic/ontap_anti-ransomware/anti-ransomware.pdf
- ThinkSystem DM Series Installation Videos and Video Tutorials
https://www.youtube.com/playlist?list=PLlQclfVNrzcBW55-7IAe7_Our6nMQxak
- Lenovo Data Center Support
<http://datacentersupport.lenovo.com>

Related product families

Product families related to this document are the following:

- [DG Series Storage](#)
- [External Storage](#)
- [Lenovo SAN Storage](#)

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