Lenovo ThinkSystem D4390 Direct Attached Storage Enclosure

Product Guide

The Lenovo ThinkSystem D4390 Direct Attached Storage Enclosure offers 24 Gbps SAS direct-attached drive-rich storage expansion capabilities that are designed to provide density, speed, scalability, security, and high availability for high-capacity application. The D4390 delivers enterprise-class storage technology in a cost-effective dense solution with flexible drive configurations of up to 90 drives in 4U rack space and host-RAID or JBOD ("Just a Bunch Of Drives") non-RAID host connectivity.

The Lenovo ThinkSystem D4390 is ideal for high-capacity scratch storage for HPC simulations and object storage for unstructured data. Typical use cases also include video streaming, global file sharing, big data and analytics, video surveillance, private and hybrid clouds, and backup and archiving.

Figure 1. D4390 High Density Expansion Enclosure

360° View | Full 3D Tour

Did you know?

The Lenovo ThinkSystem D4390 supports 24 Gbps SAS connectivity, which doubles the data transfer rate compared to 12 Gbps SAS solutions to maximize performance of storage I/O-intensive applications.

With support for daisy chaining, the D4390 can be scaled up seamlessly to 3.240 PB for capacity-optimized configurations.

The Lenovo ThinkSystem D4390 Direct Attached Storage Enclosure is a single, flexible expansion platform that utilizes existing infrastructure, providing a lower TCO and immediate savings on traditional capital costs.

Key features

Key features and benefits provided by the Lenovo ThinkSystem D4390 include:

- Versatile, scalable storage expansion with dual Electronic Service Module (ESM) configurations for high availability and performance
- Flexible host connectivity to match diverse client needs for direct attach storage with support. Users are able to use either 12 Gb SAS or RAID adapters for advanced data protection. At a later date we will also introduce support for a 24Gb SAS HBA for end-to-end 24Gb connectivity
- Support 90x 3.5-inch large form factor (LFF) 12Gb Nearline SAS drives in a 4U rack space
- Scalability of up to 180 drives per HBA with the attachment of up to two D4390 daisy-chained high density expansion enclosures
- Flexibility in storing data on high performance SAS SSDs or capacity-optimized enterprise NL SAS HDDs; mixing and matching drive types on a single HBA to perfectly meet performance and capacity requirements for various workloads
- Support multiple host attachments (zoning function)

The D4390 Direct Attached Storage Enclosure is designed to support a wide range of data storage requirements, from highly utilized applications to high-capacity, low usage applications.

The following SAS drives are supported by the D4390:

- High-capacity, archival-class nearline HDDs, up to 24 TB 7.2K rpm
- High performance SSDs (2.5" drive in 3.5" tray): 800 GB

Additional drives and expansion units are designed to be dynamically added with virtually no downtime (operating system dependent), helping to quickly and seamlessly respond to growing capacity demands.

The D4390 Direct Attached Storage Enclosure is designed to offer high levels of system and data availability with the following technologies:

- Dual ESMs provide redundant paths from a supported HBA to the drives in the enclosures for I/O load balancing and failover
- Dual-port drives (both HDDs and SSDs)
- Redundant hardware, including host ports, ESMs, power supplies, 5V DC/DC regulators and cooling fans
- Hot-swappable and customer replaceable components; including ESMs, power supplies, cooling fans, 5V DC/DC modules, and drives

Components and connectors

The following figures show the rear angled of the D4390 Direct Attached Storage Enclosure.

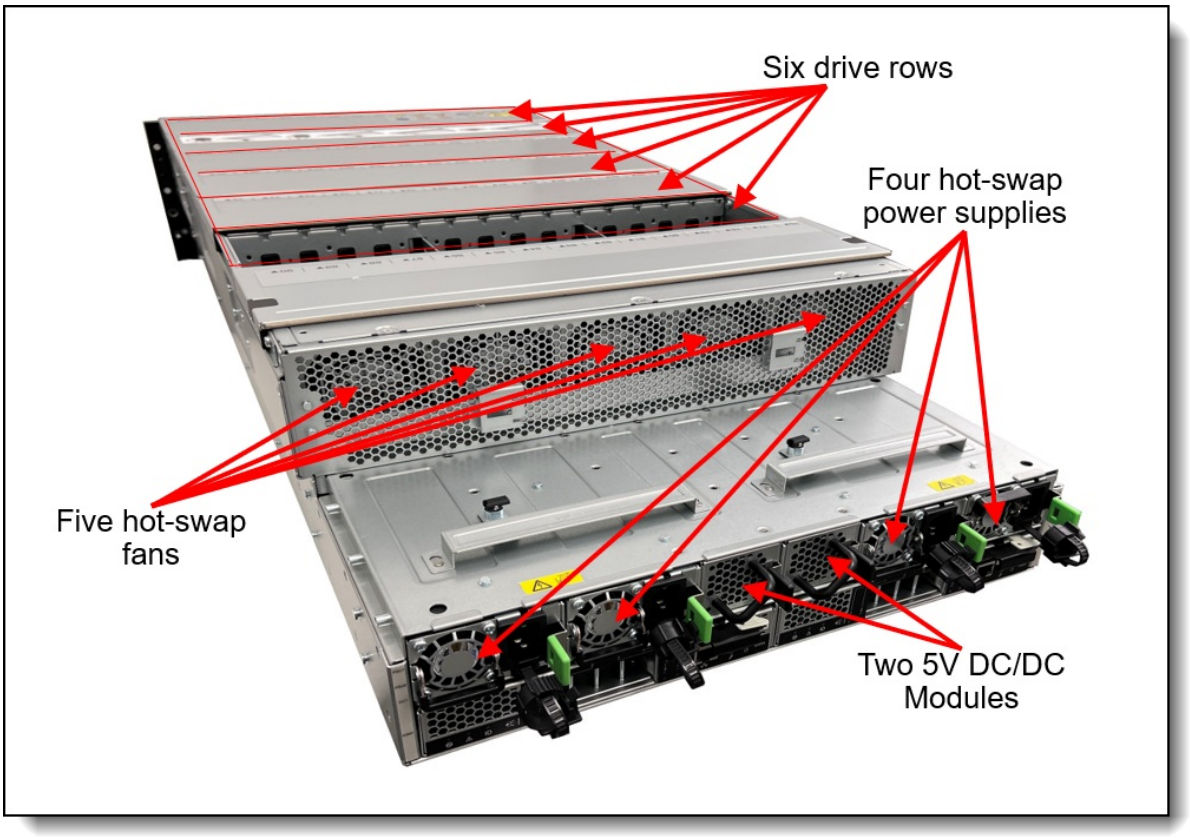

Figure 2. Rear view of the D4390 Direct Attached Storage Enclosure

The following figures show the rear of the D4390 Direct Attached Storage.

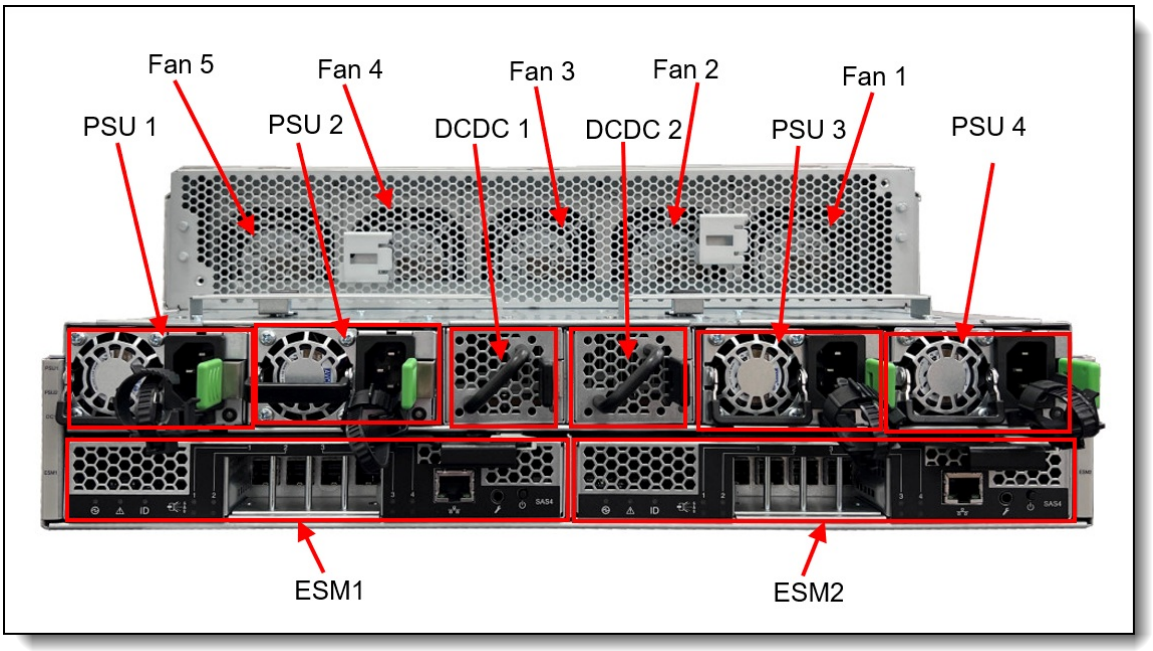

Figure 3. Rear view of the D4390 Direct Attached Storage Enclosure

Notes:

- The ESMs (shown in the previous figure) have additional service ports, and these ports are reserved for use by a Lenovo service technician.
- The Ethernet management ports on the ESMs are disabled.

Standard specifications

The following table lists the D4390 standard system specifications.

Table 1. System specifications

Attribute	Specification
Machine types	7DAH
Form factor	4U rack mount.
Number of ESMs	2
Expansion ports	4x 24Gbps Mini-SAS HD (SFF-8674) ports per ESM.
Drive technologies	NL SAS HDDs and SAS SSDs. Intermix of HDDs and SSDs is supported within an enclosure. • Up to 90 hot-swap SAS drives per enclosure ◦ Of those: Up to 12 hot-swap SAS SSDs supported per enclosure • Up to 22 TB 7,200rpm NL-SAS HDDs • Up to 800GB SSDs (2.5" drive in 3.5" tray)
Drive connectivity	Dual-ported 12 Gb SAS drive attachment infrastructure.
Host adapters	RAID controllers: • ThinkSystem RAID 940-8e PCIe 12Gb Adapter Host bus adapters (non-RAID): • ThinkSystem 440-16e SAS/SATA PCIe Gen4 12Gb HBA • ThinkSystem 440-8e SAS/SATA PCIe Gen4 12Gb HBA • 24Gb SAS HBA (future option)
Host operating systems	Red Hat Enterprise Linux (RHEL) 8.4, 8.5, 8.6, 8.7, 8.8, 9; SUSE Linux Enterprise Server (SLES) 15.3, 15.4, Windows Server 2019, 2022, VMware ESXi 7.0U3, 8.0, 8.0U1, 8.0U2, Ubuntu 22.04.4
Cooling	Five 80 mm hot-swap/redundant fan modules, hot-pluggable from the top.
Power supply	Four hot-swap 80PLUS Titanium 1300W AC power supplies (3+1 AC100~240V, 2+2 AC200~240V)
Hot-swap parts	HDDs, SSDs, ESMs, 5V DC-DC modules, fans, power supplies.
Management interfaces	In-band SES commands.
Warranty	Three-year limited warranty, 9x5 Next Business Day Onsite (upgradeable).
Service and support	Optional warranty service upgrades are available through Lenovo: Technician installed parts, 24x7 coverage, 2-hour or 4-hour response time, 6-hour or 24-hour committed repair, 1-year or 2-year warranty extensions, YourDrive YourData, hardware installation.
Dimensions	Height: 175.3mm (6.9 in); Width: 446mm (17.56”); Depth: 1080mm (42.52”) w/ CMA.
Weight	min. 45kg (95lbs); max. 118kg (260lbs) with full drive configuration.

Note : For the latest **operating system** and **host adapter** interoperability support, please visit LSIC web page.

Models

ThinkSystem D4390 models can be configured by using the Lenovo Data Center Solution Configurator (DCSC).

Configure-to-order (CTO) models are used to create models with factory-integrated server customizations. For CTO models, two base CTO models are available for the D4390 as listed in the following table, CTO1WW and CTOLWW:

- The CTO1WW base CTO model is for general business and is selectable by choosing General Purpose mode in DCSC.
- The CTOLWW base model is intended for High Performance Computing (HPC) and Artificial Intelligence (AI) configurations and solutions, including configurations for Lenovo Scalable Infrastructure (LeSI), and is enabled using either the HPC & AI LeSI Solutions mode or HPC & AI Hardware mode in DCSC. CTOLWW configurations can also be built using System x and Cluster Solutions Configurator (x-config).

The following table lists the relationship models of the D4390 drive enclosures.

Table 2. D4390 CTO model

Machine Type/Model General purpose	**Description**
7DAHCTO1WW	Lenovo ThinkSystem D4390 Direct Attached Storage

The Lenovo ThinkSystem D4390 includes the following items:

- One chassis with the following components:
  - Dual 4-port electronic service modules (ESMs)
  - Six rows for drives
  - Four power supplies
  - Two 5V DC/DC modules
  - Five cooling fan modules
- Four lift handles
- Pair - Rack Mount Kit - Rails 25"-33"
- Documentation package
- CMA (Cable Management Assembly) kit

Host connectivity

Topics in this section:

Enclosure port detail

The D4390 high density expansion enclosure supports dual electronic service module (ESM) configurations. Each ESM has four universal 12/24 Gb SAS x4 ports (Mini-SAS HD SFF-8674 connectors). These ports are used for connections to a supported SAS RAID controller or SAS HBA installed in a server and for daisy chaining the D4390 enclosures between each other.

Typical convention leverages the ports as follows:

- A, B, C ports are for upstream
- D ports for downstream

Note: Any port can be an "upstream" or "downstream" port

Up to two Lenovo ThinkSystem D4390 can be daisy-chained with support for up to 1 host server attached to the chain.

Without daisy-chaining, a standalone Lenovo ThinkSystem D4390 can support up to four directly attached host servers with zoning function enabled.

- There is no support for intermixing chaining with D1212/D1224/D3284.

Connectivity: Please note that the only supported method to attach a non-RAID or a RAID adapter is by using a single path to each individual ESM module.

Connectivity topologies

The following figures illustrate different host connectivity topologies.

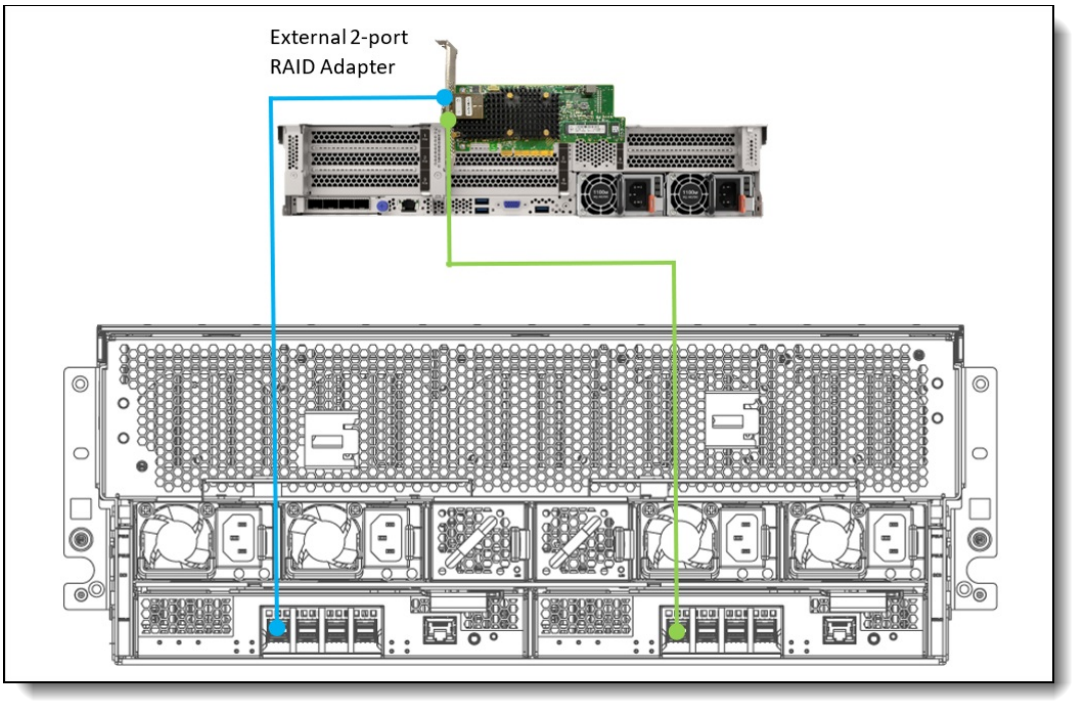

Figure 4. Connectivity topology one host with one RAID adapter and 1xD4390

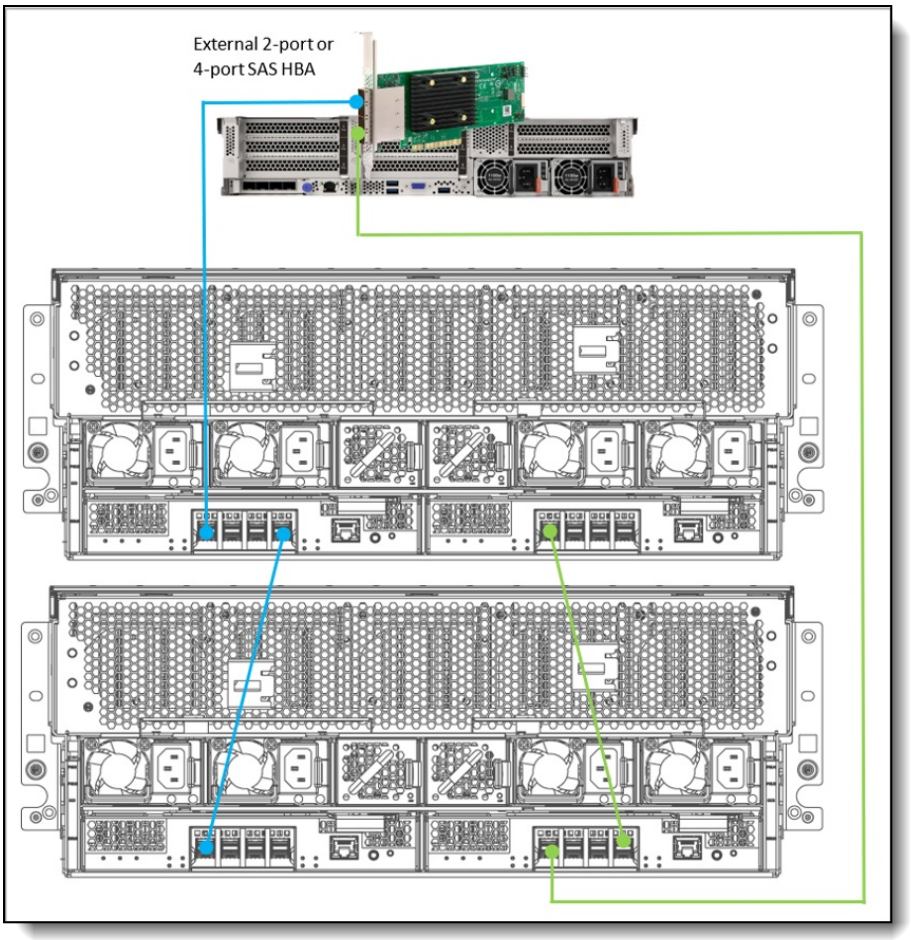

Figure 5. Connectivity topology one host with one HBA adapter and 2xD4390

SAS Zoning

The SAS zoning function of D4390 allows multiple host servers to access the JBOD enclosure at the same time independently. If the zoning function is disabled (zone mode 0), the attached host server can access all the drives in the enclosure. If the zoning function is enabled (zone mode 1 or 2 or 3), each connected host server has exclusive access to a predefined set of drives in the same enclosure through different SAS ports on the ESM module. Different zone modes will have different drive partitions in association to the SAS ports on the ESM module. With zone mode set to 1, there are two equal size zones. With zone mode set to 2, there are three equal size zones. With zone mode set to 3, there are four zones (22/23/22/23). The following table shows all supported zone configurations.

- With zone mode enabled, daisy-chaining D4390 is not supported. Therefore, there is no downstream expansion port. It's always a single, standalone D4390 enclosure when its zone mode is enabled.

The following table lists the supported zoning configurations

Table 3. D4390 zoning configurations

Zone mode*	# of zones	Maximum # of hosts	# of drive bays in one zone	Host ports	Expansion ports	Drive bays
0	1	1**	90	A, B, C	D	1 - 90
1	2	2	45	A, B	None	1 - 45
				C, D	None	46 - 90
2	3	3	30	A	None	1 - 30
				B	None	31 - 60
				C	None	61 - 90
3	4	4	22	A	None	1 - 22
			23	B	None	23 - 45
			22	C	None	46 - 67
			23	D	None	68 - 90

* Zone mode 0/1/2/3 are the value you use to enable/disable the zoning function using Lenstor utility. In zone mode 2, SAS port D on the ESM module will be disabled.
** If the hosts are running an OS/Application that supports SCSI reservations, for example a parallel distributed file system, more than 1 host attachment could be supported, but that is beyond the ability of the enclosure to enforce in zone mode 0.

The following figures illustrate different zone modes:

Zone mode 1

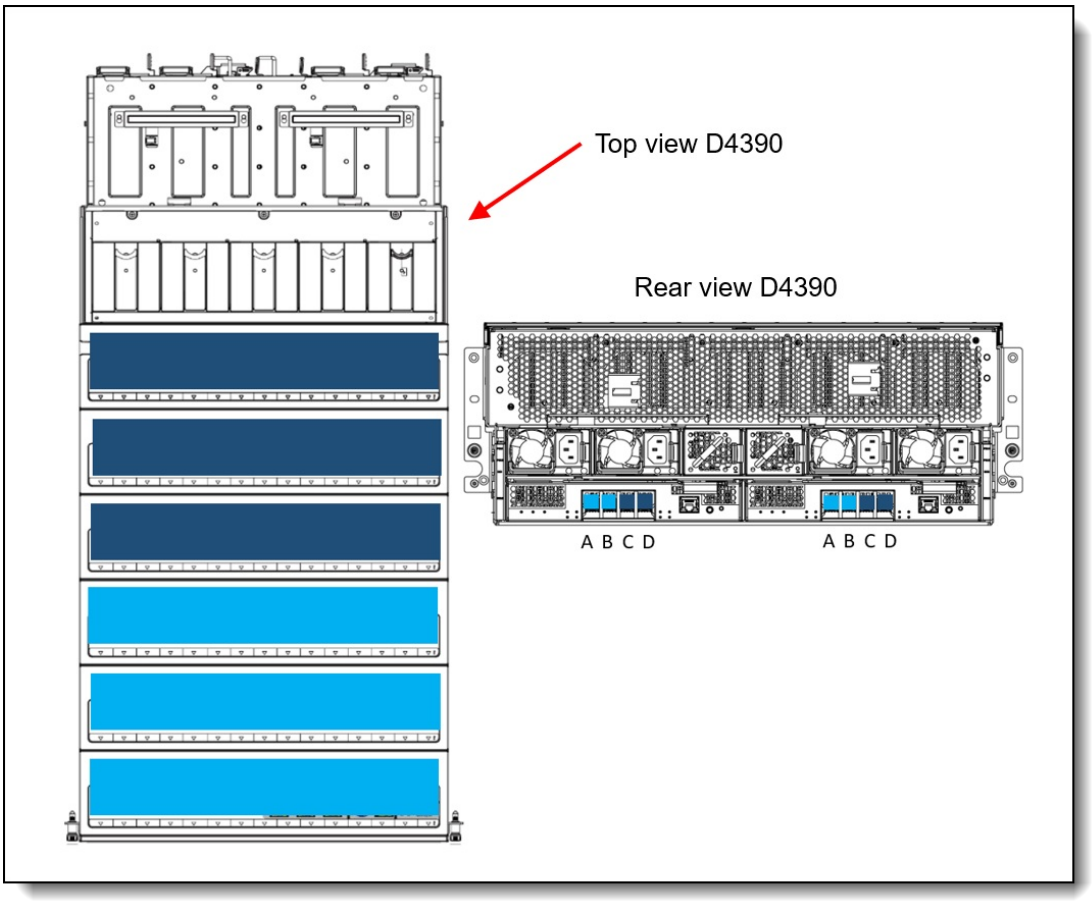

Figure 6. Zone mode 1 for D4390 enclosure

Zone mode 2

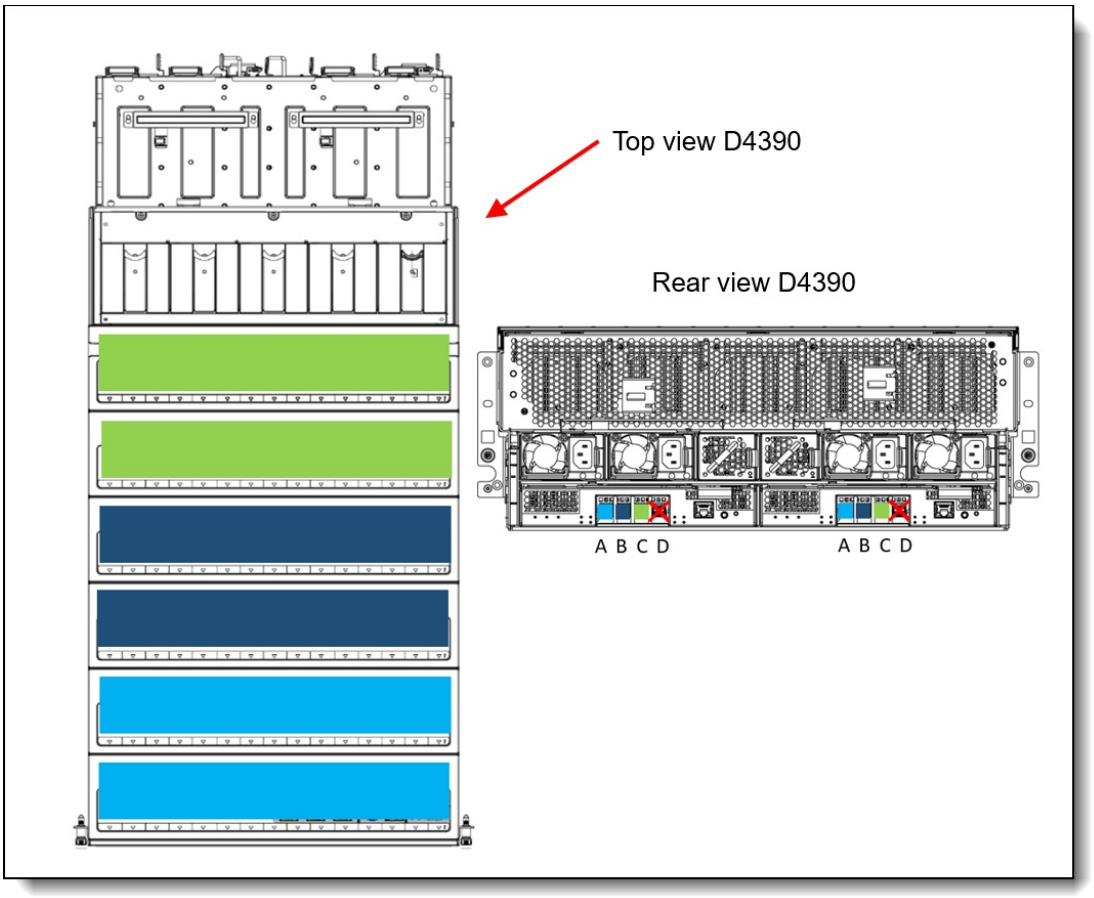

Figure 7. Zone mode 2 for D4390 enclosure

Zone mode 3

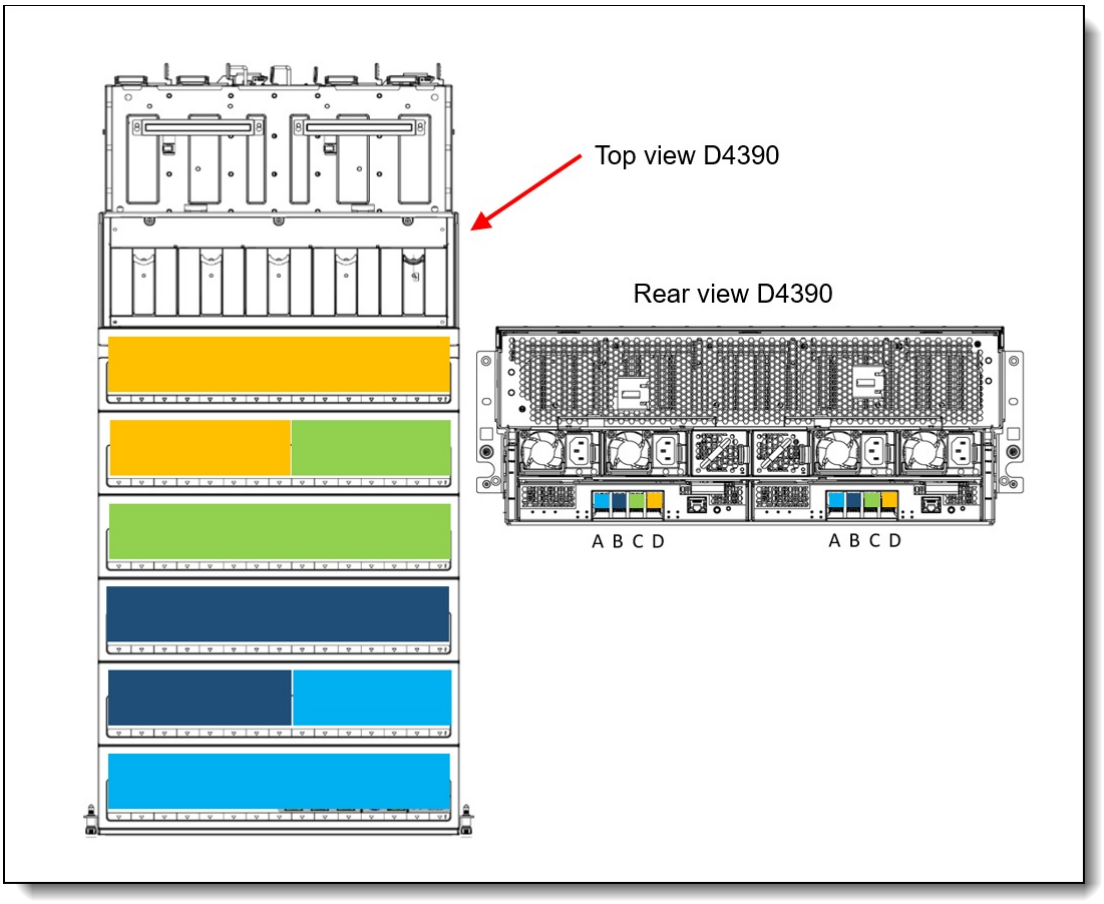

Figure 8. Zone mode 3 for D4390 enclosure

With zone mode 3, a single D4390 JBOD enclosure can support up to four individual host servers with the following cabling configuration as an example. Each host server can use either a SAS HBA (non-RAID) or a RAID adapter.

The following is connectivity topology of four host servers attached to one D4390 JBOD enclosure

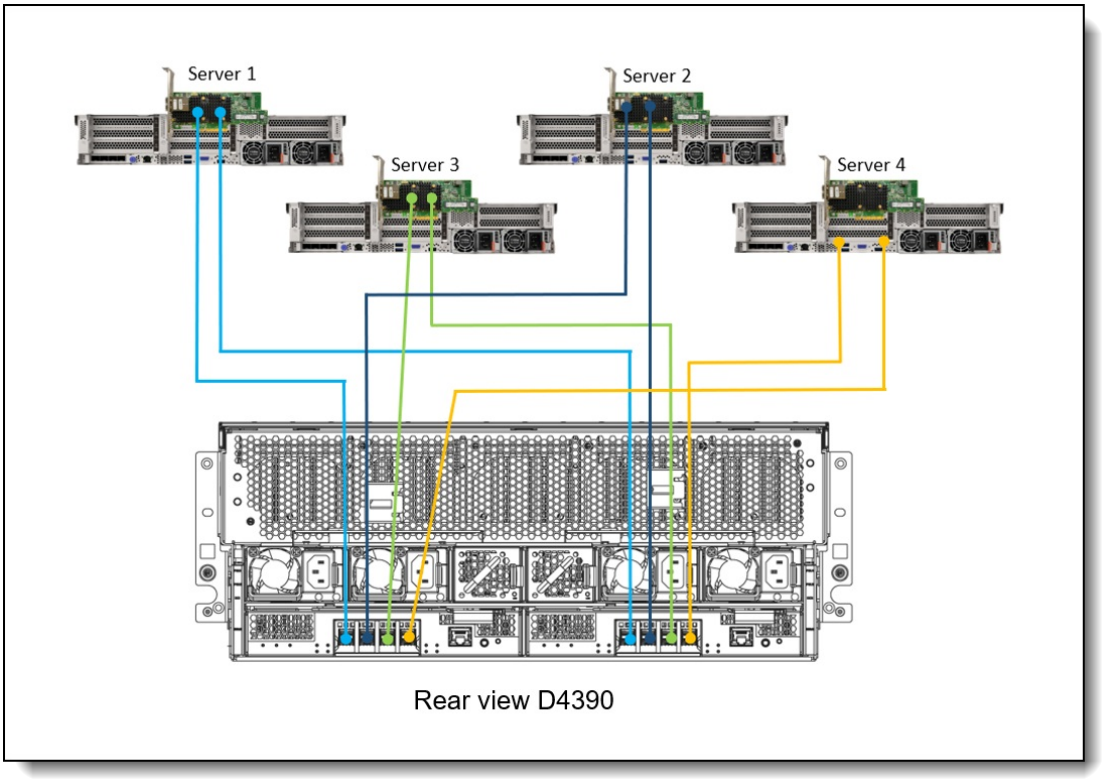

Figure 9. Four host servers attached to one D4390 JBOD enclosure

The following table lists ordering information for the SAS cables that are supported with the D4390.

Table 4. SAS cable options

Part number	Feature code	Description	Maximum quantity per one D4390
Connectivity cables - Mini-SAS HD Host Adapter to Expansion - 12Gb			
00YL849	AU18	2m External MiniSAS HD 8644/MiniSAS HD 8644 Cable	8
00YL850	AU19	External MiniSAS HD 8644/MiniSAS HD 8644 3M Cable	8
00KH452	AUJY	External MiniSAS HD 8644/MiniSAS HD 8644 6M Cable	8
Connectivity cables - Mini-SAS HD Host Adapter to Expansion - 24Gb			
4X97A84506	BT4K	External 24Gb miniSAS HD Cable 2 meter	8
4X97A84507	BT4L	External 24Gb miniSAS HD Cable 3 meter	8
4X97A84508	BT4M	External 24Gb miniSAS HD Cable 3.5 meter	8
4X97A91957	BZQ3	External 24Gb miniSAS HD Cable 5 meter	8
Connectivity cables - Expansion to Expansion - 12Gb			
00YL849	AU18	External MiniSAS HD 8644/MiniSAS HD 8644 2M Cable	2
00YL850	AU19	External MiniSAS HD 8644/MiniSAS HD 8644 3M Cable	2
00KH452	AUJY	External MiniSAS HD 8644/MiniSAS HD 8644 6M Cable	2
Connectivity cables - Expansion to Expansion - 24Gb			
4X97A84506	BT4K	External 24Gb miniSAS HD Cable 2 meter	2
4X97A84507	BT4L	External 24Gb miniSAS HD Cable 3 meter	2

Part number	Feature code	Description	Maximum quantity per one D4390
4X97A84508	BT4M	External 24Gb miniSAS HD Cable 3.5 meter	2

Note: For end-to-end 24Gb connectivity you will need 24Gb SAS adapter and 24Gb cable to connect to D4390

Configuration notes:

- Y-cables are not supported.
- For host server with CMA function, it requires another 1 meter distance to travel for the server CMA installation. The 2 meter SAS cable may not be long enough for this purpose. Plan accordingly.

Drives

The D4390 Direct Attached Storage Enclosure supports up to 90x 3.5-inch hot-swap drives. The supported drive types are NL-SAS HDDs and SAS SSDs.

The following rules apply when adding drives to a system that start with less than 90 drives:

- For HDDs, add only complete rows of 15 drives at a time starting from the back of the system (the row next to the fan modules, row 6) and moving towards the front (row1).
- A partial filled row (except the back row, row 6) of drives (less than 15) is allowed, but if additional drives are added later, the row must be filled completely before adding more drives to the next empty row.
- While SSDs are supported in any of the 90 drive slots, for lowest possible latency on the SSD drives it is recommended to use slot 1 to slot 12 on row 1.
- HDDs and SSDs can be mixed and coexist on any row in the enclosure.
- Intermixing HDDs of various sizes within a row is supported.

The following tables list drive options for the D4390 Direct Attached Storage.

Table 5. Drive options

Part number	Feature code	Description	Maximum quantity per D4390
12 Gbps NL SAS hot-swap HDDs (15-pack)			
4XB7A96808	C3F7	Lenovo Thinksystem D4390 15x pack 3.5" 24TB SED 7.2K NL-SAS	6
4XB7A90621	BYP9	Lenovo Thinksystem D4390 15x pack 3.5" 22TB SED 7.2K NL-SAS	6
4XB7A88069	BWD8	Lenovo Thinksystem D4390 15x pack 3.5" 20TB SED 7.2K NL-SAS	6
4XB7A84545	BT4T	Lenovo Thinksystem D4390 15x pack 3.5" 18TB SED 7.2K NL-SAS	6
4XB7A84546	BT4U	Lenovo Thinksystem D4390 15x pack 3.5" 16TB SED 7.2K NL-SAS	6
4XB7A84547	BT4V	Lenovo Thinksystem D4390 15x pack 3.5" 14TB SED 7.2K NL-SAS	6
4XB7A84548	BT4W	Lenovo Thinksystem D4390 15x pack 3.5" 12TB SED 7.2K NL-SAS	6
12 Gbps NL SAS hot-swap HDDs (1-pack)			
4XB7A96807	C3F6	Lenovo Thinksystem D4390 3.5" 24TB SED 7.2K NL-SAS	90
4XB7A90620	BYP8	Lenovo Thinksystem D4390 3.5" 22TB SED 7.2K NL-SAS	90
4XB7A88067	BWD6	Lenovo Thinksystem D4390 3.5" 20TB SED 7.2K NL-SAS	90
4XB7A84144	BT4N	Lenovo Thinksystem D4390 3.5" 18TB SED 7.2K NL-SAS	90
4XB7A84193	BT4P	Lenovo Thinksystem D4390 3.5" 16TB SED 7.2K NL-SAS	90
4XB7A84194	BT4Q	Lenovo Thinksystem D4390 3.5" 14TB SED 7.2K NL-SAS	90
4XB7A84195	BT4R	Lenovo Thinksystem D4390 3.5" 12TB SED 7.2K NL-SAS	90
12 Gbps SAS hot-swap SSDs (3 Drive Writes per Day) (1-pack)			
4XB7A84196	BT4S	Lenovo Thinksystem D4390 2.5 800GB 3DWD SAS SSD	12

Power supplies and cables

The Lenovo ThinkSystem D4390 Direct Attached Storage Enclosure supports up to four redundant hot-swap power supplies. In the Lenovo configurators power supplies are automatically derived and not individually configurable.

Table 6. Power supply options

Part number	Feature code	Description	Connector	Quantity supported	110V AC	220V AC
4P57A84536	BTLH	D4390 Titanium 1300W AC-DC CSRP PSU	C14	4	Yes	Yes

- The D4390 Titanium 1300W AC-DC CSRP power supply operates at both 230V and 110V.
- The D4390 Titanium 1300W AC-DC CSRP power supply supports AutoSensing of the input power.
- At 230V the power supplies are N+N (N=2), 2+2. If 1 or 2 PSUs fail. Unit can operate with as few 2 PSUs.
- At 110V the power supplies are N+1 (N=3), 3+1. If 1 PSU fails. Unit operates at 3 PSUs.

Power cords

- Line cords and rack power cables with C13 connectors can be ordered as listed in the following table.

Table 7. Power cable options

Part number	Feature code	Description
Rack power cables*		
4L67A08365	B0N4	2.0m,10A/100-250V,C13 to IEC 320-C14
4L67A08366	6311	2.8m,10A/100-250V,C13 to IEC 320-C14
39Y7938	6204	2.8m, 250V, C13 to IEC-C20
39Y7932	6263	4.3m,10A/100-250V,C13 to IEC 320-C14
4L67A08369	6570	2.0m, 13A/100-250V, C13 to C14 Jumper Cord
4L67A08370	6400	2.8m, 13A/100-250V, C13 to C14 Jumper Cord
4L67A08371	6583	4.3m, 13A/100-250V, C13 to C14 Rack Power Cable
Line cords*		
4L67A76736	BEU7	2.0m, 10A/125-250 VAC, IEC 320 C19/C20 Inline Line Cord
81Y2375	6317	2.8m,10A/240V,C13 to CNS 10917-3 (TW)
90Y3016	6313	2.8m,10A/120V,C13 to NEMA 5-15P (US)
46M2592	A1RF	2.8m, 10A/250V, C13 to NEMA 6-15P LC
39Y7927	6269	2.8m,10A/250V,C13(2P+Gnd) (IN)
69Y1988	6532	2.8m,10A/250V,C13 to NBR 14136(BR)
4L67A08357	6533	2.8m,200V,C13toJIS C8303 Japan
81Y2389	6531	4.3m,10A/250V,C13 to 76 CNS 10917-3Z(TW)
39Y7919	6216	2.8m,10A/250V,C13 to SEV1011-S24507(SW)
39Y7922	6214	2.8m,10A/250V,C13 to SABS 164 (ZA)
39Y7917	6212	2.8m,10A/230V,C13 to CEE7-VII (EU)
39Y7928	6210	2.8m,220-240V,C13 to GB 2099.1 (CN)
81Y2384	6492	4.3m,10A/220V,C13-IRAM 2073(AR)

Part number	Feature code	Description
81Y2385	6494	4.3m,12A/220V,C13 to KSC 8305(KR)
4L67A08361	6373	4.3m,10A/250V,C13 to NEMA 6-15P (US)
39Y7920	6218	2.8m,10A/250V,C13 to SI 32(IL)
81Y2378	6580	4.3m,10A/220V,C13 to GB 2099.1 (CN)
81Y2376	6572	4.3m,10A/230V,C13 to CEE7-VII (EU)
81Y2382	6575	4.3m,10A/230V,C13 to DK2-5a(DK)
81Y2383	6574	4.3m,10A/230V,C13 to AS/NZS 3112(AU/NZ)
39Y7930	6222	2.8m,10A/250V,C13 to IRAM 2073 (AR)
81Y2381	6579	4.3m,10A/230V,C13 to SI 32 (IL)
81Y2379	6576	4.3m,10A/230V,C13 to SABS 164(ZA)
81Y2377	6577	4.3m,10A/230V,C13 to BS 1363/A(UK)
81Y2390	6578	4.3m,10A/230V,C13 to SEV1011-S24507(SW)
39Y7923	6215	2.8m,10A/250V,C13 to BS 1363/A (UK)
39Y7921	6217	2.8m,220-240V,C13 to CEI 23-16 (IT/CL)
4L67A08359	6370	4.3m,10A/125V,C13 to NEMA 5-15P (US)
39Y7918	6213	2.8m,10A/250V,C13 to DK2-5a(DK)
81Y2387	6404	4.3m,10A/250V,C13 - 2P+Gnd(BR)
39Y7924	6211	2.8m,10A/250V,C13 to AS/NZ 3112(AU/NZ)
81Y2380	6493	4.3m,10A/230V,C13 to CEI 23-16 (IT/CL)
4L67A08362	6495	4.3m,12A/200V,C13 to JIS C-8303 (JP)
39Y7925	6219	2.8m,220-240V,C13 to KETI(KR)
81Y2386	6567	4.3m,10A/240V,C13 to IS 6538 (IN)
39Y7926	6335	4.3m, 12A/100V, C13 to JIS C-8303 (Japan) Line Cord
23R7158	6386	2.8m, 10A/125V, C13 to CNS 10917-3 (Taiwan) Line Cord
81Y2374	6402	2.8m, 13A/125V, C13 to CNS 60799 (Taiwan) Line Cord
4L67A08363	AX8B	4.3m, 10A 125V, C13 to CNS 10917 (Taiwan) Line Cord
81Y2388	6530	4.3m, 13A/125V, C13 to CNS 10917 (Taiwan) Line Cord
00WH545	6401	2.8m, 13A/120V, C13 to NEMA 5-15P (US) Line Cord
4L67A08360	AX8A	4.3m, 13A/120V, C13 to NEMA 5-15P (US) Line Cord

* Four cables are needed with the D4390 models listed in the Models section.

System Management

Due to the absence of a web interface for enclosure management and the inactivation of the RJ45 port, all enclosure management functions and services must be conducted through in-band SAS commands. To facilitate this process, Lenovo offers the Lenstor utility, which aids customers in firmware updates, log collection, overall status assessment, and all other enclosure management tasks.

The Lenstor utility is a binary executable file compatible with Linux-based operating systems, such as RedHat and SLES as well as Windows Server operating systems. Please note that this utility is exclusively designed for the ThinkSystem D4390 enclosure, allowing hosts with either non-RAID or RAID adapters installed and connected to the D4390 to interact with the enclosure(s).

Before updating the firmware, it is a good practice to back up the user data, and configuration of RAID adapter. With zoning function enabled, it is highly recommended to stop all I/O between host server and the drives in ThinkSystem D4390 enclosure before performing the firmware update.

To download the Lenstor utility, please visit the Lenovo Data Center Support page. Additionally, we recommend reviewing the accompanying readme file within the Lenstor utility software package for further information under Drivers & Software from same support page noted above.

Security

The ThinkSystem D4390 is a Direct Attached Storage (DAS) enclosure that does not feature Ethernet capabilities or a web management interface. Its serial COM port is secured by a user-defined password. Provided that the host server to which the ThinkSystem D4390 is connected is secure and well-protected, the enclosure remains free from security vulnerabilities.

Rack Installation

A fully assembled D4390 enclosure can weigh up to 100kg. To ensure a safe and efficient installation experience, the following guidelines should be observed:

- Stability is maintained by starting the installation of enclosures at the bottom of the rack.
- Rack cabinet balance can be enhanced by securing it to the floor using stabilizers.
- When installing multiple D4390 enclosures in a single rack, it is recommended to begin from the bottom and work upwards.
- To prevent a rack from tipping over while servicing drives in a rack with multiple D4390 enclosures, only one enclosure should be pulled out at a time, and pulling out multiple enclosures simultaneously should be avoided.

The D4390 system base includes the necessary railkits for seamless rack installation. Detailed railkit installation instructions can be found in the D4390 Hardware Installation and Maintenance Guide. For a quick reference, the Getting Started Guide poster, provided with the system base package, can also be consulted.

Physical specifications

The Lenovo ThinkSystem D4390 has the following overall physical dimensions, excluding components that extend outside the standard chassis, such as EIA flanges, front security bezel (if any), and power supply handles:

- Height: 175.3mm (6.9 in)
- Width: 446mm (17.56 in)
- Depth: 1080mm (42.52 in) w/ CMA

The following table lists the detailed dimensions. See the figure below for the definition of each

Table 8. Detailed dimensions

Dimension	Description
485mm	Xa = Width, to the outsides of the front EIA flanges
446mm	Xb = Width, to the rack rail mating surfaces
446mm	Xc = Width, to the outer most chassis body feature
175.3mm	Ya = Height, from the bottom of chassis to the top of the chassis
975mm	Za = Depth, from the rack flange mating surface to the rearmost I/O port surface
985mm	Zb = Depth, from the rack flange mating surface to the rearmost feature of the chassis body
985mm	Zc = Depth, from the rack flange mating surface to the rearmost feature such as power supply handle
35mm	Zd = Depth, from the forwardmost feature on front of EIA flange to the rack flange mating surface
35mm	Ze = Depth, from the front of security bezel (if applicable) or forwardmost feature to the rack flange mating surface

The following figure illustrates the detailed dimensions.

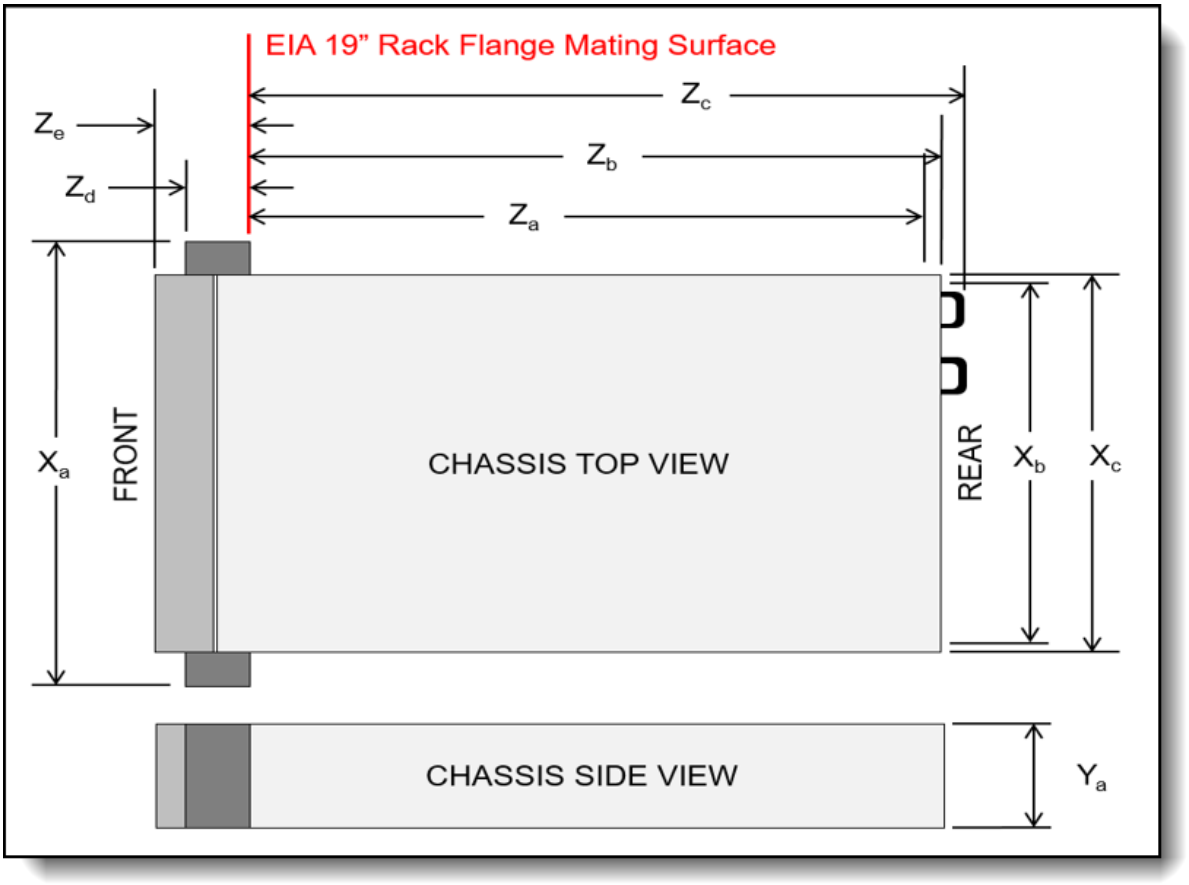

Figure 10. Detailed dimensions

The shipping dimensions (cardboard packaging) of the D4390 are as follows:

- Width: 625 mm (24.6 inches)
- Height: 805 mm (31.7 inches)
- Depth: 1220 mm (48 inches)

The JBOD enclosure has the following weight:

- Base configuration: 45kg (95lbs)
- Maximum weight: 118kg (260lbs)

Electrical specifications for AC input power supplies:

- Input voltage:
  - 100 to 127 (nominal) Vac, 50 Hz or 60 Hz
  - 200 to 240 (nominal) Vac, 50 Hz or 60 Hz
- Inlet current:
  - 100 to 127Vac / 12A
  - 200 to 240 Vac / 8.5A
  - 240 Vdc / 6A

Operating environment

The D4390 expansion enclosures are supported in the following environment:

- Air temperature:
  - ASHRAE Class A2: 10°C to 35°C (50°F to 95°F); the maximum ambient temperature decreases by 1°C for every 300 m (984 ft) increase in altitude above 900 m (2,953 ft).
  - Shipment/storage: -40 °C to 60 °C (-104 °F to 140 °F)
- Maximum altitude:
  - Operating: 3050 m (10,007 ft) (temperature de-rating 950m@35°C, 3050m@28°C)
  - Non-operating: 12,000 m (39,370 ft)
- Relative Humidity (non-condensing):
  - Operating:
    - ASHRAE Class A2: 8% to 85%; maximum dew point: 21°C (70°F)
  - Shipment/storage: 8% to 95% (no precipitation)

Heat output

- The system generates the following heat:
- Maximum power load: 1930W
- Maximum Heat output: 5827.94 BTU/hour
- Idle power load: 1312 W
- Idle Heat output: 4473.9 BTU/hour

Acoustical noise emissions

- The system has the following acoustic noise emissions declaration:
- Sound power level (LWAd):
  - Idling: 7.0 Bel
  - Operating: 7.6 Bel

Notes:

- These sound levels were measured in controlled acoustical environments according to procedures specified by ISO7779 and are reported in accordance with ISO 9296.
- The declared acoustic sound levels are based on the following configurations, which may change slightly depending on configuration/conditions.
- The declared acoustic noise levels may increase greatly, if high-power components are installed such as SSD.
- Government regulations (such as those prescribed by OSHA or European Community Directives) may govern noise level exposure in the workplace and may apply to you and your server installation. The actual sound pressure levels in your installation depend upon a variety of factors, including the number

of racks in the installation; the size, materials, and configuration of the room; the noise levels from other equipment; the room ambient temperature, and employee's location in relation to the equipment. Further, compliance with such government regulations depends on a variety of additional factors, including the duration of employees' exposure and whether employees wear hearing protection. Lenovo recommends that you consult with qualified experts in this field to determine whether you are in compliance with the applicable regulations.

Shock and vibration

The system has the following vibration and shock limits:

- Vibration:
  - Operating: 278 G rms at 5 Hz to 500 Hz for 30 minutes across 3 axes
  - Non-operating: 04 G rms at 2 Hz to 200 Hz for 15 minutes across 4 surfaces
- Shock:
  - Operating: 10 G for 5 milliseconds in each direction (positive and negative X, Y, and Z axes)
  - Non-operating:
    - 23 kg - 31 kg: 35 G for 152 in./sec velocity change across 4 surfaces (excluding front and rear faces)
    - 32 kg - 68 kg: 35 G for 136 in./sec velocity change across 4 surfaces (excluding front and rear faces)
    - 69 kg – 106 kg: 25G for 118 in./sec velocity change across 4 surfaces (excluding front and rear faces)

Particulate contamination

Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might damage the system that might cause the system to malfunction or stop working altogether.

The following specifications indicate the limits of particulates that the system can tolerate:

- Reactive gases:
  - The reactivity rate of copper coupons shall be less than 200 Angstroms per month (Å/month)
  - The reactivity rate of silver coupons shall be less than 200 Å/month
- Airborne particulates:
  - The room air should be continuously filtered with MERV 8 filters.
  - Air entering a data center should be filtered with MERV 11 or preferably MERV 13 filters.
  - The deliquescent relative humidity of the particulate contamination should be more than 60% RH
  - Data centers must be free of zinc whiskers

For additional information, see the Specifications section of the Setup Guide for the system, available from the Lenovo Documents site, https://pubs.lenovo.com/

Warranty and support

The Lenovo ThinkSystem D4390 has a three-year customer-replaceable unit (CRU) warranty 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 a customer's data center, with an experience consistently ranked number one in customer satisfaction worldwide.

The following Lenovo support services are available:

- **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 capabilities:
  - Direct technician-to-technician access through a dedicated phone line.
  - 24x7x365 remote support.
  - Single point of contact service.
  - End to end case management.
  - 3rd Party collaborative software support.
  - Online case tools and live chat support.
  - On-demand remote system analysis.
- **Warranty Upgrades (Preconfigured Support)** 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, with optional YourDrive YourData.
  - **Essential Service:** 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select regions), with optional YourDrive YourData.
  - **Advanced Service:** 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select regions), with optional YourDrive YourData.
- **Managed Services**

Lenovo Managed Services provide continuous 24x7 remote monitoring (plus 24x7 call center availability) and proactive management of a customer's 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 and operating system device driver levels, and software as needed. Lenovo will also maintain records of latest patches, critical updates, and firmware levels, to ensure customer's systems are providing business value through optimized performance.

- **Technical Account Management (TAM)**

A Lenovo Technical Account Manager helps customers optimize operations of their data centers based on a deep understanding of customer's business. Customers gain direct access to a Lenovo TAM, who serves as their single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time. Also, a TAM helps proactively make service recommendations and manage service relationship with Lenovo to make certain that customer's needs are met.

- **YourDrive YourData**

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

- **Health Check**

Having a trusted partner who can perform regular and detailed health checks is central to maintaining efficiency and ensuring that customer 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.

Some regions might have different warranty terms and conditions than the standard warranty. This is due to local business practices or laws in the specific region. Local service teams can assist in explaining region-specific terms when needed. 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 support services are region-specific. Not all support services are available in every region. For information about Lenovo support services that are available in a specific region, refer to the following resources:

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

For service definitions, region-specific details, and service limitations, 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 Data Center Services empower you at every stage of your IT lifecycle. From expert advisory and strategic planning to seamless deployment and ongoing support, we ensure your infrastructure is built for success. Our comprehensive services accelerate time to value, minimize downtime, and free your IT staff to focus on driving innovation and business growth.

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

In this section:

Lenovo Advisory Services

Lenovo Advisory Services simplify the planning process, enabling customers to build future-proofed strategies in as little as six weeks. Consultants provide guidance on projects including VM migration, storage, backup and recovery, and cost management to accelerate time to value, improve cost efficiency, and build a flexibly scalable foundation.

- **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.

Lenovo Plan & Design Services

Unlock faster time to market with our tailored, strategic design workshops to align solution approaches with your business goals and technical requirements. Leverage our deep solution expertise and end-to-end delivery partnership to meet your goals efficiently and effectively.

Lenovo Deployment, Migration, and Configuration Services

Optimize your IT operations by shifting labor-intensive functions to Lenovo's skilled technicians for seamless on-site or remote deployment, configuration, and migration. Enjoy peace of mind, faster time to value, and comprehensive knowledge sharing with your IT staff, backed by our best-practice methodology.

- **Deployment Services for Storage and ThinkAgile**

  A comprehensive range of remote and onsite options tailored specifically for your business needs to ensure your storage and ThinkAgile hardware are fully operational from the start.

- **Hardware Installation Services**

  A full-range, comprehensive setup for your hardware, including unpacking, inspecting, and positioning components to ensure your equipment is operational and error-free for the most seamless and efficient installation experience, so you can quickly benefit from your investments.

- **DM/DG File Migration Services**

  Take the burden of file migration from your IT's shoulders. Our experts will align your requirements and business objectives to the migration plans while coordinating with your team to plan and safely execute the data migration to your storage platforms.

- **DM/DG/DE Health Check Services**

  Our experts perform proactive checks of your Firmware and system health to ensure your machines are operating at peak and optimal efficiency to maximize up-time, avoid system failures, ensure the security of IT solutions and simplify maintenance.

- **Factory Integrated Services**

  A suite of value-added offerings provided during the manufacturing phase of a server or storage system that reduces time to value. These services aim at improving your hardware deployment experience and enhance the quality of a standard configuration before it arrives at your facility.

Lenovo Support Services

In addition to response time options for hardware parts, repairs, and labor, Lenovo offers a wide array of additional support services to ensure your business is positioned for success and longevity. Our goal is to reduce your capital outlays, mitigate your IT risks, and accelerate your time to productivity.

- **Premier Support for Data Centers**

  Your direct line to the solution that promises the best, most comprehensive level of support to help you fully unlock the potential of your data center.

- **Premier Enhanced Storage Support (PESS)**

  Gain all the benefits of Premier Support for Data Centers, adding dedicated storage specialists and resources to elevate your storage support experience to the next level.

- **Committed Service Repair (CSR)**

  Our commitment to ensuring the fastest, most seamless resolution times for mission-critical systems that require immediate attention to ensure minimal downtime and risk for your business. This service is only available for machines under the Premier 4-Hour Response SLA.

- **Multivendor Support Services (MVS)**

  Your single point of accountability for resolution support across vast range of leading Server, Storage, and Networking OEMs, allowing you to manage all your supported infrastructure devices seamlessly from a single source.

- **Keep Your Drive (KYD)**

  Protect sensitive data and maintain compliance with corporate retention and disposal policies to ensure your data is always under your control, regardless of the number of drives that are installed in your Lenovo server.

- **Technical Account Manager (TAM)**

  Your single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time, ensuring smooth operations and optimized performance as your business grows.

- **Enterprise Software Support (ESS)**

  Gain comprehensive, single-source, and global support for a wide range of server operating systems and Microsoft server applications.

For more information, consult the brochure Lenovo Operational Support Services for Data Centers.

Lenovo Managed Services

Achieve peak efficiency, high security, and minimal disruption with Lenovo's always-on Managed Services. Our real-time monitoring, 24x7 incident response, and problem resolution ensure your infrastructure operates seamlessly. With quarterly health checks for ongoing optimization and innovation, Lenovo's remote active monitoring boosts end-user experience and productivity by keeping your data center's hardware performing at its best.

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.

Lenovo Sustainability Services

- **Asset Recovery Services**

  Lenovo Asset Recovery Services (ARS) provides a secure, seamless solution for managing end-of-life IT assets, ensuring data is safely sanitized while contributing to a more circular IT lifecycle. By maximizing the reuse or responsible recycling of devices, ARS helps businesses meet sustainability goals while recovering potential value from their retired equipment. For more information, see the Asset Recovery Services offering page.

- **CO2 Offset Services**

  Lenovo's CO2 Offset Services offer a simple and transparent way for businesses to take tangible action on their IT footprint. By integrating CO2 offsets directly into device purchases, customers can easily support verified climate projects and track their contributions, making meaningful progress toward their sustainability goals without added complexity.

- **Lenovo Certified Refurbished**

  Lenovo Certified Refurbished offers a cost-effective way to support IT circularity without compromising on quality and performance. Each device undergoes rigorous testing and certification, ensuring reliable performance and extending its lifecycle. With Lenovo's trusted certification, you gain peace of mind while making a more sustainable IT choice.

Regulatory compliance

The Lenovo ThinkSystem D4390 conforms to the following regulations:

- BSMI CNS 13438, Class A; CNS 14336 (Taiwan)
- CE UKCA Mark (European Union)
- CISPR 32 and 35, Class A
- EAC (Russia)
- EN55032, Class A
- EN55035
- FCC Part 15, Class A (United States)
- ICES-003/NMB-03, Class A (Canada)
- IEC/EN60950-1
- MSIP (Korea)
- NOM-019 (Mexico)
- RCM (Australia)
- Reduction of Hazardous Substances (ROHS)
- UL/CSA IEC 62368-1
- VCCI, Class A (Japan)

Interoperability

Lenovo provides end-to-end storage compatibility testing to deliver interoperability throughout the network. The Lenovo ThinkSystem D4390 supports attachment to hosts that support the RAID controllers and HBAs listed in the SAS RAID controllers and HBAs section.

Important: Information that is provided in these sections is for order reference purposes only.

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.

SAS RAID controllers and HBAs

The Lenovo ThinkSystem D4390 support the RAID adapters and HBAs that are listed in the following table.

- For SAS RAID controllers, the controller's firmware manages multiple I/O paths to SAS drives.
- For SAS HBAs, the host operating system runs multi-pathing software to manage multiple I/O paths.

Table 9. RAID controllers and HBAs

Part number	Description	Maximum quantity of D4390 per adapter	
		Dual I/O path	Single I/O path
ThinkSystem RAID controllers			
4Y37A78836	ThinkSystem RAID 940-8e 4GB Flash PCIe Gen4 12Gb	1	2
ThinkSystem HBAs			
4Y37A78837	ThinkSystem 440-8e SAS/SATA PCIe Gen4 12Gb HBA	2	4
4Y37A09724	ThinkSystem 440-16e SAS/SATA PCIe Gen4 12Gb HBA	2	4

Uninterruptible Power Supply Units

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

Table 10. 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)
7DD5A003WW	RT3kVA 2U Rack or Tower UPS-G2 (100-125VAC)
Rack-mounted or tower UPS units - 200-240VAC	
7DD5A002WW	RT1.5kVA 2U Rack or Tower UPS-G2 (200-240VAC)
7DD5A005WW	RT3kVA 2U Rack or Tower UPS-G2 (200-240VAC)
7DD5A007WW	RT5kVA 3U Rack or Tower UPS-G2 (200-240VAC)
7DD5A008WW	RT6kVA 3U Rack or Tower UPS-G2 (200-240VAC)
7DD5A00AWW	RT11kVA 6U Rack or Tower UPS-G2 (200-240VAC)

† 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

Power Distribution Units

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

Table 11. Power distribution units

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
0U Basic PDUs															

Part number	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
4PU7A93176	C0QH	0U 36 C13 and 6 C19 Basic 32A 1 Phase PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93169	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	C0QJ	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
0U Switched and Monitored PDUs															
4PU7A93181	C0QN	0U 21 C13/C15 and 21 C13/C15/C19 Switched and Monitored 48A 3 Phase Delta PDU v2 (60A derated)	N	Y	N	N	N	N	N	Y	N	Y	N	Y	N
4PU7A93178	C0QK	0U 20 C13 and 4 C19 Switched and Monitored 32A 1 Phase PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93171	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	C0QP	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 63A 3 Phase WYE PDU v2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
4PU7A93175	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	N	Y	Y	Y
4PU7A93180	C0QM	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
4PU7A93173	C0D6	0U 18 C13/C15 and 18 C13/C15/C19 Switched and Monitored 32A 3 Phase WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A93179	C0QL	0U 16 C13/C15 and 16 C13/C15/C19 Switched and Monitored 24A 1 Phase PDU v2 (30A derated)	N	Y	N	N	N	N	N	Y	N	Y	N	Y	N
1U Switched and Monitored PDUs															
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
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
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
4PU7A90812	C0DB	1U 12 C19/C13 Switched and monitored 60A 3P Delta PDU V2	N	N	N	N	N	N	N	Y	N	Y	Y	Y	N
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
Line cords for 1U PDUs that ship without a line cord															
40K9611	6504	DPI 32a Cord (IEC 309 3P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9612	6502	DPI 32a Cord (IEC 309 P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9613	6503	DPI 63a Cord (IEC 309 P+N+G)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9614	6500	DPI 30a Cord (NEMA L6-30P)	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
40K9615	6501	DPI 60a Cord (IEC 309 2P+G)	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N

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

Rack cabinets

The following table lists the supported rack cabinets.

Table 12. Rack cabinets

Part number	Description
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
7D6EA009WW	ThinkSystem 48U Onyx Primary Heavy Duty Rack Cabinet (1200mm)
7D6EA00AWW	ThinkSystem 48U Pearl Primary Heavy Duty Rack Cabinet (1200mm)

Note: Cabling routing will be difficult on a 1100mm rack. Recommendation is to use a 1200mm 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

Lenovo Financial Services

Why wait to obtain the technology you need now? No payments for 90 days and predictable, low monthly payments make it easy to budget for your Lenovo solution.

- **Flexible**

  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.

Seller training courses

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

1. **Positioning Lenovo Direct Attached Storage**
   2023-02-01 | 20 minutes | Employees and Partners

   Course Description: This course provides an overview of Lenovo's DAS storage products and the unique value proposition. Completing this course will allow you to help your customer understand how these products address their business needs, communicate the unique value proposition of these products, and identify the elements of an effective elevator pitch for Lenovo DAS products. Last Update: 2/1/2023

   Tags: Sales, Storage

   Published: 2023-02-01
   Length: 20 minutes

   Start the training:
   Employee link: Grow@Lenovo
   Partner link: Lenovo 360 Learning Center

   Course code: DDASP100r2

Related publications and links

For more information, see the following documents:

- Lenovo Storage product page
  https://www.lenovo.com/us/en/data-center/storage/
- Lenovo Data Center Solution Configurator
  http://dcsc.lenovo.com
- System x and Cluster Solutions Configurator (x-config)
  https://lesc.lenovo.com/products/hardware/configurator/worldwide/bhui/asit/install.html
- Lenovo Storage D4390 Support
  https://datacentersupport.lenovo.com/us/en/products/storage/lenovo-storage/

Related product families

Product families related to this document are the following:

- Direct-Attached Storage
- External Storage

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This document, LP1681, was created or updated on April 28, 2025.

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