Lenovo ThinkSystem DM3010H
Product Guide

Lenovo ThinkSystem DM3010H is a unified, hybrid storage system that is designed to provide performance, simplicity, capacity, security, and high availability for small to large enterprises. ThinkSystem DM3010H delivers enterprise-class storage management capabilities with a wide choice of host connectivity options, flexible drive configurations, and enhanced data management features.

The ThinkSystem DM3010H is a perfect fit for small offices, edge locations and remote offices that demand a wide range of general-purpose workloads: including backup and archiving, file services, Hybrid Cloud, Integrated ransomware, Microsoft applications, unified data management, virtualization and other storage I/O-intensive applications.

A single Lenovo ThinkSystem DM3010H Storage Array scales up to 144 drives with the attachment of ThinkSystem DM120S 2U12 LFF, DM600S 4U60 LFF, and DM240S 2U24 SFF Expansion Enclosures.

Figure 1. Lenovo ThinkSystem DM3010H

Up to 12 DM3010H Storage Arrays can be combined into a clustered system in a NAS environment, or up to 6 DM3010H Storage Arrays can be combined into a clustered system in a SAN environment.

Did you know?

The Lenovo ThinkSystem DM3010H offers a simple unified storage experience that is easy to configure, provision, and manage. It supports block, file, and object protocols.

A single ThinkSystem DM3010H can scale up to 2.3 PB of raw storage capacity. A cluster of the DM3010H storage arrays can scale up to 26.4 PB for NAS or up to 13.2 PB for SAN environments.

Key features

The ThinkSystem DM3010H offers the following key features and benefits:

- Unified, hybrid storage with dual active/active controller configurations for high availability and performance.
- A comprehensive set of advanced storage management features, including SSD read cache, hybrid storage pools, 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.
- DM Series is designed to meet high availability requirements for mission critical operations. Through redundant hardware design and advanced software availability features, including snapshotting, replication, metrocluster, and advanced ransomware protection, DM Series can be implemented to deliver high application availability.
- 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, SAN, and S3 storage protocols, including 10/25 GbE for Ethernet and 8/16/32 Gb for Fibre Channel connectivity.
- Supports two controllers. A controller provides interfaces for host connectivity, internal drives, and runs Lenovo ThinkSystem Storage Manager.
- 12 Gb SAS drive-side connectivity with multipathing with up to 12x 3.5-inch large form factor (LFF) drives in the 2U12 LFF enclosures, up to 60x 3.5-inch LFF drives in the 4U60 LFF expansion enclosures, or up to 24x 2.5-inch small form factor (SFF) drives in the 2U24 SFF expansion enclosures.
- Scalability to up to 132 drives for the DM3010H with the attachment of 5x DM240S 2U24 SFF expansion enclosures or 2x DM600S 4U60 LFF expansion enclosures to satisfy growing needs for storage capacity.
- Flexibility in storing data on capacity-optimized SAS SSDs, performance-optimized enterprise SAS HDDs, or capacity-optimized enterprise NL SAS HDDs; mixing and matching drive types within a single system to perfectly meet performance and capacity requirements for various workloads.
- Acceleration of read-centric workloads with the high-speed, low-latency onboard NVMe SSD caching.
- 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.

The ThinkSystem DM3010H supports the following drives either directly or with storage attachments. See a further explanation below:

- 2U12 LFF and 4U60 LFF **high-capacity** nearline HDDs: 4 TB, 8 TB, 10 TB, and 16 TB 7.2K rpm
  - Supported drives of type: 3.5" large form factor (LFF) drives (NL SAS)
- 2U24 SFF capacity-optimized SSDs: 960 GB, 3.84 TB, 7.68 TB, and 15.36 TB
  - Supported drives of type: 2.5" small form factor (SFF) drives (SAS SSD)
- 2U24 SFF enterprise SAS HDDs: 900 GB, 1.2 TB, and 1.8 TB 10K rpm
  - Supported drives of type: 2.5" small form factor (SFF) drives (SAS)

All drives are dual-port and hot-swappable.

The ThinkSystem DM3010H supports attachment of the following ThinkSystem DM Series expansion enclosures:

- Up to 9x DM120S 2U12 LFF enclosures.
- Up to 2x DM600S 4U60 LFF enclosures.
- Up to 5x DM240S 2U24 SFF enclosures.

- A combination of DM3010H , 5x DM240S expansions and 1x DM120S expansion for a maximum of 144 drives
- A combination of DM3010H , 2x DM600S expansions and 1x DM120S expansion for a maximum of 144 drives

Customers can intermix 2U12 LFF, 4U60 LFF, and 2U24 SFF expansion enclosures behind a 2U12 LFF enclosure. This configuration delivers the added flexibility to mix 3.5-inch and 2.5-inch drives within a single system (but not within the enclosure).

More drives and expansion enclosures are designed to be dynamically added with virtually no downtime, which helps to respond to ever-growing capacity demands quickly and seamlessly.

The ThinkSystem DM3010H 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
- Dual-port SAS HDDs with automatic drive failure detection and rebuild
- Redundant, hot-swappable and customer replaceable hardware components, including SFP+ transceivers, controllers, I/O modules, power supplies, cooling modules (4U60 LFF only), 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 DM3010H or DM120S 2U12 LFF enclosure.

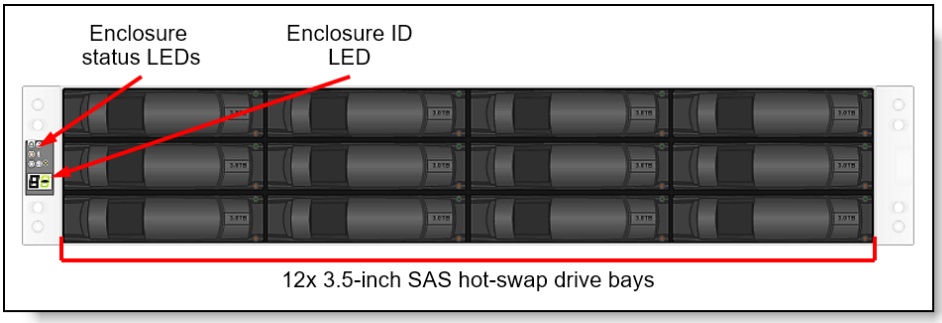

Figure 2. The DM3010H enclosure or DM120S expansion enclosure front view

The front of the DM3010H enclosure or DM120S expansion enclosure includes the following components:

- 12 LFF hot-swap drive bays
- Enclosure status LEDs
- Enclosure ID LED

The following figure shows the rear of the Lenovo ThinkSystem DM3010H enclosure with supported ports.

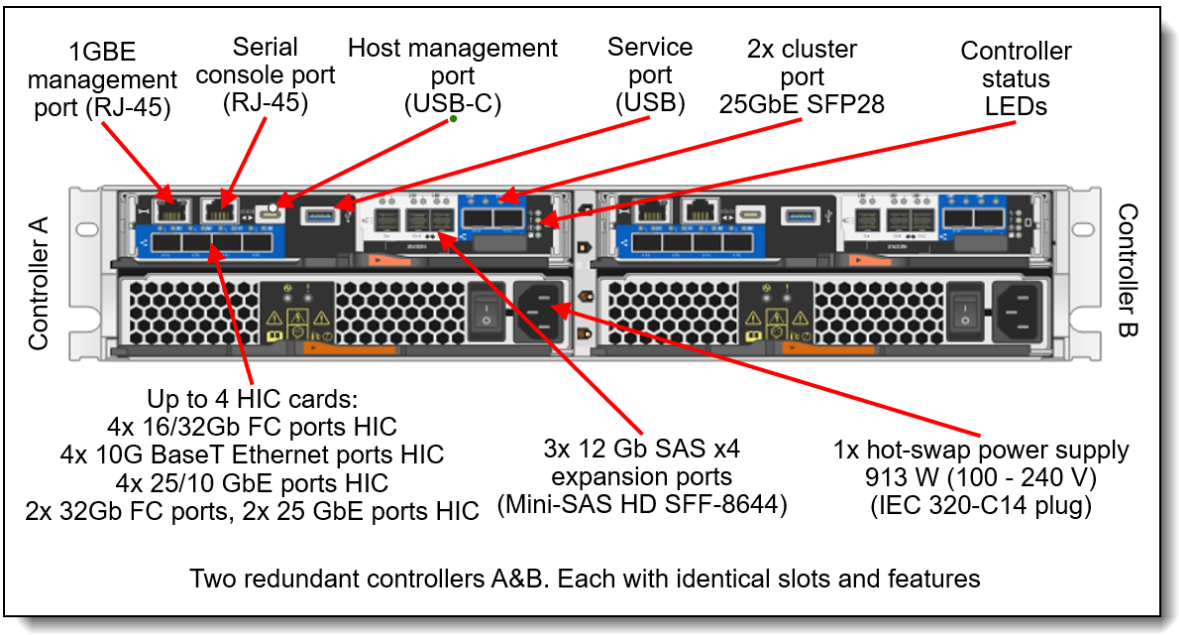

Figure 3. Lenovo ThinkSystem DM3010H enclosure rear view with supported ports

The following figure shows the front of the DM240S 2U24 SFF expansion enclosure.

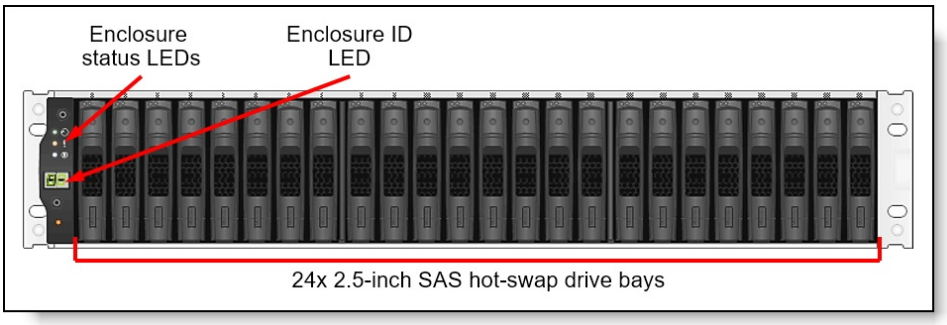

Figure 4. DM240S 2U24 SFF expansion enclosure front view

The front of the DM240S 2U24 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 DM120S and DM240S 2U expansion enclosures.

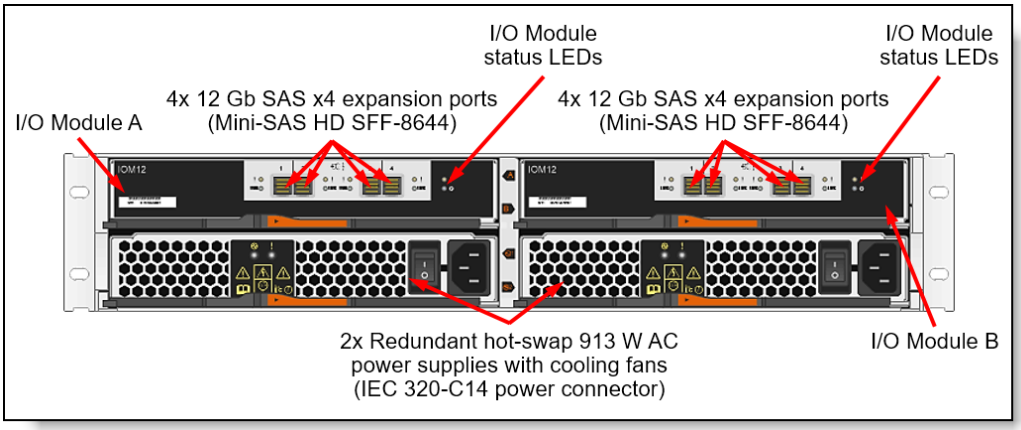

Figure 5. ThinkSystem DM120S or DM240S 2U expansion enclosure rear view

The rear of the DM120S and the DM240S 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 DM3010H enclosure 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.

The following figure shows the front of the Lenovo ThinkSystem DM600S expansion enclosure.

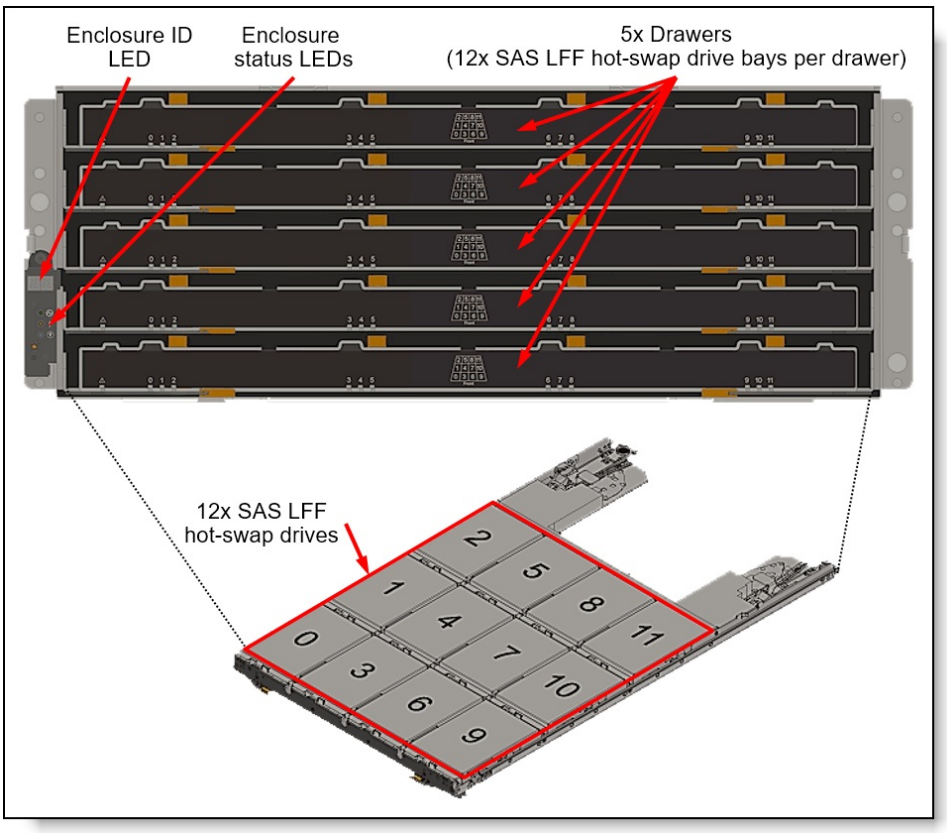

Figure 6. Lenovo ThinkSystem DM600S expansion enclosure front view

The front of the DM600S 4U60 expansion enclosure includes the following components:

- Five drawers, each with 12 LFF hot-swap drive bays.
- Enclosure status LEDs.
- Enclosure ID LED.

The following figure shows the rear of the DM600S 4U60 LFF expansion enclosure.

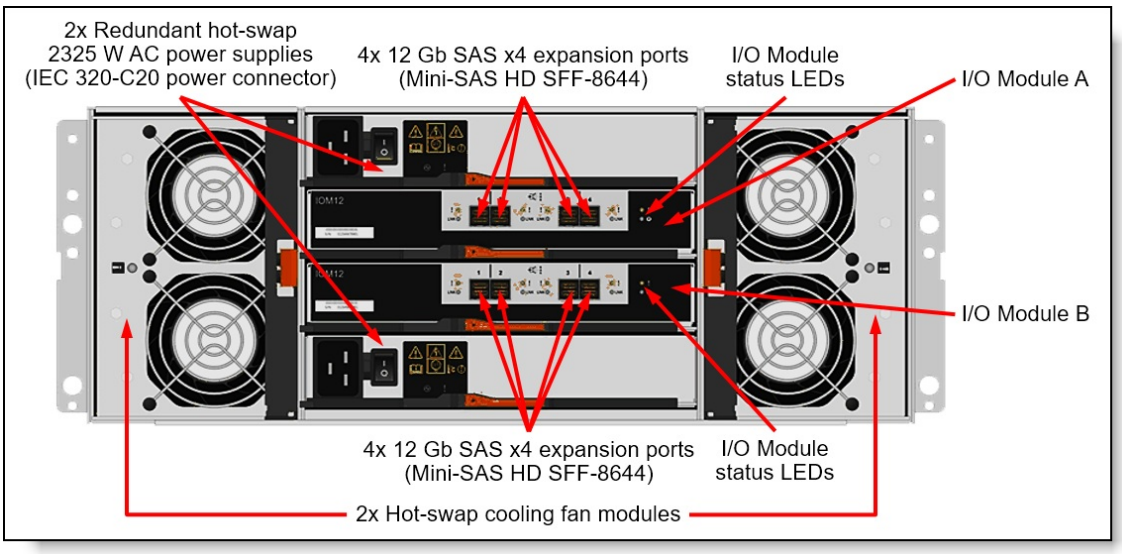

Figure 7. DM600S 4U60 LFF expansion enclosure rear view

The rear of the DM600S 4U60 4U LFF 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 DM3010H enclosure and for connecting the expansion enclosures between each other.
- Two redundant hot-swap 2325 W (200 - 240 V) AC power supplies (IEC 320-C20 power connector)
- Two hot-swap cooling fan modules; each module has two fans.
  Note: The failed cooling module should be replaced as soon as possible.
- I/O Module status LEDs.

System specifications

The following table lists the ThinkSystem DM3010H storage system specifications.

Note: The supported hardware options, software features, and interoperability listed in this product guide are based on the ONTAP software version 9.13.1P1. 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 DM3010H that can be found at:
http://datacentersupport.lenovo.com

Table 1. ThinkSystem DM3010H system specifications

Attribute	Specification
Form factor	• DM3010H 2U12 LFF enclosure (7DCV): 2U rack mount • DM120S 2U12 LFF expansion enclosure (7D7X): 2U rack mount • DM240S 2U24 SFF expansion enclosure (7D7Y): 2U rack mount • DM600S 4U60 LFF expansion enclosure (7D7Z): 4U 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 25 GbE SFP28 ports (2 ports per controller).

Attribute	Specification
RAID levels	RAID-4, RAID-DP, RAID-TEC.
Controller memory	• 128 GB RAM per system (64 GB per controller). • 16 GB battery-backed NVMEM per system (8 GB per controller) mirrored between the controllers.
Controller cache	2 TB NVMe-based Flash Cache (1 TB per controller).
Drive bays	• Up to 132 LFF hot-swap drive bays (1x DM3010H 2U12 LFF (12 LFF drives), 2x Expansion DM600S 4U60 (120 LFF drives)). • Up to 132 drives (1x DM3010H 2U12 LFF (12 LFF drives), 5x Expansion DM240S 2U24 (120 SFF drives)). • Up to 144 LFF hot-swap drive bays (1x DM3010H 2U12 LFF (12 LFF drives), 2x Expansion DM600S 4U60 (120 LFF drives), 1x Expansion DM120S 2U12 (12 LFF drives)). • Up to 144 drives hot-swap drive bays (1x DM3010H 2U12 LFF (12 LFF drives), 5x Expansion DM240S 2U24 (120 SFF drives), 1x Expansion DM120S 2U12 (12 LFF drives)). Intermix of 2U12 LFF, 4U60 LFF, and 2U24 SFF enclosures is supported.
Drive technology	12 Gb NL SAS HDDs, 12 Gb SAS SSDs, 12 Gb SAS HDDs.
Drive expansion connectivity	• SAS connectivity only. • 3x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) expansion ports on each of two controllers in the DM3010H enclosure for the attachment of the expansion enclosures.

Drives	• 2U12 LFF drives: 4 TB, 8 TB, 10 TB, and 16 TB 7.2K rpm NL SAS HDDs
	• 4U60 LFF drives: 4 TB, 8 TB, 10 TB, and 16 TB 7.2K rpm NL SAS HDDs
	• 2U24 SFF drives:
	  ◦ 960 GB, 3.84 TB, 7.68 TB, and 15.36 TB SAS SSDs (1 DWD).
	  ◦ 900 GB, 1.2 TB, and 1.8 TB 10K rpm SAS HDDs.

Storage capacity	Up to 2.3 PB.
Storage protocols	• NAS (File access): NFS and CIFS/SMB. • SAN (Block access): iSCSI and FC. • S3 (Object Access)
Host connectivity	The following Host Interface cards are available: • Dual 25GbE and 32Gb FC • 32Gb Quad Port FC • Quad port 25GbE • 10Gb T Based Ethernet
Host operating systems	Reference LSIC for details.

Attribute	Specification

Configuration maximums**	• Maximum raw storage capacity: 2.3 PB
	• Maximum flash pool cache size: 24 TB
	• Maximum aggregate size: 800 TB
	• Maximum number of FlexVol volumes per controller: 1000
	• 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):
	  ◦ RAID 4: 14 (13 + 1 SAS SSDs) or 7 (6 + 1 NL SAS HDDs)
	  ◦ RAID-DP: 28 (26 + 2 SAS SSDs) or 20 (18 + 2 NL SAS HDDs)
	  ◦ RAID-TEC: 29 (26 + 3 SAS SSDs or NL SAS HDDs)
	• Maximum number of initiators per controller: 2048
	• Maximum number of snapshots per FlexVol volume: 1023

Cooling	Redundant cooling with two cooling modules (DM600S 4U LFF) or with the fans that are built into power supplies (DM3010H, DM120S 2U12 LFF, and DM240S 2U24 SFF).
Power supply	Up to two redundant hot-swap Platinum AC power supplies. • DM3010H, DM120S, DM240S: 913 W (100 - 240 V) • DM600S: 2325 W (200 - 240 V)
Hot-swap parts	Controllers, I/O modules, drives, power supplies, cooling modules (DM600S 4U60 LFF only), and SFP+ 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 USB-C) 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.
Warranty and support	3-year base warranty, 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	2U12 LFF enclosure: • Height: 87 mm (3.4 in.), width: 447 mm (17.6 in.), depth: 508 mm (20.0 in.) 2U12 LFF expansion enclosure: • Height: 87 mm (3.4 in.), width: 447 mm (17.6 in.), depth: 505 mm (19.0 in.) 4U60 LFF expansion enclosure: • Height: 176 mm (6.9 in.), width: 449 mm (17.7 in.), depth: 922 mm (36.3 in.) 2U24 SFF expansion enclosure: • Height: 85 mm (3.4 in.), width: 447 mm (17.6 in.), depth: 484 mm (19.1 in.)
Weight	• DM3010H 2U12 LFF enclosure (fully configured): 29.2 kg (64.4 lb) • 2U12 LFF expansion enclosure (fully configured): 28.7 kg (63.3 lb) • 4U60 LFF expansion enclosure (fully configured): 111.5 kg (245.8 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 Support website:
http://datacentersupport.lenovo.com

Controller enclosures

Preconfigured and factory-integrated models of the ThinkSystem DM3010H Unified Hybrid 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 of the ThinkSystem DM3010H.

Table 2. ThinkSystem DM3010H CTO base models

Description	Machine Type/Model
Lenovo ThinkSystem DM3010H (3-year warranty)	7DCVCTO1WW

The models of the ThinkSystem DM3010H ship with the following items:

- One chassis with the following components:
  - Two controllers with the configured software version (No Encryption or Encryption Capable)
  - Two power supplies
- Rack Mount Kit
- 2 m USB Cable (USB Type A to USB-C)
- Electronic Publications Flyer
- Two power cables:
  - CTO models: Two customer-configured power cables
  - Preconfigured models in Table 2: Two 2.8m 10A/100-250V, C13 to C14 Rack Power Cables
- Additional configured components (model-specific)

Controllers

The Lenovo ThinkSystem DM3010H enclosure can support four different host interface cards. A controller provides interfaces for host connectivity, management, and internal drives. Each DM3010H enclosure provides 128 GB RAM, 16 GB NVRAM, and 2 TB NVMe SSD flash cache (64 GB RAM, 8 GB battery-backed NVRAM, and 1 TB NVMe SSD flash cache per controller).

The Lenovo ThinkSystem DM3010H enclosure ships standard with four interconnect 25 GbE SFP28 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 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.

The Lenovo ThinkSystem DM3010H enclosure supports two controllers.

Each controller of the Lenovo ThinkSystem DM3010H enclosure supports one of the following host interface cards at a time:

- Lenovo ThinkSystem DM Series DM3010H, 16/32Gb FC,4-Ports HIC
- Lenovo ThinkSystem DM Series DM3010H, 10GBaseT Ethernet, 4-Ports HIC
- Lenovo ThinkSystem DM Series DM3010H, 25/10GbE, 4-Ports HIC
- Lenovo ThinkSystem DM Series DM3010H, 2-Port 32Gb Fiber Channel, 2-Port 25Gb Ethernet HIC

Each controller of the Lenovo ThinkSystem DM3010H enclosure comes standard with three integrated 12 Gb SAS x4 expansion ports (Mini-SAS HD SFF-8644 connectors) for the attachment of the ThinkSystem DM Series expansion enclosures.

Two controllers are required for selection and must have the same HIC adapters installed.

The following table lists the Lenovo ThinkSystem DM3010H enclosure and supported connectivity options.

Table 3. DM3010H enclosure and host interface card options

Part number	Feature code	Description	Maximum quantity per enclosure
Controller			
None*	BWTE	Lenovo ThinkSystem DM Series DM3010H SAS Controller, 64GB	2
Host Interface Cards			
CTO only	BWTF	Lenovo ThinkSystem DM Series DM3010H, 16/32Gb FC,4-Ports HIC	2
CTO only	BWTM	Lenovo ThinkSystem DM Series DM3010H, 2-Port 32Gb Fiber Channel, 2-Port 25Gb Ethernet HIC	2
CTO only	BWTK	Lenovo ThinkSystem DM Series DM3010H, 25/10GbE, 4-Ports HIC	2
CTO only	BWTH	Lenovo ThinkSystem DM Series DM3010H, 10GBaseT Ethernet, 4-Ports HIC	2

* Factory-installed only.

The following table lists the DM3010H enclosure storage array supported connectivity options.

Table 4. DM3010H connectivity options

Description	Part number	Feature code	Maximum quantity per controller enclosure
SFP+ transceivers for 32 Gb FC			
Lenovo 32Gb FC SFP+ Transceiver	4M17A13528	B4B3	8

Description	Part number	Feature code	Maximum quantity per controller enclosure
25Gb SR SFP28 transceiver			
Lenovo 25Gb SR SFP28 Ethernet Transceiver	4M27A67041	BFH2	12
SFP+ options for base ports and interconnect ports			
10Gb SW Optical iSCSI SFP+ Module 1 pack	4XF7A14919	B4K9	8
OM4 cables for 16/32 Gb FC and 10/25 Gb iSCSI SW SFP+/SFP28 optical transceivers			
Lenovo 0.5m LC-LC OM4 MMF Cable	4Z57A10845	B2P9	12
Lenovo 1m LC-LC OM4 MMF Cable	4Z57A10846	B2PA	12
Lenovo 3m LC-LC OM4 MMF Cable	4Z57A10847	B2PB	12
Lenovo 5m LC-LC OM4 MMF Cable	4Z57A10848	B2PC	12
Lenovo 10m LC-LC OM4 MMF Cable	4Z57A10849	B2PD	12
Lenovo 15m LC-LC OM4 MMF Cable	4Z57A10850	B2PE	12
Lenovo 25m LC-LC OM4 MMF Cable	4Z57A10851	B2PF	12
Lenovo 30m LC-LC OM4 MMF Cable	4Z57A10852	B2PG	12
OM3 cables for 16/32 Gb FC and 10/25 Gb iSCSI SW SFP+/SFP28 optical transceivers			
Lenovo 0.5m LC-LC OM3 MMF Cable	00MN499	ASR5	12
Lenovo 1m LC-LC OM3 MMF Cable	00MN502	ASR6	12
Lenovo 3m LC-LC OM3 MMF Cable	00MN505	ASR7	12
Lenovo 5m LC-LC OM3 MMF Cable	00MN508	ASR8	12
Lenovo 10m LC-LC OM3 MMF Cable	00MN511	ASR9	12
Lenovo 15m LC-LC OM3 MMF Cable	00MN514	ASRA	12
Lenovo 25m LC-LC OM3 MMF Cable	00MN517	ASRB	12
Lenovo 30m LC-LC OM3 MMF Cable	00MN520	ASRC	12
DAC cable options for 10 GbE SFP+ connectivity (SFP+ base, adapter card, and interconnect ports)			
0.5m Passive DAC SFP+ Cable	00D6288	A3RG	8
1m Passive DAC SFP+ Cable	90Y9427	A1PH	8
1.5m Passive DAC SFP+ Cable	00AY764	A51N	8
2m Passive DAC SFP+ Cable	00AY765	A51P	8
3m Passive DAC SFP+ Cable	90Y9430	A1PJ	8
5m Passive DAC SFP+ Cable	90Y9433	A1PK	8
SFP28 25Gb Passive DAC Cables			
Lenovo 1m Passive 25G SFP28 DAC Cable	7Z57A03557	AV1W	10
Lenovo 3m Passive 25G SFP28 DAC Cable	7Z57A03558	AV1X	10
Lenovo 5m Passive 25G SFP28 DAC Cable	7Z57A03559	AV1Y	10
QSFP28 100G-to-4x25G Breakout Cables			
Lenovo 1m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03564	AV22	2
Lenovo 3m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable 2	7Z57A03565	AV23	2
Lenovo 5m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03566	AV24	2
DAC cable options for 40 GbE QSFP+ to 4x 10 GbE SFP+ host connectivity			
5m QSFP+ DAC Break Out Cable	49Y7888	A1DN	2
3m QSFP+ DAC Break Out Cable	49Y7887	A1DM	2

Description	Part number	Feature code	Maximum quantity per controller enclosure
1m QSFP+ DAC Break Out Cable	49Y7886	A1DL	2
UTP Category 6 cables options for 1/10 GbE RJ-45 host connectivity and 1 GbE RJ-45 management ports			
0.75m Green Cat6 Cable	00WE123	AVFW	10
1.0m Green Cat6 Cable	00WE127	AVFX	10
1.25m Green Cat6 Cable	00WE131	AVFY	10
1.5m Green Cat6 Cable	00WE135	AVFZ	10
3m Green Cat6 Cable	00WE139	AVG0	10
10m Green Cat6 Cable	90Y3718	A1MT	10
10m Blue Cat6 Cable	90Y3721	A1MU	10
10m Yellow Cat6 Cable	90Y3715	A1MS	10
25m Green Cat6 Cable	90Y3727	A1MW	10
25m Blue Cat6 Cable	90Y3730	A1MX	10
25m Yellow Cat6 Cable	90Y3724	A1MV	10

Expansion enclosures

The ThinkSystem DM3010H supports attachment of the following DM Series expansion enclosures:

- Up to 9x DM120S 2U12 LFF enclosures.
- Up to 2x DM600S 4U60 LFF enclosures.
- Up to 5x DM240S 2U24 SFF enclosures.
- A combination of the DM120S, DM600S, and DM240S enclosures is supported.

DM120S 2U12 LFF, DM600S 4U60 LFF, and DM240S 2U24 SFF expansion enclosures can be intermixed behind a DM3010H 2U12 enclosure. The expansion enclosures can be added to the system non-disruptively.

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

Table 5. CTO base models for the ThinkSystem DM Series expansion enclosures

Description	**Machine Type/Model**
3-year warranty	
DM120S 2U12 LFF Expansion Enclosure	7D7XCTO1WW
DM240S 2U24 SFF Expansion Enclosure	7D7YCTO1WW
DM600S 4U60 LFF Expansion Enclosure	7D7ZCTO1WW

Configuration note: Two I/O expansion modules (feature code BQ9X) are pre-selected by the configurator.

The models of the DM120S, DM240S and DM600S ship with the following items:

- One chassis with the following components:
  - Two I/O expansion modules
  - Two power supplies
  - Two cooling modules (4U60 LFF only)
- Rack Mount Kit
- Electronic Publications Flyer
- Two customer-configured power cables
- Additional configured components (model-specific)

Each ThinkSystem DM Series expansion enclosure ships with two SAS I/O expansion modules. Each *I/O expansion module* provides two external 12 Gb SAS x4 ports (Mini-SAS HD SFF-8644 connectors labelled Port 1-4) that are used for connections to the ThinkSystem DM3010H and for daisy chaining the expansion enclosures between each other.

The dual-path HA (high availability) connectivity topology for the enclosures is shown in the following figure.

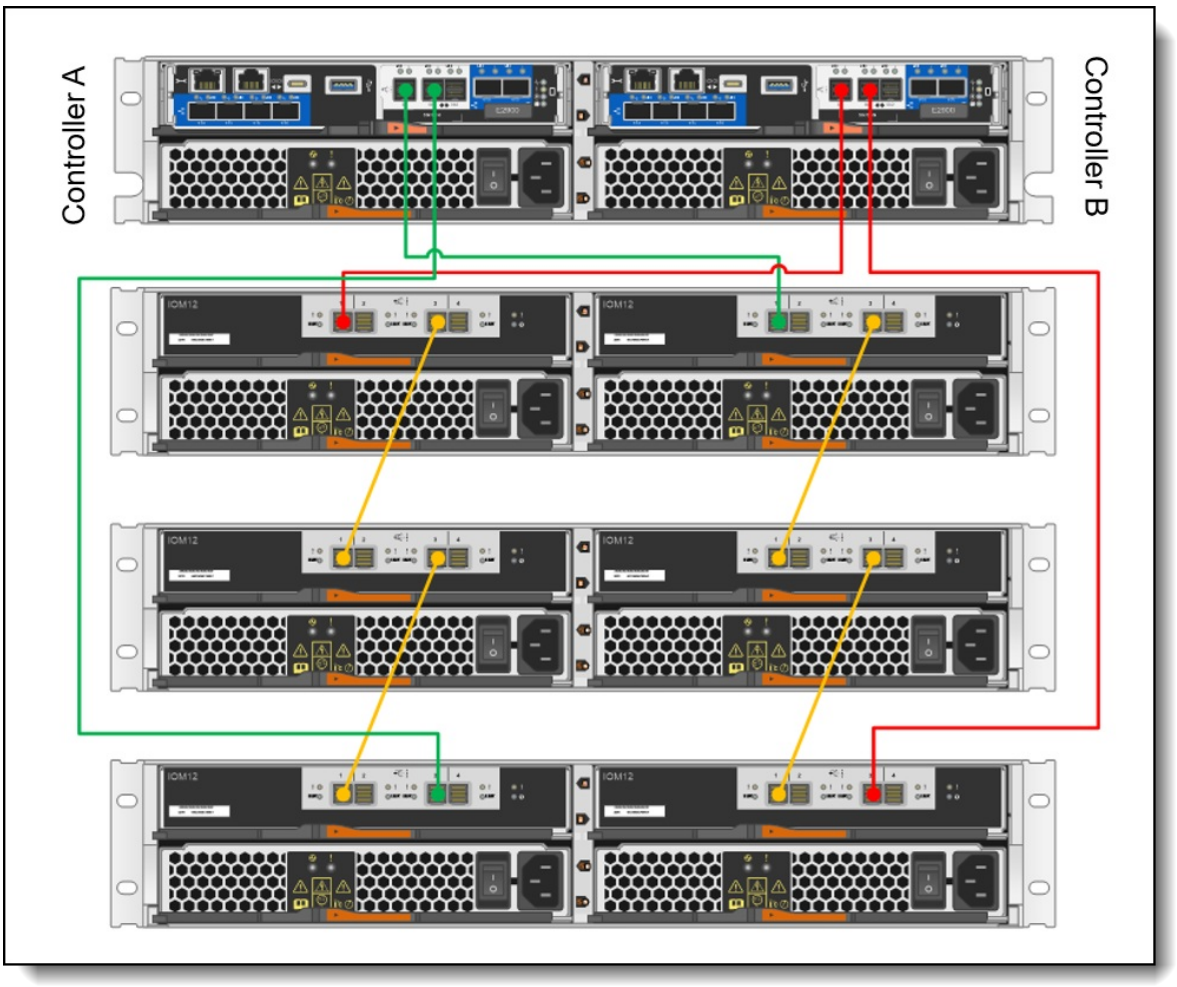

Figure 8. DM3010H expansion enclosure connectivity topology

Expansion cabling rules:

- Port 0b on the Controller A is the primary path that is connected to the Port 3 on the I/O Module A in the last expansion enclosure in a stack.
- Port 1 on the I/O Module A in the last expansion enclosure is connected to Port 3 on the I/O Module A in the adjacent expansion enclosure, and so on (until the first expansion enclosure in a stack is cabled).
- Port 0a on the Controller A is the secondary path that is connected to the Port 1 on the I/O Module B in the first expansion enclosure in a stack.
- Port 0b on the Controller B is the primary path that is connected to the Port 3 on the I/O Module B in the last expansion enclosure in a stack.
- Port 1 on the I/O Module B in the last expansion enclosure is connected to Port 3 on the I/O Module B in the adjacent expansion enclosure, and so on (until the first expansion enclosure in a stack is cabled).
- Port 0a on the Controller B is the secondary path that is connected to the Port 1 on the I/O Module A in the first 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 notes:

- The following quantities of SAS cables are needed for the 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 DM3010H enclosure and for connections to the adjacent expansion enclosures.
  - Two additional SAS cables for connecting the last expansion enclosure in the stack to the DM3010H enclosure.
- The length of the SAS cables that connect a DM3010H enclosure to an adjacent 4U60 enclosure should be at least 1 meter.

Drives

The DM3010H 2U12 LFF enclosure and DM120S 2U12 LFF expansion enclosure support up to 12 LFF hot-swap drives, the DM600S 4U60 LFF expansion enclosure supports up to 60 LFF hot-swap drives, and the DM240S 2U24 SFF expansion enclosure supports up to 24 SFF hot-swap drives.

Shipping requirement: 2U12 and 2U24 enclosures can be shipped with all drive bays populated, however the 4U60 enclosures must be shipped with drives removed.

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 Unified Complete or Unified Essential bundles. See the Software section for details.
- Drives are sold in packs. Supported quantities are as follows:
  - The DM3010H 2U12 LFF enclosure supports 12 LFF drives
  - The DM120S 2U12 LFF expansion enclosure support either 6 or 12 LFF drives
  - The DM600S 4U60 LFF expansion enclosures support either 30 or 60 LFF drives
  - The DM240S 2U24 SFF expansion enclosures support 6, 12, 18 or 24 SFF drives
- For factory-installed drive packs, all drives in the enclosure must be of the same type and capacity.

Field upgrades: Drive packs for field upgrades can be ordered via the CTO base 7D4FCTO4WW, ThinkSystem DM Drive Pack Upgrades. These are for use in existing expansion enclosures that have not been fully populated with the factory-installed drive packs

Table 7. DM3010H 2U12 LFF enclosure drive pack options

Part number	Feature code	Description	Maximum quantity per 2U enclosure
3.5", Non-SED, NLSAS HDD			
CTO only	BXC1	Lenovo ThinkSystem 24TB (6x 4TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXC0	Lenovo ThinkSystem 48TB (6x 8TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXBY	Lenovo ThinkSystem 96TB (6x 16TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXBZ	Lenovo ThinkSystem 60TB (6x 10TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXBU	Lenovo ThinkSystem 24TB (6x 4TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2
CTO only	BXBT	Lenovo ThinkSystem 48TB (6x 8TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2
CTO only	BXC4	Lenovo ThinkSystem 60TB (6x 10TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2
CTO only	BXC3	Lenovo ThinkSystem 96TB (6x 16TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2
3.5", NLSAS HDD			
CTO only	B90V*	Lenovo ThinkSystem 24TB (6x 4TB, 3.5", NLSAS HDD) Drive Pack	2
CTO only	B90X*	Lenovo ThinkSystem 48TB (6x 8TB, 3.5", NLSAS HDD) Drive Pack	2
CTO only	B90Y*	Lenovo ThinkSystem 60TB (6x 10TB, 3.5", NLSAS HDD) Drive Pack	2
CTO only	BEFK*	Lenovo ThinkSystem 96TB (6x 16TB, 3.5", NLSAS HDD) Drive Pack	2
NVMe			
CTO only	B4CH	Lenovo ThinkSystem DM Series 1TB NVMe Cache	2

*For Brazil geography

The following table lists additional supported drive pack options for the controller DM3010H and DM120S expansion enclosures.

Table 8. Controller DM3010H 2U12 LFF / Expansion DM120S 2U12 LFF expansion drive pack options

Part number	Feature code	Description	Maximum quantity per 2U enclosure
3.5", Non-SED, NLSAS HDD			
CTO only	BXC1	Lenovo ThinkSystem 24TB (6x 4TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXC0	Lenovo ThinkSystem 48TB (6x 8TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXBY	Lenovo ThinkSystem 96TB (6x 16TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXBZ	Lenovo ThinkSystem 60TB (6x 10TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2

Part number	Feature code	Description	Maximum quantity per 2U enclosure
CTO only	BXBU	Lenovo ThinkSystem 24TB (6x 4TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2
CTO only	BXBT	Lenovo ThinkSystem 48TB (6x 8TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2
CTO only	BXC4	Lenovo ThinkSystem 60TB (6x 10TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2
CTO only	BXC3	Lenovo ThinkSystem 96TB (6x 16TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2

The following table lists additional supported drive pack options for the DM240S expansion enclosure.

Table 9. Expansion DM240S 2U24 SFF drive packs

Part number	Feature code	Description	Maximum quantity per 2U enclosure
2.5 inch, Non-SED, SAS 10K HDDs			
CTO only	BXDN	Lenovo ThinkSystem 5.4TB (6x 900GB, 2.5", Non-SED, SAS 10K HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	4
CTO only	BXDJ	Lenovo ThinkSystem 5.8TB (6x 960GB, 2.5", Non-SED, SSD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	4
CTO only	BXDP	Lenovo ThinkSystem 7.2TB (6x 1.2TB, 2.5", Non-SED, SAS 10K HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	4
CTO only	BXDQ	Lenovo ThinkSystem 10.8TB (6x 1.8TB, 2.5", Non-SED, SAS 10K HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	4
CTO only	BXDK	Lenovo ThinkSystem 23TB (6x 3.84TB, 2.5", Non-SED, SSD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	4
CTO only	BXDL	Lenovo ThinkSystem 46.1TB (6x 7.68TB, 2.5", Non-SED, SSD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	4
CTO only	BXDM	Lenovo ThinkSystem 92.2TB (6x 15.36TB, 2.5", Non-SED, SSD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	4
CTO only	BXDE	Lenovo ThinkSystem 5.4TB (6x 900GB, 2.5", Non-SED, SAS 10K HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	4
CTO only	BXDA	Lenovo ThinkSystem 5.8TB (6x 960GB, 2.5", Non-SED, SSD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	4
CTO only	BXDF	Lenovo ThinkSystem 7.2TB (6x 1.2TB, 2.5", Non-SED, SAS 10K HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	4
CTO only	BXD1	Lenovo ThinkSystem 10.8TB (6x 1.8TB, 2.5", Non-SED, SAS 10K HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	4
CTO only	BXDB	Lenovo ThinkSystem 23TB (6x 3.84TB, 2.5", Non-SED, SSD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	4
CTO only	BXDC	Lenovo ThinkSystem 46.1TB (6x 7.68TB, 2.5", Non-SED, SSD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	4
CTO only	BXDD	Lenovo ThinkSystem 92.2TB (6x 15.36TB, 2.5", Non-SED, SSD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	4

The following table lists additional supported drive pack options for the DM600S 4U60 LFF expansion enclosure.

Table 10. Expansion DM600S 4U60 LFF drive packs

Part number	Feature code	Description	Maximum quantity per 2U enclosure
3.5 inch, Non-SED, NLSAS HDD			
CTO only	BXCM	Lenovo ThinkSystem 120TB (30x 4TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXCN	Lenovo ThinkSystem 240TB (30x 8TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXCP	Lenovo ThinkSystem 300TB (30x 10TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXCQ	Lenovo ThinkSystem 480TB (30x 16TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Complete Bundle - ONTAP: Unified	2
CTO only	BXC9	Lenovo ThinkSystem 120TB (30x 4TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2
CTO only	BXC8	Lenovo ThinkSystem 240TB (30x 8TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2
CTO only	BXC7	Lenovo ThinkSystem 300TB (30x 10TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2
CTO only	BXC5	Lenovo ThinkSystem 480TB (30x 16TB, 3.5", Non-SED, NLSAS HDD) Drive Pack for DM3010H - Essential Bundle - ONTAP: Unified	2

Software

In this section:

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

Enclosure software for the DM3010H is available in the following bundles of features:

Table 11. Software features and specifications summary

Attribute	Unified Essentials	Unified Complete
Enclosure 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
Thin provisioning	Included	Included

Attribute	Unified Essentials	Unified Complete
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
FabricPool object storage tiering	Optional	Optional
Autonomous Anti-ransomware Protection	No	Included
Multitenant Key Management	No	Included
SnapLock	No	Included
SnapMirror Cloud	No	Included
SnapMirror S3	No	Included

* Requires the encryption version of ONTAP. See the ONTAP software section.
** TPM is enabled for all systems with encryption enabled outside of 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.

ONTAP software versions

The following table lists the software selection options for the DM3010H. The table also indicates which markets each version is available in.

Table 12. Software selection

Feature code	Description	Availability
ONTAP 9.13		
BWUA	Lenovo ThinkSystem Storage ONTAP 9.13 Software Encryption - IPAv2	All markets
BWUB	Lenovo ThinkSystem Storage ONTAP 9.13 Software NonEncryption - IPAv2	All markets

Software maintenance is included in the DM3010H 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 13. 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.

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 ThinkSystem DM3010H 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.

The following table lists the management port cable option.

Table 14. DM3010H management cable option

Part number	Feature code	Description	Maximum quantity per enclosure
CTO only	BY6K	USB-A to USB-C Cable	1

Power supplies and cables

The ThinkSystem DM3010H, DM120S 2U12 LFF, and DM240S 2U24 LFF enclosures ship with two redundant hot-swap 913 W (100 - 240 V) Platinum AC power supplies, each with an IEC 320-C14 connector.

The ThinkSystem DM600S 4U60 LFF expansion enclosures ship with two redundant hot-swap 2325 W (200 - 240 V) Platinum AC power supplies, each with an IEC 320-C20 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 DM3010H, DM120S 2U12 LFF, and DM240S 2U24 SFF enclosures (two power cords per enclosure).

Table 15. Power cables for DM3010H, DM120S 2U12 LFF, 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/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/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

The following table lists the rack power cable and line cord options that can be ordered for the DM600S 4U60 LFF expansion enclosures (two power cords per enclosure).

Table 16. Power cables for DM600S 4U60 enclosures

Description	Part number	Feature code
Rack power cables		
2.5m, 16A/100-250V, C19 to IEC 320-C20 Rack Power Cable	39Y7916	6252
Line cords		
Argentina 4.3m, 16A/250V, C19 to IRAM 2073 Line Cord	40K9777	6276
Australia/New Zealand 4.3m, 15A/250V, C19 to AS/NZS 3112 Line Cord	40K9773	6284
Brazil 4.3m, 16A/250V, C19 to NBR 14136 Line Cord	40K9775	6277
China 4.3m, 16A/250V, C19 to GB2099.1 Line Cord	40K9774	6288
Denmark/Switzerland 4.3m, 16A/250V, C19 to IEC 309 P+N+G Line Cord	40K9769	6283
Europe 4.3m, 16A/250V, C19 to CEE7-VII Line Cord	40K9766	6279
India 4.3m, 16A/250V, C19 to IS6538 Line Cord	40K9776	6285
Israel 4.3m, 16A/250V, C19 to SI 32 Line Cord	40K9771	6282
Italy 4.3m, 16A/250V, C19 to CEI 23-16 Line Cord	40K9768	6281
Japan 4.3m, 15A/200V, C19 to JIS C-8303 Line Cord	41Y9233	6291
Korea 4.3m, 15A/250V, C19 to KSC 8305 Line Cord	41Y9231	6289
South Africa 4.3m, 16A/250V, C19 to SABS 164 Line Cord	40K9770	6280
Switzerland 4.3m, 16A/250V, C19 to SEV 1011 Line Cord	81Y2391	6549

Description	Part number	Feature code
Taiwan 4.3m, 16A/250V, C19 to CNS 10917-3 Line Cord	41Y9230	6287
United Kingdom 4.3m, 13A/250V, C19 to BS 1363/A Line Cord	40K9767	6278
United States 4.3m, 15A/250V, C19 to NEMA 6-15P Line Cord	00D7197	A1NV
United States 4.3m, 18A/250V, C19 to NEMA L6-20P Line Cord	40K9772	6275

Rack installation

The individually shipped DM3010H and DM120S enclosures come with the ThinkSystem Storage Rack Mount Kit 2U12, and the individually shipped DM600S and DM240S enclosures come with the ThinkSystem Storage Rack Mount Kit 2U24/4U60. The rack mount kits are listed in the following table.

Table 17. 4-post rack mount kits

Description	Feature code	Quantity
ThinkSystem Storage Rack Mount Kit 2U12	B38X	1
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 18. 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/DE 4U Adjustable Rail Kit (SIR)	B742	1

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

Table 19. Rack mount kit features and specifications summary

	Screw-in fixed rail with adjustable depth			
Attribute	**2U12**	**2U24/4U60**	**2U24 SIR**	**4U SIR**
Feature code	B38X	B38Y	B6TH	B742
Enclosure support	DM3010H DM120S	DM240S DM600S‡	DM240S	DM600S‡
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) support	Yes	No	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	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	Square or round

Attribute	Screw-in fixed rail with adjustable depth			
	2U12	**2U24/4U60**	**2U24 SIR**	**4U SIR**
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 rack cabinet must be at least 1100 mm (43.31 in.) deep for 4U60 enclosures.
* 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 2U12 and 2U24 enclosures, or at least 1200 mm (47.24 in.) deep for 4U60 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 DM3010H enclosure has the following dimensions and weight (approximate):

- Height: 87 mm (3.4 in.)
- Width: 447 mm (17.6 in.)
- Depth: 508 mm (20.0 in.)
- Weight (fully configured): 29.2 kg (64.4 lb)

The DM120S 2U12 LFF enclosures have the following dimensions and weight (approximate):

- Height: 87 mm (3.4 in.)
- Width: 447 mm (17.6 in.)
- Depth: 505 mm (19.0 in.)
- Weight (fully configured): 28.7 kg (63.3 lb)

The DM600S 4U60 LFF enclosures have the following dimensions and weight (approximate):

- Height: 174 mm (6.9 in.)
- Width: 449 mm (17.7 in.)
- Depth: 922 mm (36.3 in.)
- Weight (fully configured): 111.5 kg (245.8 lb)

The 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 DM3010H, DM120S 2U12 LFF, and DM600S 4U60 LFF enclosures are supported in the following environment:

- Air temperature:
  - Operating:
    - DM3010H, DM120S and DM240S: 10 °C - 40 °C (50 °F - 104 °F)
    - DM600S 4U60 LFF: 5 °C - 40 °C (50 °F - 104 °F)
  - Non-operating: -40 °C - +70 °C (40 °F - 158 °F)
  - Maximum altitude: 3050 m (10,000 ft)
- Relative humidity:
  - Operating: 8% - 80% (non-condensing)
  - Non-operating: 10% - 95% (non-condensing)
- Electrical power:
  - DM3010H
    - 100 to 127 (nominal) V AC; 50 Hz or 60 Hz; 5.78 A

        - 200 to 240 (nominal) V AC; 50 Hz or 60 Hz; 3.00 A
        - Maximum system power load: 573 W
    - DM120S 2U12 LFF
        - 100 to 127 (nominal) V AC; 50 Hz or 60 Hz; 3.56 A
        - 200 to 240 (nominal) V AC; 50 Hz or 60 Hz; 1.78 A
        - Maximum system power load: 338 W
    - DM600S 4U60 LFF
        - 200 to 240 (nominal) V AC; 50 Hz or 60 Hz; 8.11 A
        - Maximum system power load: 1541 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:
    - DM3010H: 1955 BTU/hour
    - DM120S 2U12 LFF: 1153 BTU/hour
    - DM600S 4U60 LFF: 5258 BTU/hour
    - DM240S 2U24 SFF: 1331 BTU/hour
- Acoustical noise emission:
    - DM3010H: 7.8 bels
    - DM120S 2U12 LFF: 6.3 bels
    - DM600S 4U60 SFF: 7.2 bels
    - DM240S 2U24 SFF: 6.9 bels

Warranty and support

The DM3010H and expansion enclosures have a 3-year warranty based on the machine type of the system, as listed in the following table.

Table 20. Duration of standard warranty

System	**Machine type** **3 year warranty**
Lenovo ThinkSystem DM3010H	7DCV
DM Expansion DM120S 2U12	7D7X
DM Expansion DM240S 2U24	7D7Y
DM Expansion DM600S 4U60	7D7Z

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 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 DM3010H Unified Hybrid Storage Array supports attachment to Lenovo servers by using 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 DM3010H Unified Hybrid Storage Array for cluster interconnect configurations.

Table 21. Ethernet storage switch

Description	Part number
BES-53248 Ethernet Storage Switch: 16x SFP ports and 2x QSFP ports active, 2 PS (CTO only)*	7D2SCTO1WW
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 BES-53248 Ethernet Storage Switch for Lenovo Product Guide: http://lenovopress.com/lp1226

**The SN2100 switch can be used with the ThinkSystem DM3010H Unified Hybrid Storage Array for cluster interconnect and MetroCluster IP configurations.

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 22. 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)
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)

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 23. 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
00YJ777	ATZZ	0U 36 C13/6 C19 32A 1 Phase PDU	Y	Y	N	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 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
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
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

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
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)															
39M2816	6030	DPI C13 Enterprise PDU Plus Module (WW)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8941	6010	DPI C13 Enterprise PDU Module (WW)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
1U C19 Enterprise PDUs (6x IEC 320 C19 outlets)															
39Y8948	6060	DPI C19 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															
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 24. 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

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

Related publications and links

For more information, see the following resources:

- Lenovo Data Center Solution Configurator
  http://dcsc.lenovo.com
- ThinkSystem DM Series documentation
  http://thinksystem.lenovofiles.com/storage/help/topic/ontap_software/overview.html
- ONTAP Ransomware Protection
  https://thinksystem.lenovofiles.com/storage/help/topic/ontap_anti-ransomware/anti-ransomware.pdf
- Lenovo Data Center Support
  http://datacentersupport.lenovo.com
- ThinkSystem DM Series datasheet
  https://lenovopress.lenovo.com/datasheet/ds0048-lenovo-thinksystem-dm-series-hybrid-flash
- Lenovo ThinkSystem DG and DM Series product page
  https://www.lenovo.com/us/en/c/data-center/storage/unified-storage

Related product families

Product families related to this document are the following:

- DM Series Storage
- External Storage
- Lenovo Storage

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