Lenovo ThinkSystem DM7000F Unified Flash Storage Array

Product Guide (withdrawn product)

Lenovo ThinkSystem DM7000F 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 DM7000F delivers enterprise-class storage management capabilities with a wide choice of host connectivity options, flexible drive configurations, and enhanced data management features, including support for NVMe over Fabrics. The ThinkSystem DM7000F 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.

ThinkSystem DM7000F models are 3U rack-mount controller enclosures that include two controllers, and 256 GB RAM and 16 GB battery-backed NVRAM (128 GB RAM and 8 GB NVRAM per controller). Universal 1/10 GbE NAS/iSCSI or 4/8/16 Gb Fibre Channel (FC) ports and 1/10 GbE RJ-45 ports provide base host connectivity, with an option for additional 1/10 GbE or 40 GbE NAS/iSCSI, or 8/16/32 Gb FC connections with the adapter cards.

A single ThinkSystem DM7000F Storage Array scales up to 384 SFF solid-state drives (SSDs) with the attachment of Lenovo ThinkSystem DM240S 2U24 SFF Expansion Enclosures.

Figure 1. Lenovo ThinkSystem DM7000F

Up to 12 DM7000F Storage Arrays can be combined into a clustered system in a NAS environment, or up to 6 DM7000F Storage Arrays can be combined into a clustered system in a SAN environment.

Did you know?

The ThinkSystem DM7000F offers end-to-end NVMe storage connectivity with NVMe over Fabrics (NVMeOF) and NVMe drives by implementing NVMe/FC with 32 Gb Fibre Channel host interfaces.

A single DM7000F scales up to 5.89 PB of raw storage capacity. A cluster of the DM7000F storage systems scales up to 70.7 PB for NAS or up to 35.3 PB for SAN environments.

The DM7000F offers unified file and block storage connectivity with support for 1 GbE, 10 GbE, and 40 GbE NAS and iSCSI, and 8 Gb, 16 Gb, and 32 Gb Fibre Channel, and 32 Gb NVMe/FC protocols at the same time.

Key features

The ThinkSystem DM7000F offers the following key features and benefits:

- All-flash array capabilities to meet the demand for higher speed storage and provide higher IOPs and bandwidth with lower power usage and total cost of ownership than hybrid or HDD-based solutions.
- Scalable storage with dual active/active controller configurations for availability and performance.
- NVMe over Fabrics helps achieve up to two times higher performance at a half of the latency.
- 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 client needs with support for unified NAS and SAN storage protocols, including 1/10 GbE and 40 GbE NAS and iSCSI, 8/16/32 Gb Fibre Channel, and 32 Gb NVMe over Fibre Channel (NVMe/FC).
- 12 Gb SAS drive-side connectivity with multipathing with up to 24x 2.5-inch small form factor (SFF) drives in the 2U24 SFF expansion enclosures.
- Scalability to up to 384 SFF drives with the attachment of the ThinkSystem DM240S 2U24 SFF expansion enclosures to satisfy growing needs for storage capacity and performance.
- A 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 functions, including WORM (write once, read many) data protection (SnapLock) and object storage tiering (FabricPool).
- Scale-out clustering of up to 12 ThinkSystem DM Series storage systems for NAS connectivity or up to six DM Series storage systems for SAN connectivity.
- Intuitive, web-based GUI for easy system setup and management.
- Lenovo XClarity support for centralized systems management of Lenovo x86 servers, switches, and storage, which provides automated agent-less discovery, inventory, monitoring, and additional platform-specific functions across multiple systems.
- Designed for 99.9999% availability with redundant hot-swap components, including controllers and I/O modules, power supplies, and non-disruptive firmware upgrades.
- Certified Enterprise Storage for SAP HANA Tailored Data center Integration (TDI).
- Certified storage for Oracle VM.
- Certified storage for Citrix XenServer: http://hcl.xenserver.org/storage/910/Lenovo_DM_Series.

The ThinkSystem DM7000F supports attachment of up to 16 ThinkSystem DM240S 2U24 SFF expansion enclosures. The expansion enclosures support 2.5-inch capacity-optimized (1 drive write per day [DWD]) 960 GB, 3.84 TB, 7.68 TB, and 15.36 TB SAS hot-swap SSDs. More drives and expansion enclosures are designed to be dynamically added with virtually no downtime, which helps to quickly and seamlessly respond to ever-growing capacity demands.

The ThinkSystem DM7000F offers high levels of system and data availability with the following features:

- Dual-active controllers (high availability pair) with automatic load balancing and failover
- Mirrored, battery-backed controller NVRAM
- Dual-port SAS SSDs with 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, 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 DM7000F controller enclosure.

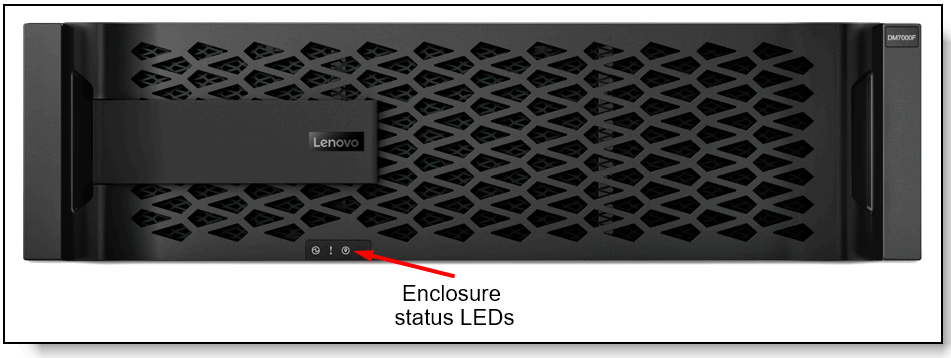


Figure 2. ThinkSystem DM7000F controller enclosure front view

The front of the ThinkSystem DM7000F controller enclosure includes the LEDs that display the status of the system.

The following figure shows the rear of the ThinkSystem DM7000F 3U controller enclosure.

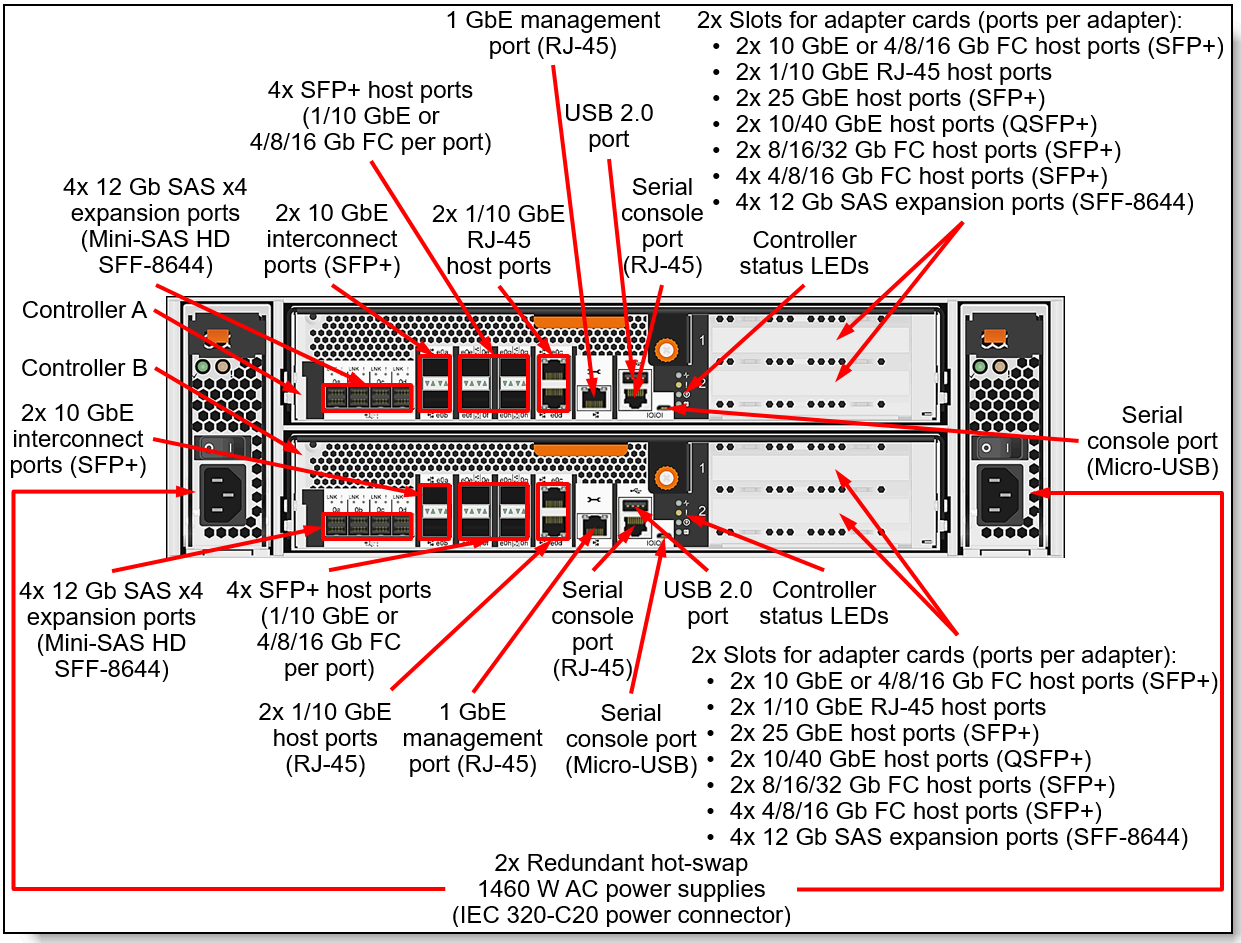


Figure 3. ThinkSystem DM7000F 3U controller enclosure rear view

The rear of the ThinkSystem DM7000F 3U controller enclosure includes the following components:

- Two redundant hot-swap controllers, each with the following ports:
  - Two 10 GbE SFP+ interconnect ports for HA pair and cluster connections.
  - Four SFP+ base host ports for 1/10 Gb GbE or 8/16 Gb FC connectivity.
  - Two 1/10 GbE RJ-45 base host ports for NAS or iSCSI connectivity.
  - Four 12 Gb SAS x4 ports (Mini-SAS HD SFF-8644) for expansion connectivity.
  - Two slots for the following optional adapter cards (ports per adapter card):
    - Two 10 GbE (NAS or iSCSI) or 4/8/16 Gb FC SFP+ host ports.
    - Two 1/10 GbE RJ-45 host ports (NAS or iSCSI).
    - Two 10/40 GbE QSFP+ host ports (NAS or iSCSI).
    - Two 8/16/32 Gb FC SFP+ host ports (32Gb ports also support NVNe/FC)(SW SFP+ transceivers included).
    - Four 4/8/16 Gb FC SFP+ host ports (SW SFP+ transceivers included).
    - Four 12 Gb SAS x4 expansion ports (Mini-SAS HD SFF-8644).
    - Two 25 GbE iWARP SFP28 host ports (MetroCluster)
  - 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 (for ONTAP software installation or booting)
- Two redundant hot-swap 1460 W (100 - 240 V) AC power supplies (IEC 320-C14 power connector) with integrated cooling fans.

The following figure shows the front of the ThinkSystem DM240S 2U SFF expansion enclosure.

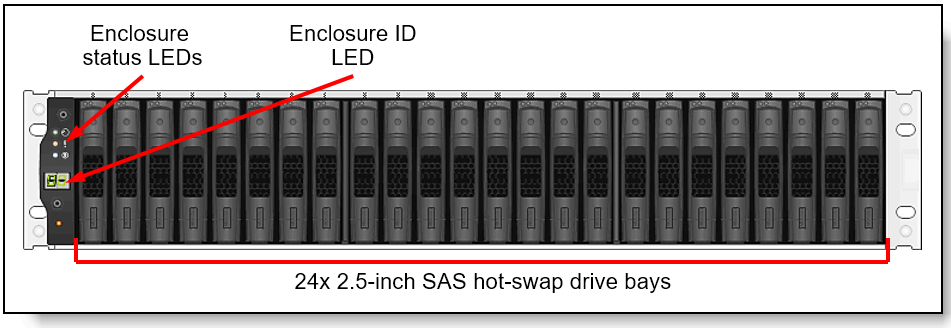


Figure 4. ThinkSystem DM240S expansion enclosure front view

The front of the ThinkSystem DM240S 2U SFF 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 DM240S 2U expansion enclosure.

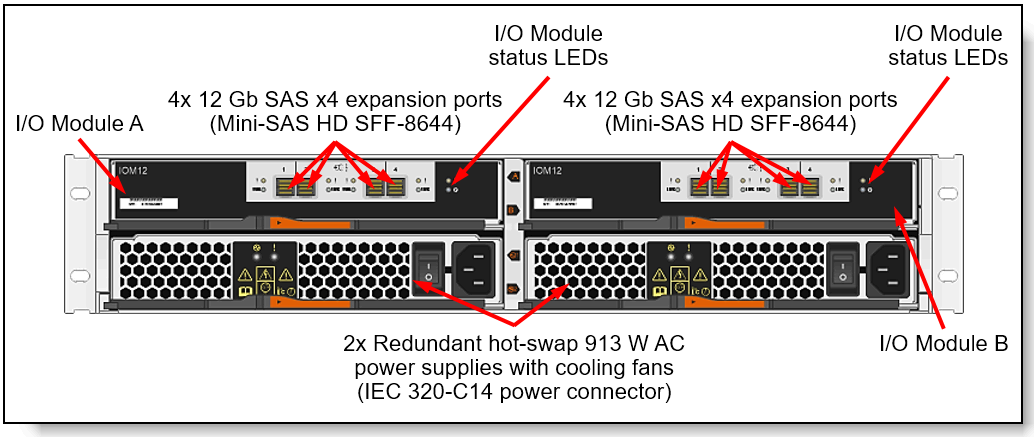


Figure 5. ThinkSystem DM240S 2U expansion enclosure rear view

The rear of the ThinkSystem DM240S 2U expansion enclosure includes the following components:

- Two redundant hot-swap I/O Modules; each I/O Module provides four 12 Gb SAS x4 expansion ports (Mini-SAS HD SFF-8644) for connections to the controller enclosures and for connecting the expansion enclosures between each other.
- Two redundant hot-swap 913 W (100 - 240 V) AC power supplies (IEC 320-C14 power connector) with integrated cooling fans.
- I/O Module status LEDs.

System specifications

The following table lists the ThinkSystem DM7000F storage system specifications.

Note: The supported hardware options, software features, and interoperability listed in this product guide are based on the ONTAP software version 9.7. For details about specific software releases that introduced support for certain hardware options and software features, refer to the Release notes of the particular software release for the ThinkSystem DM7000F that can be found at:
http://datacentersupport.lenovo.com

Table 1. ThinkSystem DM7000F system specifications

Attribute	Specification
Form factor	• DM7000F controller enclosure (machine type 7Y40): 3U rack mount. • DM240S 2U24 SFF expansion enclosure (machine types 7Y58, 7D7Y): 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/cluster interconnect ports	4x 10 GbE SFP+ ports (DAC cables or SW fiber optics [LC]) (2 ports per controller).
RAID levels	RAID-4, RAID-DP, RAID-TEC.
Controller memory	256 GB RAM per system (128 GB per controller). 16 GB battery-backed NVRAM per system (8 GB per controller) mirrored between the controllers.
Drive bays	Up to 384 SFF hot-swap drive bays (Up to 16 2U24 SFF expansion enclosures).
Drive technology	12 Gb SAS SSDs.

Attribute	Specification
Drive expansion connectivity	• 4x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) base expansion ports and 4x or 8x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) additional expansion ports with one or two SAS adapter cards on each of two controllers in the controller enclosure for the attachment of the expansion enclosures. • 4x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) expansion ports on each of two I/O modules in the expansion enclosure for the attachment to the controller enclosure and daisy chaining of the expansion enclosures.
Drives	960 GB, 3.84 TB, 7.68 TB, and 15.36 TB SAS SSDs (1 DWD).
Storage capacity	Up to 5.89 PB (384x 15.36 TB SFF SSDs).
Storage protocols	• NAS (File access): NFS, CIFS/SMB • SAN (Block access): iSCSI, FC, NVMe/FC
Host connectivity	Base ports (per controller enclosure): • 8x 1 GbE (RJ-45)/10 GbE (DAC cable or SW fiber optic cable, LC) or 8/16 Gb FC (SW fiber optic cable, LC) SFP+ host ports (4 ports per controller) Optional additional ports on two or four adapter cards (one or two adapter cards per controller) with the following ports per adapter card: • 2x 10 GbE or 4/8/16 Gb FC SFP+ (DAC cable [10 GbE] or SW fiber optic cable, LC) • 2x 1/10 GbE RJ-45 ports (UTP Category 6/6a) • 2x 10/40 GbE QSFP+ (DAC cable or SW fiber optic cable, MPO) • 2x 8/16/32 Gb FC SFP+ host ports (SW fiber optic cable, LC) • 4x 4/8/16 Gb FC SFP+ host ports (SW fiber optic cable, LC)
MetroCluster	Optional adapter that is used for IP MetroCluster configurations: • 2x 25 GbE iWARP SFP28 (DAC cable or SW fiber optic cable, LC)
Host operating systems	Microsoft Windows Server 2012 R2, 2016, and 2019; Red Hat Enterprise Linux (RHEL) 6, 7, and 8; SUSE Linux Enterprise Server (SLES) 11, 12, and 15; VMware vSphere 6.0, 6.5, 6.7, and 7.0.
Performance*	Up to 350 000 random read IOPS (8 KB blocks).

Configuration maximums**	• Maximum raw storage capacity: 5.89 PB
	• Maximum aggregate size: 400 TB
	• Maximum number of FlexVol volumes per controller: 1000
	• Maximum FlexVol volume size: 100 TB
	• Maximum number of LUNs per controller: 12 288
	• Maximum number of LUNs per FlexVol volume: 512
	• Maximum LUN size: 16 TB
	• Maximum number of drives in a RAID group (data + parity drives):
	  ◦ RAID 4: 14 (13 + 1 SAS SSDs)
	  ◦ RAID-DP: 28 (26 + 2 SAS SSDs)
	  ◦ RAID-TEC: 29 (26 + 3 SAS SSDs)
	• Maximum number of initiators per controller: 4096
	• Maximum number of snapshots per FlexVol volume: 1023

Cooling	Redundant cooling with the fans that are built into power supplies.
Power supply	Two redundant hot-swap 1460 W (100 - 240 V) (DM7000F 3U controller enclosure) or 913 W (100 - 240 V) (DM240S 2U24 enclosure) Platinum AC power supplies.
Hot-swap parts	Controllers, I/O modules, drives, power supplies, and SFP+/QSFP+ transceivers and DAC cables.
Management ports	• 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.
Management interfaces	ThinkSystem Storage Manager web-based GUI; SSH CLI; Serial console CLI; SNMP, email, and syslog alerts; optional Lenovo XClarity.
Security features	Secure Socket Layer (SSL), Secure Shell (SSH), user level security, role-based access control (RBAC), LDAP authentication.

Attribute	Specification
Warranty and support	Three-, four-, or five-year customer-replaceable unit and onsite limited warranty with selectable service levels: 9x5 service coverage next business day (NBD) onsite response (Foundation) or 24x7 service coverage with 4-hour onsite response (Essential). Premier Support is also available. Software support is included in the Foundation or Essential Service for the duration of the warranty period.
Dimensions	Controller enclosure: • Height: 130 mm (5.1 in.) • Width: 447 mm (17.6 in.) • Depth: 608 mm (23.9 in.) 2U24 SFF expansion enclosure: • Height: 85 mm (3.4 in.) • Width: 449 mm (17.7 in.) • Depth: 484 mm (19.1 in.)
Weight	• Controller enclosure (fully configured): 34.5 kg (76.1 lb) • 2U24 SFF expansion enclosure (fully configured): 24.4 kg (53.8 lb)

* Estimated performance based on internal measurements.
** 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 ThinkSystem DM7000F Unified Flash Storage Array 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 ThinkSystem DM7000F.

Table 2. ThinkSystem DM7000F CTO base models

Description	Machine Type/Model	Feature code
Lenovo ThinkSystem DM Series 3U Chassis (2x PSUs, No controller modules)	7Y40CTO1WW	B38K

Configuration note: Two DM7000 controllers (feature code B39H) are selected by default in the configurator, and the selection cannot be changed.

The models of the ThinkSystem DM7000F ship with the following items:

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

Controllers

The ThinkSystem DM7000F controller enclosures ship with two DM7000 controllers. A *controller* provides interfaces for host connectivity, management, and internal drives, and it runs ONTAP storage management software. Each DM7000 controller enclosure provides 256 GB RAM and 16 GB battery-backed NVRAM (128 GB RAM and 8 GB NVRAM per controller).

The ThinkSystem DM7000F controller enclosures ship with four interconnect 10 GbE SFP+ ports (two ports per controller) to cable a directly-connected dual-controller HA pair or for switched cluster interconnect with multiple dual-controller HA pairs. 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 DM7000F controller enclosures ship with eight universal SFP+ ports (four ports per controller) for 1/10 GbE NAS / iSCSI or 4/8/16 Gb FC host connectivity and two 1/10 GbE RJ-45 ports for NAS / iSCSI host connectivity. Each controller also has two expansion slots for optional adapter cards.

Each DM7000F controller enclosure also provides eight integrated 12 Gb SAS x4 expansion ports (Mini-SAS HD SFF-8644 connectors) (four ports per controller) for the attachment of the ThinkSystem DM Series expansion enclosures.

The following interfaces can be added to the ThinkSystem DM7000F controller enclosures with optional adapter cards (ports per adapter card):

- Host interfaces
    - 2x 10 GbE or 4/8/16 Gb FC SFP+ ports for NAS, iSCSI, or FC connectivity (for FC connectivity, 16 Gb FC SW SFP+ transceivers [LC connectors] included; for 10 GbE connectivity, optical transceivers or DAC cables should be purchased for the adapter card)
    - 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)
    - 2x 10/40 GbE QSFP+ ports for NAS or iSCSI connectivity (require optical transceivers or DAC cables that should be purchased for the adapter card)
    - 2x 8/16/32 Gb FC SFP+ ports for FC connectivity, or NVMe/FC with 32 Gb ports (SW SFP+ transceivers with LC connectors included)
    - 4x 4/8/16 Gb FC SFP+ ports for FC connectivity (SW SFP+ transceivers with LC connectors included)
- Expansion interfaces: 4x 12 Gb SAS x4 ports (Mini-SAS HD SFF-8644) for expansion connectivity
- MetroCluster interfaces
    - 2x 25 GbE iWARP SFP28 ports for IP MetroCluster connectivity (require optical transceivers or DAC cables that should be purchased for the adapter card)

Configuration notes:

- A pair of the universal SFP+ base ports (e0e/0e and e0f/0f or e0g/0g and e0h/0h) in the system must have the same connectivity type (either Ethernet or Fibre Channel, but not both types) and the same type of physical connections; different pairs might have different types of connectivity.
- Both controllers must have matching configurations of the base ports (type and physical connections) and adapter cards (type, quantity, slot location, and physical connections).
- The adapter cards should be installed in pairs: Two or four adapter cards are supported per controller enclosure (two adapter cards per controller), including a combination of the adapter card pairs.
- One 40 GbE port on the dual-port 40 GbE adapter card can be configured as 4x 10 GbE ports (the other 40 GbE port cannot be used in this configuration).

The following table lists the supported host port configurations for the ThinkSystem DM7000F.

Table 3. ThinkSystem DM7000F host port configurations

Port type and total number of ports per controller enclosure (per controller)					
10 GbE or 16 Gb FC SFP+	**10 GbE RJ-45**	**25 GbE SFP28**	**40 GbE QSFP+**	**16 Gb FC SFP+**	**32 Gb FC SFP+**
Base host ports					
8 (4)	4 (2)	-	-	-	-
Base host ports and additional host ports on the optional adapter cards					
8 (4)	4 (2)	4 (2)	-	-	-
8 (4)	4 (2)	4 (2)	4 (2)	-	-
8 (4)	4 (2)	4 (2)	-	8 (4)	-
8 (4)	4 (2)	4 (2)	-	-	4 (2)
8 (4)	4 (2)	8 (4)	-	-	-
8 (4)	4 (2)	-	4 (2)	-	-
8 (4)	4 (2)	-	4 (2)	8 (4)	-
8 (4)	4 (2)	-	4 (2)	-	4 (2)
8 (4)	4 (2)	-	8 (4)	-	-
8 (4)	4 (2)	-	-	8 (4)	-
8 (4)	4 (2)	-	-	8 (4)	4 (2)
8 (4)	4 (2)	-	-	16 (8)	-
8 (4)	4 (2)	-	-	-	4 (2)
8 (4)	4 (2)	-	-	-	8 (4)
8 (4)	8 (4)	-	-	-	-
8 (4)	8 (4)	4 (2)	-	-	-
8 (4)	8 (4)	-	4 (2)	-	-
8 (4)	8 (4)	-	-	8 (4)	-
8 (4)	8 (4)	-	-	-	4 (2)
8 (4)	12 (6)	-	-	-	-
12 (8)	4 (2)	-	-	-	-
12 (8)	4 (2)	4 (2)	-	-	-
12 (8)	4 (2)	-	4 (2)	-	-
12 (8)	4 (2)	-	-	8 (4)	-
12 (8)	4 (2)	-	-	-	4 (2)
12 (8)	8 (2)	-	-	-	-
16 (8)	4 (2)	-	-	-	-

The following table lists the controller for the DM7000F Storage Array and supported connectivity options.

Table 4. DM7000F controller and connectivity options

Description	Part number	Feature code	Maximum quantity per controller enclosure
Controllers			
Lenovo ThinkSystem DM7000 Controller	None*	B39H	2
Adapter cards: Additional host interfaces			
Lenovo ThinkSystem DM Series 16Gb FC/10Gb iSCSI 2 port UTA2 Card	4XC7A14394	B38S	4
Lenovo ThinkSystem DM Series 10Gb 10GBASE-T 2 port Ethernet Card	4XC7A14395	B38T	4
Lenovo ThinkSystem DM Series 25Gb 2 port Ethernet Card (iWARP)	4XC7A39673	B7N2	4
Lenovo ThinkSystem DM Series 40Gb 2 port Ethernet Card	4XC7A14393	B38R	4
Lenovo ThinkSystem DM Series 32Gb 2 port Fibre Channel Card	4XC7A14396	B38U	4
Lenovo ThinkSystem DM Series 16Gb 4 port Fibre Channel Card	4XC7A14397	B38V	4
Adapter cards: Additional expansion interfaces			
Lenovo ThinkSystem DM Series 12Gb 4 port SAS Card	4XC7A14398	B38W	4
SFP+ options for base ports			
1Gb RJ-45 iSCSI SFP+ Module 1 pack	4XF7A14917	B4K7	8
8Gb Fibre Channel SFP+ Module 1 pack	4XF7A14918	B4K8	8
16Gb Fibre Channel SFP+ Module 1 pack	4XF7A14920	B4KA	8
SFP+ options for 10 Gb iSCSI / 16 Gb FC adapter card			
QLogic 10Gb SFP+ SR Optical Transceiver	49Y4218	0064	8
SFP+ options for base ports, 10 Gb iSCSI / 16 Gb FC adapter card, and interconnect ports			
10Gb SW Optical iSCSI SFP+ Module 1 pack	4XF7A14919	B4K9	20
SFP28 options for 25 GbE adapter card			
25Gb Ethernet Optical SFP28 Shortwave Module 1 pack	4XF7A39597	B732	8
QSFP+ options for 40 GbE adapter card			
Lenovo 40GBASE-eSR4 QSFP+ Transceiver	00FE325	A5U9	8
OM3 optical cables for 40 GbE QSFP+ eSR4 transceivers			
Lenovo 10m QSFP+ MPO-MPO OM3 MMF Cable	00VX003	AT2U	8
Lenovo 30m QSFP+ MPO-MPO OM3 MMF Cable	00VX005	AT2V	8
OM4 optical cables for 40 GbE QSFP+ eSR4 transceivers			
Lenovo 5m MPO-MPO OM4 MMF Cable	7Z57A03567	AV25	8
Lenovo 7m MPO-MPO OM4 MMF Cable	7Z57A03568	AV26	8
Lenovo 10m MPO-MPO OM4 MMF Cable	7Z57A03569	AV27	8
Lenovo 15m MPO-MPO OM4 MMF Cable	7Z57A03570	AV28	8
Lenovo 20m MPO-MPO OM4 MMF Cable	7Z57A03571	AV29	8
Lenovo 30m MPO-MPO OM4 MMF Cable	7Z57A03572	AV2A	8
Optical breakout cables for 40 GbE QSFP+ eSR4 transceivers			
Lenovo 1m MPO-4xLC OM3 MMF Breakout Cable	00FM412	A5UA	4
Lenovo 3m MPO-4xLC OM3 MMF Breakout Cable	00FM413	A5UB	4
Lenovo 5m MPO-4xLC OM3 MMF Breakout Cable	00FM414	A5UC	4

Description	Part number	Feature code	Maximum quantity per controller enclosure
DAC cable options for 40 GbE QSFP+ host connectivity			
Lenovo 1m Passive QSFP+ DAC Cable	49Y7890	A1DP	8
Lenovo 3m Passive QSFP+ DAC Cable	49Y7891	A1DQ	8
Lenovo 5m Passive QSFP+ DAC Cable	00D5810	A2X8	8
Lenovo 7m Passive QSFP+ DAC Cable	00D5813	A2X9	8
DAC cable options for 40 GbE QSFP+ to 4x 10 GbE SFP+ host connectivity			
Lenovo 1m Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7886	A1DL	4
Lenovo 3m Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7887	A1DM	4
Lenovo 5m Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7888	A1DN	4
OM4 cable options for 8/16/32 Gb FC, 10 GbE SW SFP+, and 25 GbE SFP28 optical transceivers			
Lenovo 0.5m LC-LC OM4 MMF Cable	4Z57A10845	B2P9	28
Lenovo 1m LC-LC OM4 MMF Cable	4Z57A10846	B2PA	28
Lenovo 3m LC-LC OM4 MMF Cable	4Z57A10847	B2PB	28
Lenovo 5m LC-LC OM4 MMF Cable	4Z57A10848	B2PC	28
Lenovo 10m LC-LC OM4 MMF Cable	4Z57A10849	B2PD	28
Lenovo 15m LC-LC OM4 MMF Cable	4Z57A10850	B2PE	28
Lenovo 25m LC-LC OM4 MMF Cable	4Z57A10851	B2PF	28
Lenovo 30m LC-LC OM4 MMF Cable	4Z57A10852	B2PG	28
OM3 cable options for 8/16/32 Gb FC, 10 GbE SW SFP+, and 25 GbE SFP28 optical transceivers			
Lenovo 0.5m LC-LC OM3 MMF Cable	00MN499	ASR5	28
Lenovo 1m LC-LC OM3 MMF Cable	00MN502	ASR6	28
Lenovo 3m LC-LC OM3 MMF Cable	00MN505	ASR7	28
Lenovo 5m LC-LC OM3 MMF Cable	00MN508	ASR8	28
Lenovo 10m LC-LC OM3 MMF Cable	00MN511	ASR9	28
Lenovo 15m LC-LC OM3 MMF Cable	00MN514	ASRA	28
Lenovo 25m LC-LC OM3 MMF Cable	00MN517	ASRB	28
Lenovo 30m LC-LC OM3 MMF Cable	00MN520	ASRC	28
DAC cable options for 10 GbE SFP+ connectivity (SFP+ base, adapter card, and interconnect ports)			
0.5m Passive DAC SFP+ Cable	00D6288	A3RG	20
1m Passive DAC SFP+ Cable	90Y9427	A1PH	20
1.5m Passive DAC SFP+ Cable	00AY764	A51N	20
2m Passive DAC SFP+ Cable	00AY765	A51P	20
3m Passive DAC SFP+ Cable	90Y9430	A1PJ	20
5m Passive DAC SFP+ Cable	90Y9433	A1PK	20
7m Passive DAC SFP+ Cable	00D6151	A3RH	20
DAC cable options for 25 GbE SFP28 connectivity (SFP28 adapter card ports)			
Lenovo 1m Passive 25G SFP28 DAC Cable	7Z57A03557	AV1W	8
Lenovo 3m Passive 25G SFP28 DAC Cable	7Z57A03558	AV1X	8
Lenovo 5m Passive 25G SFP28 DAC Cable	7Z57A03559	AV1Y	8
UTP Category 6 cables options for 1/10 GbE RJ-45 host connectivity and 1 GbE RJ-45 management ports			

Description	Part number	Feature code	Maximum quantity per controller enclosure
0.75m Green Cat6 Cable	00WE123	AVFW	4
1.0m Green Cat6 Cable	00WE127	AVFX	4
1.25m Green Cat6 Cable	00WE131	AVFY	4
1.5m Green Cat6 Cable	00WE135	AVFZ	4
3m Green Cat6 Cable	00WE139	AVG0	4
10m Green Cat6 Cable	90Y3718	A1MT	4
25m Green Cat6 Cable	90Y3727	A1MW	4

* Factory-installed only.

Expansion enclosures

The ThinkSystem DM7000F supports attachment of up to 16 ThinkSystem DM240S 2U24 SFF expansion enclosures. The expansion enclosures can be added to the system non-disruptively.

The following table lists the CTO base models for the ThinkSystem DM240S 2U24 SFF expansion enclosures.

Table 5. CTO base models for the ThinkSystem DM240S 2U24 SFF expansion enclosures

Description	Machine Type/Model	Feature code
Lenovo ThinkSystem Storage 2U24 Chassis (with 2x PSUs)	7Y58CTO1WW	B38L

Configuration note: Two I/O expansion modules (feature code B39J) are selected by default in the configurator, and this cannot be changed.

The models of the ThinkSystem DM240S ship with the following items:

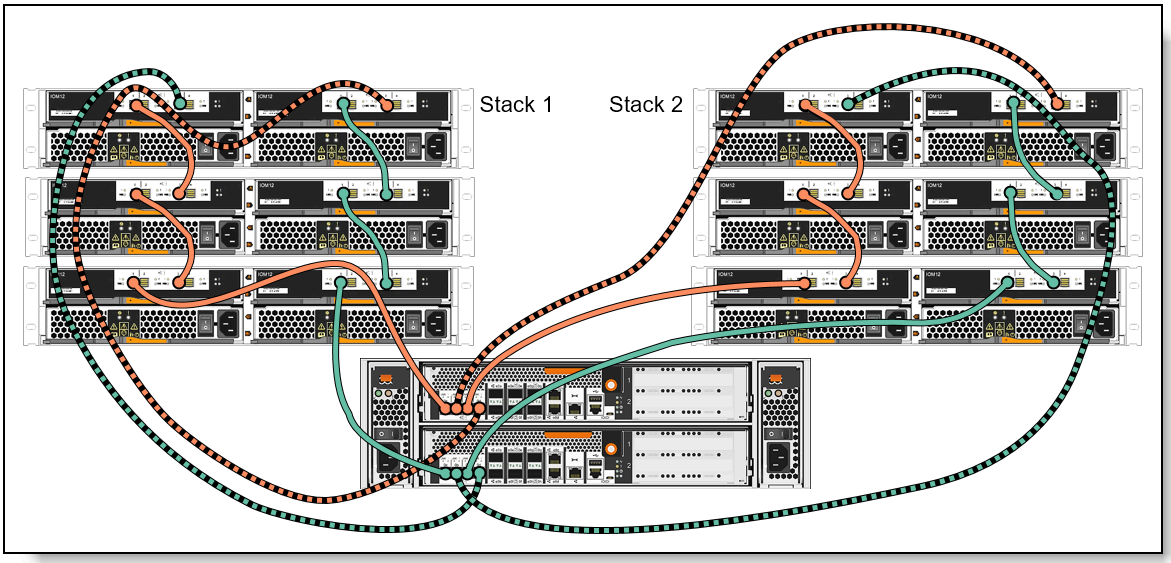
- One chassis with the following components:
  - Two I/O modules
  - Two power supplies
- Rack Mount Kit
- *Electronic Publications Flyer*
- Two customer-configured power cables

Each ThinkSystem DM Series expansion enclosure ships with two SAS I/O expansion modules. Each *I/O expansion module* provides four external 12 Gb SAS x4 ports (Mini-SAS HD SFF-8644 connectors labelled Port 1-4) that are used for connections to the ThinkSystem DM7000F and for daisy chaining the expansion enclosures between each other.

The ThinkSystem DM7000F supports up to 16 expansion enclosures in up to six enclosure stacks with up to 4 enclosures in each stack. For one or two stacks, the integrated SAS expansion ports on the DM7000 controller can be used. For three or four stacks, an additional 4-port SAS adapter card is required for the DM7000 controller. For five or six stacks, two additional 4-port SAS adapter cards are required for the DM7000 controller.

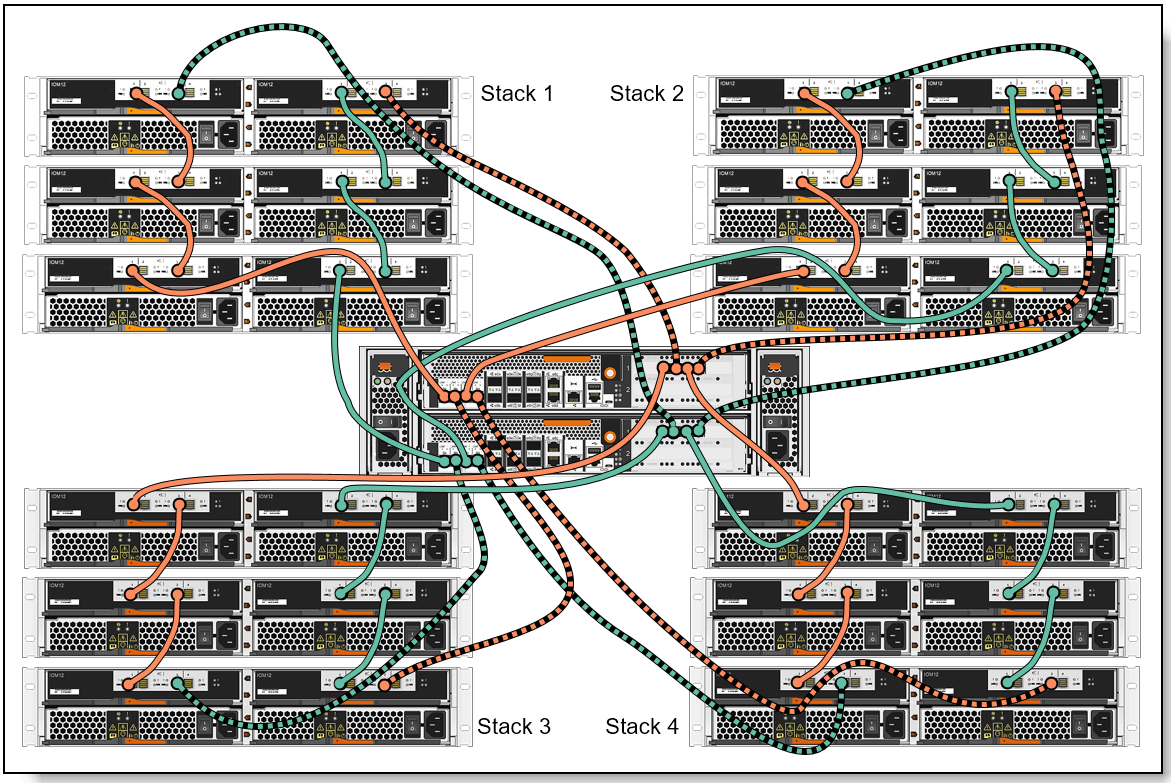
The example expansion connectivity topologies for two and four enclosure stacks with dual-path HA (high

availability) are shown in the following figures.



Figure

6. DM7000F expansion enclosure connectivity topology: Two stacks



Figure

7. DM7000F expansion enclosure connectivity topology: Four stacks

Expansion cabling rules:

- Ports A and C (integrated and on the SAS adapter card) on the Controller 1 are primary paths to stacks; each port is connected to the Port 1 on the I/O Module A in the first expansion enclosure in a stack.
- Port 3 on the I/O Module A in the first expansion enclosure is connected to Port 1 on the I/O Module A in the adjacent expansion enclosure, and so on (until the last expansion enclosure in a

stack is cabled).

- Ports B and D (integrated and on the SAS adapter card) on the Controller 1 are secondary paths to stacks; each port is connected to the Port 3 on the I/O Module B in the last expansion enclosure in a stack.
- Ports A and C (integrated and on the SAS adapter card) on the Controller 2 are primary paths to stacks; each port is connected to the Port 1 on the I/O Module B in the first expansion enclosure in a stack.
- Port 3 on the I/O Module B in the first expansion enclosure is connected to Port 1 on the I/O Module B in the adjacent expansion enclosure, and so on (until the last expansion enclosure in a stack is cabled).
- Ports B and D (integrated and on the SAS adapter card) on the Controller 2 are secondary paths to stacks; each port is connected to the Port 3 on the I/O Module A in the last expansion enclosure in a stack.

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

Table 6. Expansion enclosure connectivity options

Description	Part number	Feature code	Maximum quantity per one expansion enclosure
External MiniSAS HD 8644/MiniSAS HD 8644 0.5M Cable	00YL847	AU16	4
External MiniSAS HD 8644/MiniSAS HD 8644 1M Cable	00YL848	AU17	4
External MiniSAS HD 8644/MiniSAS HD 8644 2M Cable	00YL849	AU18	4
External MiniSAS HD 8644/MiniSAS HD 8644 3M Cable	00YL850	AU19	4

Configuration note: The following quantities of SAS cables are needed per stack of the expansion enclosures:

- Two SAS cables per expansion enclosure in the stack for connecting the first expansion enclosure in the stack to the controller enclosure and for connections to the adjacent expansion enclosures.
- Two additional SAS cables for connecting the last expansion enclosure in the stack to the controller enclosure.

Drives

The ThinkSystem DM240S 2U24 SFF expansion enclosures support up to 24 SFF hot-swap drives. The following table lists supported drive options for the DM240S 2U24 SFF expansion enclosures.

Table 7. DM240S 2U24 SFF drive options

Description	Part number	Feature code	Maximum quantity per 2U24 enclosure
2.5-inch 12 Gbps SAS hot-swap SSDs (1 Drive Write per Day)			
ThinkSystem 5.76TB (6x 960GB SAS SSDs) 2U24 Drive Pack for DM7000F	4XB7A16966	B66H	4
ThinkSystem 23.04TB (6x 3.84TB SAS SSDs) 2U24 Drive Pack for DM7000F	4XB7A16969	B66L	4
ThinkSystem 46.08TB (6x 7.68TB SAS SSDs) 2U24 Drive Pack for DM7000F	4XB7A16972	B66P	4
ThinkSystem 92.16TB (6x 15.36TB SAS SSDs) 2U24 Drive Pack for DM7000F	4XB7A16975	B66S	4

Configuration note: With the DM7000F, the DM240S 2U24 SFF expansion enclosures support from 12 to 24 drives in increments of 6 drives, and all drives in the enclosure must be of the same type and capacity.

Software

In this section:

- Feature bundles
- ONTAP software versions
- Extended ONTAP features
- Ansible playbooks for DM Series

ONTAP software unifies data management across flash, disk, and cloud to simplify the Lenovo 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 DM7000F is available in the following bundles of features:

- Unified Base (China only) (Feature B5RH)
- Unified Premium (Feature B5RJ)

The following table summarizes the features in each bundle for the DM7000F.

Table 8. Comparison of software features for the DM7000F

Feature	Unified Base (PRC only)	Unified Premium
Controller software feature code	B5RH	B5RJ
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
All Flash Array (AFA) capability	Included	Included
Thin provisioning	Included	Included
Compression	Included	Included
Compaction	Included	Included
Deduplication	Included	Included
Snapshots	Included	Included
Encryption*	No	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	No	Included

Feature	Unified Base (PRC only)	Unified Premium
MetroCluster IP	Included	Included
NVMe over FC Protocol	No	No
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
ONTAP S3 SnapMirror	No	Optional
FabricPool object storage tiering	Optional	Optional
SnapLock data protection	No	Optional
Security and Compliance Bundle (Anti-ransomware, MTKM, SnapLock)	No	Optional
Hybrid Cloud Bundle (FabricPool, SnapMirror Cloud)	Optional**	Optional

* Requires the encryption version of ONTAP. See the ONTAP software section.
** When used with bundles other than Unified Premium, Hybrid Cloud Bundle only adds FabricPool. The use of SnapMirror Cloud requires Unified Premium.
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.
- **All Flash Array (AFA) capability**: Meets the demand for higher speed, lower latency storage and provides higher IOPS and bandwidth with lower power usage and total cost of ownership than hybrid or HDD-based solutions.
- **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.
- **Compaction:** enhances compression to further 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 Business Continuity (SMBC):** Non-disruptive failover active-active cross site clusters. Based on existing SnapMirror Synchronous Replication. Offers Zero data loss, zero downtime. You do not have to failover the application. If there is a failure the application will continue to run and there will be no need to restart.
- **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 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

DM Series.

- **ONTAP S3 SnapMirror** : 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.

Add-on feature bundles:

- **Security and Compliance Bundle**: Licensed per 2-node HA Pair, the Security and Compliance Bundle provides built-in protection from ransomware and while also providing the ability to meet regulatory compliance and organizational data retention requirements.
  - Includes: Anti-ransomware feature with Multitenant Key Management (MTKM) and SnapLock
- **Hybrid Cloud Bundle**: Licensed per TB (3 Year & 5 Year Offerings) the Hybrid Cloud Bundle provides the ability to use S3 SnapMirror from ONTAP to the Public Cloud (AWS S3) and/or SnapMirror Cloud with participating ISV Backup providers.
  - Includes SnapMirror Cloud and FabricPool

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.
- **SnapLock data protection:** Creates Write-Once-Read-Many (WORM) non-rewritable, non-erasable data on hard disk drives to prevent files from being altered or deleted until a predetermined or default retention date.

ONTAP software versions

The following table lists the software selection options for the DM7000F. The table also indicates which markets each version is available in.

Table 9. Software selection

Feature code	Description	Availability
ONTAP 9.7		
BAYJ	Lenovo ThinkSystem DM Series ONTAP 9.7 SW Base NonEncryption	China only

Feature code	Description	Availability
BAYL	Lenovo ThinkSystem DM Series ONTAP 9.7 Software Encryption	All markets
BAYK	Lenovo ThinkSystem DM Series ONTAP 9.7 Software NonEncryption	All markets
ONTAP 9.8		
BF5S	Lenovo ThinkSystem DM Series ONTAP 9.8 Software Base NonEncryption	China only
BF5Q	Lenovo ThinkSystem DM Series ONTAP 9.8 Software Encryption	All markets except China
BF5R	Lenovo ThinkSystem DM Series ONTAP 9.8 Software NonEncryption	All markets
ONTAP 9.9		
BKF7	Lenovo ThinkSystem DM Series ONTAP 9.9 Software Base NonEncryption	China only
BKFB	Lenovo ThinkSystem DM Series ONTAP 9.9 Software Encryption	All markets
BKFA	Lenovo ThinkSystem DM Series ONTAP 9.9 Software NonEncryption	All markets
ONTAP 9.10		
BNLY	Lenovo ThinkSystem DM Series ONTAP 9.10 Software Base NonEncryption	China only
BNM2	Lenovo ThinkSystem DM Series ONTAP 9.10 Software Encryption	All markets except China
BNM1	Lenovo ThinkSystem DM Series ONTAP 9.10 Software NonEncryption	All markets
ONTAP 9.11		
BRK0	Lenovo ThinkSystem DM Series ONTAP 9.11 Software Base NonEncryption	China only
BRJW	Lenovo ThinkSystem DM Series ONTAP 9.11 Software Encryption	All markets except China
BRJX	Lenovo ThinkSystem DM Series ONTAP 9.11 Software NonEncryption	All markets

Software maintenance is included in the DM7000F warranty and support (see Warranty and support for details).

Extended ONTAP features

FabricPool and SnapLock WORM data protection are optional extended features. To obtain these feature licenses, order the part numbers as listed in the following table. Upgrades are supported in specific bundles as listed in the Comparison of software features table.

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

Table 10. Optional software features

Part number	Feature code	Description	Quantity
4P47A16547	None*	DM Series SnapLock License	1 per system (contains two licenses)
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
4P47A82668	BPQ6	Security and Compliance Bundle	1 per system (contains two licenses)
4P47A83121	BQ8X	Hybrid Cloud Bundle 3 year per TB License	1 per TB of storage capacity
4P47A83123	BQ8W	Hybrid Cloud Bundle 5 year per TB License	1 per TB of storage capacity

* Field upgrade only; no factory installation.

Configuration notes:

- The SnapLock feature is licensed on a per-controller basis; that is, two licenses are needed per system, and these two licenses are contained in a single orderable part number. These licenses also include 5-year software support entitlement.
- The FabricPool feature is a cluster-wide, capacity-based license that is available for 3-year or 5-year subscription terms.

Ansible playbooks for DM Series

Ansible Playbooks give customers the ability to quickly deploy and use DM 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 Series storage systems to help with:

- Provisioning
- Configuring

To access the Ansible Playbooks for Lenovo ThinkSystem DM Series storage systems, go to the following page:
https://github.com/lenovo/ansible-dm-series-ontap

Management

The ThinkSystem DM7000F 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.
- Optional Lenovo XClarity for discovery, inventory, monitoring, and alerts.

Power supplies and cables

The ThinkSystem DM7000F 3U controller enclosure ships with two redundant hot-swap 1460 W (100 - 240 V) Platinum AC power supplies, each with an IEC 320-C14 connector.

The ThinkSystem DM240S 2U24 SFF expansion enclosures ship with two redundant hot-swap 913 W (100 - 240 V) Platinum AC power supplies, each with an IEC 320-C14 connector.

Each ThinkSystem DM Series enclosure requires the selection of two power cables.

The following table lists the rack power cable and line cord options that can be ordered for the DM7000F 3U and DM240S 2U24 SFF enclosures (two power cords per enclosure).

Table 11. Power cables for DM7000F 3U and DM240S 2U24 SFF enclosures

Description	Part number	Feature code
Rack power cables		
1.0m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	00Y3043	A4VP
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, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7937	6201
1.5m, 13A/100-250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08368	B0N6
2.0m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08365	B0N4
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, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08366	6311
2.8m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08370	6400
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	39Y7938	6204
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, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7932	6263
4.3m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08371	6583
Line cords		
Argentina 2.8m, 10A/250V, C13 to IRAM 2073 Line Cord	39Y7930	6222
Argentina 4.3m, 10A/250V, C13 to IRAM 2073 Line Cord	81Y2384	6492
Australia/New Zealand 2.8m, 10A/250V, C13 to AS/NZS 3112 Line Cord	39Y7924	6211
Australia/New Zealand 4.3m, 10A/250V, C13 to AS/NZS 3112 Line Cord	81Y2383	6574
Brazil 2.8m, 10A/250V, C13 to NBR 14136 Line Cord	69Y1988	6532
Brazil 4.3m, 10A/250V, C13 to NBR14136 Line Cord	81Y2387	6404
China 2.8m, 10A/250V, C13 to GB 2099.1 Line Cord	39Y7928	6210
China 4.3m, 10A/250V, C13 to GB 2099.1 Line Cord	81Y2378	6580
Denmark 2.8m, 10A/250V, C13 to DK2-5a Line Cord	39Y7918	6213
Denmark 4.3m, 10A/250V, C13 to DK2-5a Line Cord	81Y2382	6575
Europe 2.8m, 10A/250V, C13 to CEE7-VII Line Cord	39Y7917	6212
Europe 4.3m, 10A/250V, C13 to CEE7-VII Line Cord	81Y2376	6572
India 2.8m, 10A/250V, C13 to IS 6538 Line Cord	39Y7927	6269
India 4.3m, 10A/250V, C13 to IS 6538 Line Cord	81Y2386	6567
Israel 2.8m, 10A/250V, C13 to SI 32 Line Cord	39Y7920	6218
Israel 4.3m, 10A/250V, C13 to SI 32 Line Cord	81Y2381	6579
Italy 2.8m, 10A/250V, C13 to CEI 23-16 Line Cord	39Y7921	6217
Italy 4.3m, 10A/250V, C13 to CEI 23-16 Line Cord	81Y2380	6493
Japan 2.8m, 12A/125V, C13 to JIS C-8303 Line cord	46M2593	A1RE
Japan 2.8m, 12A/250V, C13 to JIS C-8303 Line Cord	4L67A08357	6533
Japan 4.3m, 12A/125V, C13 to JIS C-8303 Line Cord	39Y7926	6335

Description	Part number	Feature code
Japan 4.3m, 12A/250V, C13 to JIS C-8303 Line Cord	4L67A08362	6495
Korea 2.8m, 12A/250V, C13 to KS C8305 Line Cord	39Y7925	6219
Korea 4.3m, 12A/250V, C13 to KS C8305 Line Cord	81Y2385	6494
South Africa 2.8m, 10A/250V, C13 to SABS 164 Line Cord	39Y7922	6214
South Africa 4.3m, 10A/250V, C13 to SABS 164 Line Cord	81Y2379	6576
Switzerland 2.8m, 10A/250V, C13 to SEV 1011-S24507 Line Cord	39Y7919	6216
Switzerland 4.3m, 10A/250V, C13 to SEV 1011-S24507 Line Cord	81Y2390	6578
Taiwan 2.8m, 10A/125V, C13 to CNS 10917-3 Line Cord	23R7158	6386
Taiwan 2.8m, 10A/250V, C13 to CNS 10917-3 Line Cord	81Y2375	6317
Taiwan 2.8m, 15A/125V, C13 to CNS 10917-3 Line Cord	81Y2374	6402
Taiwan 4.3m, 10A/125V, C13 to CNS 10917-3 Line Cord	4L67A08363	AX8B
Taiwan 4.3m, 10A/250V, C13 to CNS 10917-3 Line Cord	81Y2389	6531
Taiwan 4.3m, 15A/125V, C13 to CNS 10917-3 Line Cord	81Y2388	6530
United Kingdom 2.8m, 10A/250V, C13 to BS 1363/A Line Cord	39Y7923	6215
United Kingdom 4.3m, 10A/250V, C13 to BS 1363/A Line Cord	81Y2377	6577
United States 2.8m, 10A/125V, C13 to NEMA 5-15P Line Cord	90Y3016	6313
United States 2.8m, 10A/250V, C13 to NEMA 6-15P Line Cord	46M2592	A1RF
United States 2.8m, 13A/125V, C13 to NEMA 5-15P Line Cord	00WH545	6401
United States 4.3m, 10A/125V, C13 to NEMA 5-15P Line Cord	4L67A08359	6370
United States 4.3m, 10A/250V, C13 to NEMA 6-15P Line Cord	4L67A08361	6373
United States 4.3m, 13A/125V, C13 to NEMA 5-15P Line Cord	4L67A08360	AX8A

Rack installation

The individually shipped ThinkSystem DM7000F and DM240S enclosures come with the ThinkSystem Storage Rack Mount Kit 2U24/4U60 listed in the following table.

Table 12. 4-post rack mount kit

Description	Feature code	Quantity
Lenovo ThinkSystem Storage Rack Mount Kit 2U24/4U60	B38Y	1

When the ThinkSystem DM 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 13. 4-post SIR rack mount kits

Description	Feature code	Quantity
Lenovo ThinkSystem Storage Rack Mount Kit 2U12	B38X	1
Lenovo ThinkSystem Storage SIR Rack Mount Kit (for 2U24 enclosures)	B6TH	1
DM 3U Adjustable Rail Kit (SIR)	B79Z	1
DM/DE 4U Adjustable Rail Kit (SIR)	B742	1

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

Table 14. Rack mount kit features and specifications summary

	Screw-in fixed rail with adjustable depth		
Attribute	**2U24/4U60**	**2U24 SIR**	**3U SIR**
Feature code	B38Y	B6TH	B79Z
Enclosure support	DM7000F, DM240S	DM240S	DM7000F
Rail type	Fixed (static) with adjustable depth	Fixed (static) with adjustable depth	Fixed (static) with adjustable depth
Tool-less installation	No	No	No
In-rack maintenance	Yes*	Yes*	Yes*
Ship-in-rack (SIR) support	No	Yes	Yes
1U PDU support	Yes	Yes	Yes
0U PDU support	Limited**	Limited**	Limited**
Rack type	IBM or Lenovo 4-post, IEC standard-compliant	IBM or Lenovo 4-post, IEC standard-compliant	IBM or Lenovo 4-post, IEC standard-compliant
Mounting holes	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.)
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.)

* 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 and 3U 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 DM7000F controller enclosure has the following dimensions and weight (approximate):

- Height: 130 mm (5.1 in.)
- Width: 447 mm (17.6 in.)
- Depth: 608 mm (23.9 in.)
- Weight (fully configured): 34.5 kg (76.1 lb)

The ThinkSystem DM240S 2U24 SFF enclosures have the following dimensions and weight (approximate):

- Height: 85 mm (3.4 in.)
- Width: 449 mm (17.7 in.)
- Depth: 484 mm (19.1 in.)
- Weight (fully configured): 24.4 kg (53.8 lb)

Operating environment

The ThinkSystem DM7000F and DM240S 2U24 SFF enclosures are supported in the following environment:

- Air temperature:
  - Operating: 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:
  - Operating: 8% - 90% (non-condensing)
  - Non-operating: 10% - 95% (non-condensing)
- Electrical power:
  - DM7000F
    - 100 to 127 (nominal) V AC; 50 Hz or 60 Hz; 6.69 A
    - 200 to 240 (nominal) V AC; 50 Hz or 60 Hz; 3.35 A
    - Maximum system power load: 636 W
  - DM240S 2U24 SFF
    - 100 to 127 (nominal) V AC; 50 Hz or 60 Hz; 4.11 A
    - 200 to 240 (nominal) V AC; 50 Hz or 60 Hz; 2.05 A
    - Maximum system power load: 390 W
- Heat dissipation:
  - DM7000F: 2170 BTU/hour
  - DM240S 2U24 SFF: 1331 BTU/hour
- Acoustical noise emission:
  - DM7000F: 7.8 bels
  - DM240S 2U24 SFF: 6.9 bels

Warranty upgrades and post-warranty support

The DM7000F has a 1-year warranty and the expansion enclosure has a 1-year or 3-year warranty based on the machine type of the system, as listed in the following table.

Table 15. Duration of standard warranty

System	Machine type 1 year warranty	Machine type 3 year warranty
DM7000F Controller Enclosure	7Y40	-
DM240S 2U24 SFF Expansion Enclosure	7Y58	7D7Y

Our global network of regional support centers offers consistent, local-language support enabling you to vary response times and level of service to match the criticality of your support needs:

- **Standard Next Business Day** – Best choice for non-essential systems requiring simple maintenance.
- **Premier Next Business Day** – Best choice for essential systems requiring technical expertise from senior-level Lenovo Engineers.
- **Premier 24x7 4-Hour Response** – Best choice for systems where maximum uptime is critical.
- **Premier Support Plus 24x7 4-Hour Response** – Best choice for systems where maximum uptime is critical.

For more information, consult our Lenovo Operational Support Services for Data Centers Services Brochure.

Note: Some warranty upgrades may not be available in all markets or regions. For more information, go to https://lenovolocator.com/. For information about Lenovo warranty upgrade offerings that are available in your region, contact your local Lenovo sales representative or business partner.

Services

Lenovo Services is a dedicated partner to customer success. Lenovo's goal for customers is to reduce capital outlays, mitigate IT risks, and accelerate time to productivity.

Here is a more in-depth look at what Lenovo can do for their customers:

- **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 customers.
- **Assessment Services**
  An assessment helps solve customer IT challenges through an onsite, multi-day session with a Lenovo technology expert. Lenovo performs 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, no matter how large or small, get a better return on their IT investment and overcome challenges in the ever-changing technology landscape.

- **Design Services**
  Professional Services consultants perform infrastructure design and implementation planning to support customer's 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 customer's server, storage, or networking hardware. Working at a time convenient for the customer (business hours or off shift), the technician will unpack and inspect the systems on customer 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 customers to focus on other priorities.
- **Deployment Services**
  When investing in new IT infrastructures, customers need to ensure that their business will see quick time to value with little to no disruption. Lenovo deployments are designed by development and engineering teams who know Lenovo products and solutions better than anyone else, and Lenovo technicians own the process from delivery to completion. Lenovo will conduct remote preparation and planning, configure and integrate systems, validate systems, verify and update appliance firmware, train on administrative tasks, and provide post-deployment documentation. Customer’s IT teams leverage Lenovo skills to enable IT staff to transform with higher level roles and tasks.
- **Integration, Migration, and Expansion Services**
  Integration, Migration, and Expansion Services allow to move existing physical and virtual workloads easily, or to determine technical requirements to support increased workloads while maximizing performance. These services include tuning, validation, and documenting ongoing run processes, and they leverage migration assessment planning documents to perform necessary migrations.

Some service options may not be available in every region. For more information about Lenovo service offerings that are available in a specific region, contact a local Lenovo sales representative or business partner.

Lenovo TruScale

Lenovo TruScale XaaS is your set of flexible IT services that makes everything easier. Streamline IT procurement, simplify infrastructure and device management, and pay only for what you use – so your business is free to grow and go anywhere.

Lenovo TruScale is the unified solution that gives you simplified access to:

- The industry’s broadest portfolio – from pocket to cloud – all delivered as a service
- A single-contract framework for full visibility and accountability
- The global scale to rapidly and securely build teams from anywhere
- Flexible fixed and metered pay-as-you-go models with minimal upfront cost
- The growth-driving combination of hardware, software, infrastructure, and solutions – all from one single provider with one point of accountability.

For information about Lenovo TruScale offerings that are available in your region, contact your local Lenovo sales representative or business partner.

Regulatory compliance

The ThinkSystem DM Series enclosures conform to the following regulations:

- United States: FCC Part 15, Class A; UL 60950-1
- Canada: ICES-003, Class A; CAN/CSA-C22.2 60950-1
- Mexico NOM
- European Union: CE Mark (EN55032 Class A, EN55024, IEC/EN60950-1); ROHS Directive 2011/65/EU
- Russia, Kazakhstan, Belarus: EAC
- China: CCC GB 4943.1, GB 17625.1, GB 9254 Class A; CELP; CECP
- Japan: VCCI, Class A
- Taiwan: BSMI CNS 13438, Class A; CNS 14336-1
- Korea KN32/35, Class A
- Australia/New Zealand: AS/NZS CISPR 22 Class A

Interoperability

Lenovo provides end-to-end storage compatibility testing to deliver interoperability throughout the network. The ThinkSystem DM7000F Unified Flash Storage Array 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/lsic

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 ThinkSystem DM7000F Unified Hybrid Storage Array for cluster interconnect and MetroCluster IP configurations.

Table 16. Ethernet storage switch

Description	Part number
BES-53248 Ethernet Storage Switch: 16x SFP ports and 2x QSFP ports active, 2 PS (CTO only)	7D2SCTO1WW

For more information, see the BES-53248 Ethernet Storage Switch for Lenovo Product Guide: http://lenovopress.com/lp1226

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#rt=product-guide

Rack cabinets

The following table lists the supported rack cabinets.

Table 17. Rack cabinets (D)

Model	Description
7D6DA007WW	ThinkSystem 42U Onyx Primary Heavy Duty Rack Cabinet (1200mm)
7D6DA008WW	ThinkSystem 42U Pearl Primary Heavy Duty Rack Cabinet (1200mm)
7D6EA009WW	ThinkSystem 48U Onyx Primary Heavy Duty Rack Cabinet (1200mm)
7D6EA00AWW	ThinkSystem 48U Pearl Primary Heavy Duty Rack Cabinet (1200mm)
93074RX	42U Standard Rack (1000mm)
93604PX	42U 1200mm Deep Dynamic Rack
93604EX	42U 1200mm Deep Dynamic Expansion Rack
93614PX	42U 1200mm Deep Static Rack
93614EX	42U 1200mm Deep Static Expansion Rack
93634PX	42U 1100mm Dynamic Rack
93634EX	42U 1100mm Dynamic Expansion Rack
93084PX	42U Enterprise Rack
93084EX	42U Enterprise Expansion Rack

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 18. Power distribution units

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
0U Basic PDUs															
4PU7A93176	C0DA	0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93177	C0D9	0U 24 C13/C15 and 24 C13/C15/C19 Basic 32A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
00YJ776	ATZY	0U 36 C13/6 C19 24A 1 Phase PDU	N	Y	Y	N	N	N	N	N	N	Y	Y	Y	N
00YJ779	ATZX	0U 21 C13/12 C19 48A 3 Phase PDU	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N
00YJ777	ATZZ	0U 36 C13/6 C19 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y
00YJ778	AU00	0U 21 C13/12 C19 32A 3 Phase PDU	Y	Y	N	Y	Y	Y	Y	Y	Y	N	N	Y	Y
0U Monitored PDUs															
4PU7B08150	CD17	0U 3 C13 and 18 C19 Monitored 80A 3 Phase WYE PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
4PU7B08148	CD15	0U 3 C13 and 18 C19 Monitored 48A 3 Phase WYE PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N
4PU7B08149	CD16	0U 3 C13 and 18 C19 Monitored 63A 3 Phase WYE PDU	N	N	N	Y	N	N	Y	Y	N	N	N	N	N
4PU7B08151	CD18	0U 21 Saf-D-Grid 300 Monitored 80A 3 Phase WYE High Voltage PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N
0U Switched and Monitored PDUs															
4PU7A93181	C0D5	0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 60A 3 Phase Delta PDU v2	N	Y	N	N	Y	N	N	Y	N	Y	N	Y	N
4PU7A93178	C0D8	0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93182	C0CS	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93180	C0D6	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93179	C0D7	0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 30A 1 Phase PDU v2	N	Y	N	N	N	N	N	Y	N	Y	Y	Y	N
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
00YJ782	AU02	0U 18 C13/6 C19 Switched and Monitored 32A 3 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
00YJ780	AU01	0U 20 C13/4 C19 Switched and Monitored 32A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
4PU7B08152	CD19	0U 21 Saf-D-Grid 300 Switched and Monitored 80A 3 Phase WYE High Voltage PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N
1U Basic PDUs															
4PU7B12339	CE6L	1U Basic 16A 1 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
1U Switched and Monitored PDUs															
4PU7B13376	CJVY	1U 18 C19/C13 Switched and Monitored 48A 3 Phase WYE PDU v3	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A90808	C0D4	1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 ETL	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
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
4PU7A90809	C0DE	1U 18 C19/C13 Switched and monitored 48A 3P WYE PDU V2 CE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
4PU7A81118	BNDW	1U 18 C19/C13 switched and monitored 48A 3P WYE PDU – CE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
4PU7A90810	C0DD	1U 18 C19/C13 Switched and monitored 80A 3P Delta PDU V2	N	N	N	N	N	N	N	Y	N	Y	Y	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
4PU7A90811	C0DC	1U 12 C19/C13 Switched and monitored 32A 3P WYE PDU V2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
4PU7A77468	BLC5	1U 12 C19/C13 switched and monitored 32A 3P WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A90812	C0DB	1U 12 C19/C13 Switched and monitored 60A 3P Delta PDU V2	N	N	Y	N	N	N	N	Y	N	Y	Y	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
46M4002	5896	1U 9 C19/3 C13 Switched and Monitored DPI PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46M4004	5894	1U 12 C13 Switched and Monitored DPI PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46M4003	5897	1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
46M4005	5895	1U 12 C13 Switched and Monitored 60A 3 Phase PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1U C13 Enterprise PDUs (12x IEC 320 C13 outlets)															
39M2816	6030	DPI C13 PDU+	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8941	6010	Enterprise C13 PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1U C19 Enterprise PDUs (6x IEC 320 C19 outlets)															
39Y8948	6060	Enterprise C19 PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8923	6061	Enterprise C19 3 phase PDU (60a)	N	N	Y	N	N	N	Y	N	N	N	Y	Y	N
1U Front-end PDUs (3x IEC 320 C19 outlets)															
39Y8938	6002	DPI 30amp/125V Front-end PDU with NEMA L5-30P	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8939	6003	DPI 30amp/250V Front-end PDU with NEMA L6-30P	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8934	6005	DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8940	6004	DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd connector	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N
39Y8935	6006	DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd connector	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 PDU with Fixed Nema L5-15P line cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Line cords for 1U PDUs that ship without a line cord															
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

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
40K9617	6505	4.3m, 32A/230V, Souriau UTG to AS/NZS 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 19. Uninterruptible power supply units

Part number	Description
Rack-mounted or tower UPS units - 100-125VAC	
7DD5A001WW	RT1.5kVA 2U Rack or Tower UPS-G2 (100-125VAC)
55941AX	RT1.5kVA 2U Rack or Tower UPS (100-125VAC)
55942AX	RT2.2kVA 2U Rack or Tower UPS (100-125VAC)
7DD5A003WW	RT3kVA 2U Rack or Tower UPS-G2 (100-125VAC)
55943AX	RT3kVA 2U Rack or Tower UPS (100-125VAC)
Rack-mounted or tower UPS units - 200-240VAC	
7DD5A002WW	RT1.5kVA 2U Rack or Tower UPS-G2 (200-240VAC)
55941KX	RT1.5kVA 2U Rack or Tower UPS (200-240VAC)
55942KX	RT2.2kVA 2U Rack or Tower UPS (200-240VAC)
7DD5A005WW	RT3kVA 2U Rack or Tower UPS-G2 (200-240VAC)
55943KX	RT3kVA 2U Rack or Tower UPS (200-240VAC)
7DD5A007WW	RT5kVA 3U Rack or Tower UPS-G2 (200-240VAC)
55945KX	RT5kVA 3U Rack or Tower UPS (200-240VAC)
7DD5A008WW	RT6kVA 3U Rack or Tower UPS-G2 (200-240VAC)
55946KX	RT6kVA 3U Rack or Tower UPS (200-240VAC)
55948KX	RT8kVA 6U Rack or Tower UPS (200-240VAC)
7DD5A00AWW	RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)
55949KX	RT11kVA 6U Rack or Tower UPS (200-240VAC)
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)
Rack-mounted or tower UPS units - 380-415VAC	
55948PX	RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)
55949PX	RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)

† 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

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  Our in-depth knowledge of the products, services and various market segments allows us to offer greater flexibility in structures, documentation and end of lease options.

- **100% Solution Financing**

  Financing your entire solution including hardware, software, and services, ensures more predictability in your project planning with fixed, manageable payments and low monthly payments.

- **Device as a Service (DaaS)**

  Leverage latest technology to advance your business. Customized solutions aligned to your needs. Flexibility to add equipment to support growth. Protect your technology with Lenovo's Premier Support service.

- **24/7 Asset management**

  Manage your financed solutions with electronic access to your lease documents, payment histories, invoices and asset information.

- **Fair Market Value (FMV) and $1 Purchase Option Leases**

  Maximize your purchasing power with our lowest cost option. An FMV lease offers lower monthly payments than loans or lease-to-own financing. Think of an FMV lease as a rental. You have the flexibility at the end of the lease term to return the equipment, continue leasing it, or purchase it for the fair market value. In a $1 Out Purchase Option lease, you own the equipment. It is a good option when you are confident you will use the equipment for an extended period beyond the finance term. Both lease types have merits depending on your needs. We can help you determine which option will best meet your technological and budgetary goals.

Ask your Lenovo Financial Services representative about this promotion and how to submit a credit application. For the majority of credit applicants, we have enough information to deliver an instant decision and send a notification within minutes.

Related publications and links

For more information, see the following resources:

- Lenovo Data Center Unified Storage product page
  https://www.lenovo.com/us/en/c/data-center/storage/unified-storage
- Lenovo Data Center Solution Configurator
  http://dcsc.lenovo.com
- ThinkSystem DM Series documentation
  https://datacentersupport.lenovo.com/us/en/storagepubs
- Lenovo Data Center Support - ThinkSystem DM7000F
  http://datacentersupport.lenovo.com/us/en/products/storage/lenovo-storage/thinksystem-dm7000f

Related product families

Product families related to this document are the following:

- DM Series Storage
- Lenovo SAN Storage

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This document, LP0912, was created or updated on April 12, 2022.

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