Lenovo Storage D1212 and D1224 Drive Enclosures
Product Guide

The Lenovo Storage D1212 and D1224 Disk Expansion Enclosures offer 12 Gbps SAS direct-attached storage expansion capabilities that are designed to provide simplicity, speed, scalability, security, and high availability for small to large businesses. The D1212 and D1224 deliver enterprise-class storage technology in a cost-effective solution with flexible drive configurations and RAID or JBOD (non-RAID) host connectivity.

The D1212 and D1224 expansion units are designed for a wide range of workloads, including big data and analytics, video surveillance, media streaming, private clouds, file and print serving, e-mail and collaboration, and databases. They also well-suited for software defined storage (SDS) and Windows Server solutions with Storage Spaces.

Figure 1. Lenovo Storage D1212 and D1224 Disk Expansion Enclosures

Did you know?

The D1212 and D1224 expansion enclosures offer flexible drive configurations with the choice of 2.5-inch and 3.5-inch drive form factors, 10K or 15K rpm SAS and 7.2K rpm NL SAS hard disk drives (HDDs) and self-encrypting drives (SEDs), and SAS solid-state drives (SSDs).

With support for daisy chaining, the D1212 can be scaled up to 1.53 PB for capacity-optimized configurations with HDDs, and the D1224 can be scaled up to 192 drives for performance-optimized configurations.

The D1212 and D1224 expansion units support 12 Gbps SAS connectivity, which doubles the data transfer rate compared to 6 Gb SAS solutions to maximize performance of storage I/O-intensive applications.

Key features

Key features and benefits provided by the D1212 and D1224 storage expansion enclosures include:

- Versatile, scalable storage expansion with dual Environmental service Module (ESM) configurations for high availability and performance
- Flexible host connectivity to match diverse client needs for direct attach storage with support for 12 Gb SAS RAID adapters for advanced data protection or 12 Gb SAS Host Bus Adapter (HBA) for maximum JBOD performance
- 12 Gb SAS drive-side connectivity with support for 12x 3.5-inch large form factor (LFF) drives in the D1212 enclosure or 24x 2.5-inch small form factor (SFF) drives in the D1224 enclosure
- Scalability of up to 96 LFF or 192 SFF drives per RAID adapter or HBA with the attachment of up to eight D1212 or D1224 daisy-chained expansion enclosures, or a combination of both, to satisfy growing needs for storage capacity and performance
- Flexibility in storing data on high performance SAS SSDs, performance-optimized enterprise SAS HDDs, or capacity-optimized enterprise NL SAS HDDs; mixing and matching drive types and form factors on a single RAID adapter or HBA to perfectly meet performance and capacity requirements for various workloads
- Self-encrypting drives with a supported RAID adapter allow clients to secure their sensitive data and to comply with various security regulations when required
- Support multiple host attachments and SAS zoning for storage partitioning

The D1212 and D1224 are designed to support the complete range of data storage requirements, from highly utilized applications to high-capacity, low usage applications.

The following 3.5-inch SAS drives are supported by the D1212:

- High performance SSDs (10 drive writes per day [DWD]): 400 GB
- Mainstream SSDs (3 DWD): 800 GB
- High-capacity, archival-class nearline HDDs: 2 TB, 4 TB, 6 TB, 8 TB, 10 TB, 12 TB, 14 TB, and 16 TB 7.2K rpm
- High-capacity, archival-class nearline self-encrypting HDDs: 4 TB 7.2K rpm

The following 2.5-inch SAS drives are supported by the D1224:

- Capacity optimized SSDs (1 DWD): 3.84 TB and 7.68 TB
- Mainstream SSDs (3 DWD): 800 GB and 1.6 TB
- High performance SSDs (10 DWD): 400 GB, 800 GB, and 1.6 TB
- Performance-optimized, enterprise class HDDs
  - 300 GB, 600 GB, and 900 GB 15K rpm
  - 600 GB, 1.2 TB, 1.8 TB, and 2.4 TB 10K rpm
- Performance-optimized, enterprise class self-encrypting HDDs: 1.2 TB 10K rpm
- High-capacity, archival-class nearline HDDs: 1 TB and 2 TB 7.2K rpm

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 D1212 and D1224 expansion enclosures are designed to offer high levels of system and data availability with the following technologies:

- Dual ESMs provide redundant paths from a supported RAID controller to the drives in the enclosures for I/O load balancing and failover
- Dual-port drives (both HDDs and SSDs) with automatic drive failure detection and RAID rebuild with global hot spares with a supported RAID adapter
- Redundant hardware, including host ports, ESMs, and power and cooling modules (PCMs)
- Hot-swappable and customer replaceable components, including ESMs, PCMs, and drives

Components and connectors

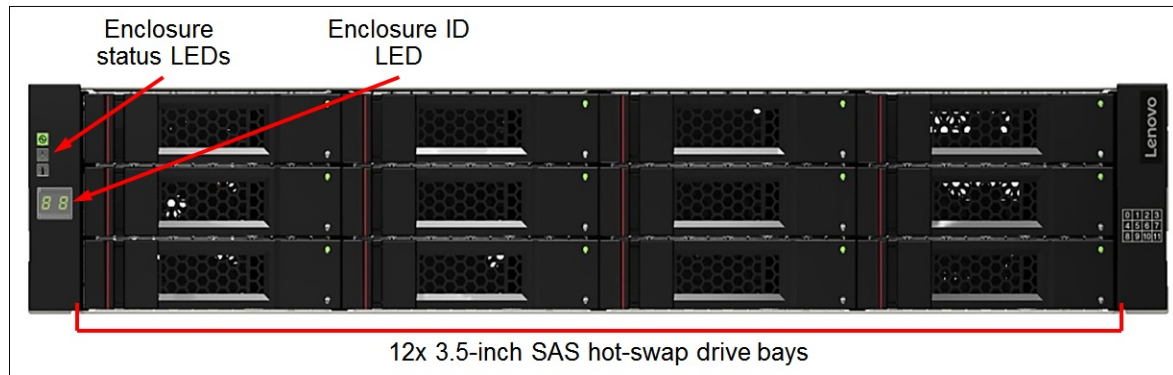The following figure shows the front of the D1212 drive expansion enclosure.

Figure 2. Front view of the D1212 drive enclosure

The following figure shows the front of the D1224 drive expansion enclosure.
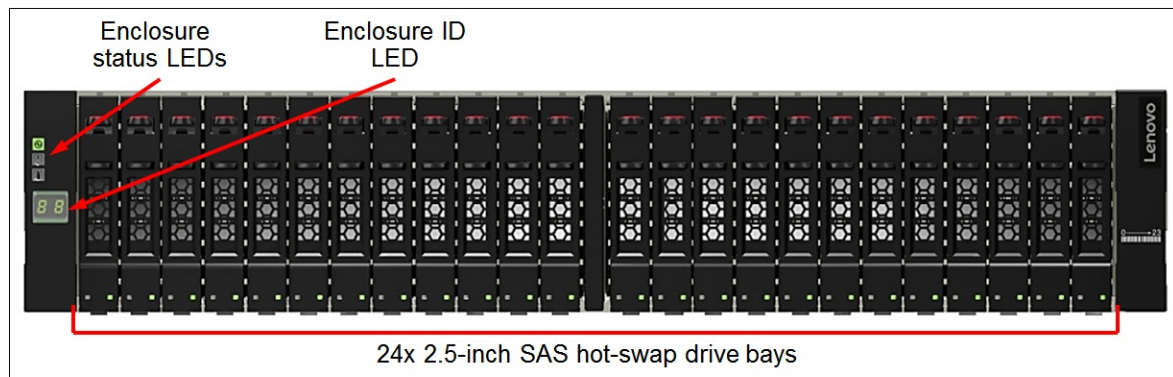

Figure 3. Front view of the D1224 drive enclosure

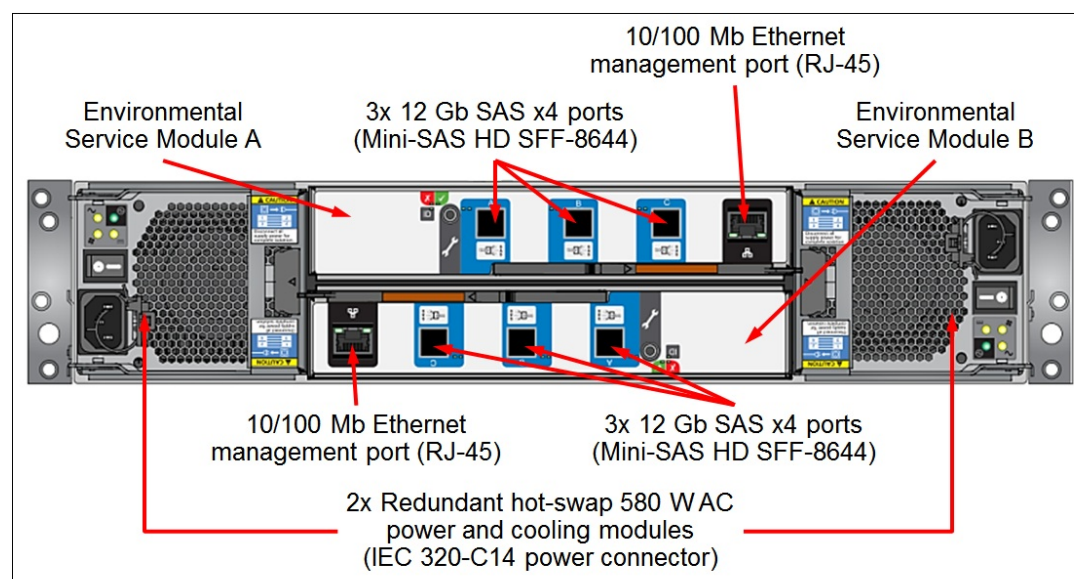The following figure shows the rear of the D1212 and D1224 drive enclosures.

Figure 4. Rear view of the D1212 and D1224 drive enclosures

Note: The ESMs (shown in Figure 4) have additional service ports with a specialized connector, and these ports are reserved for use by a Lenovo service technician.

System specifications

The following table lists the D1212 and D1224 system specifications.

Table 1. System specifications

Attribute	Specification
Form factor	2U rack mount
Number of ESMs	2
Expansion ports	3x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) ports (A, B, C) per ESM
Drive bays	• D1212: 12 LFF hot-swap drive bays; up to 8x D1212 enclosures can be daisy chained on a supported RAID adapter or HBA for a total of up to 96 LFF drives. • D1224: 24 SFF hot-swap drive bays; up to 8x D1224 enclosures can be daisy chained on a supported RAID adapter or HBA for a total of up to 192 SFF drives. Intermix of SFF and LFF enclosures is supported.
Drive technologies	SAS and NL SAS HDDs and SEDs; SAS SSDs. Intermix of HDDs, SEDs, and SSDs is supported within an enclosure, but not within a RAID array.
Drive connectivity	Dual-ported 12 Gb SAS drive attachment infrastructure.

Attribute	Specification
Drives	SFF drives: • 3.84 TB and 7.68 TBSAS SSDs (1 DWD) • 800 GB and 1.6 TB SAS SSDs (3 DWD) • 400 GB, 800 GB, and 1.6 TB SAS SSDs (10 DWD) • 300 GB, 600 GB, and 900 GB 15K rpm SAS HDDs • 600 GB, 1.2 TB, 1.8 TB, and 2.4 TB 10K rpm SAS HDDs • 1.2 TB 10K rpm SAS SED HDD • 1 TB and 2 TB 7.2K rpm NL SAS HDDs LFF drives: • 400 GB SAS SSDs (10 DWD) (hybrid tray - 2.5 in. drive in a 3.5-in. tray) • 800 GB SAS SSDs (3 DWD) (hybrid tray - 2.5 in. drive in a 3.5-in. tray) • 2 TB, 4 TB, 6 TB, 8 TB, 10 TB, 12 TB, 14 TB, and 16 TB 7.2K rpm NL SAS HDDs • 4 TB 7.2K rpm NL SAS SED HDD
Storage capacity	• D1212: Up to 1.53 PB (96x 16 TB LFF NL SAS HDDs) • D1224: Up to 1.47 PB (192x 7.68 TB SFF SAS SSDs)
Host adapters	RAID adapters: • ThinkSystem RAID 930-8e (8-port 12 Gb SAS, 2x SFF-8644 connectors) • ServeRAID M5225 (8-port 12 Gbps SAS, 2x SFF-8644 connectors) Host bus adapters (non-RAID): • ThinkSystem 430-8e HBA (8-port 12 Gb SAS, 2x SFF-8644 connectors) • ThinkSystem 430-16e HBA (16-port 12 Gb SAS, 4x SFF-8644 connectors) • N2225 (8-port 12 Gbps SAS, 2x SFF-8644 connectors) • N2226 (16-port 12 Gbps SAS, 4x SFF-8644 connectors) • ThinkServer 8885e (8-port 12 Gbps SAS, 2x SFF-8644 connectors)
Host operating systems	Microsoft Windows Server 2012 R2, 2016, and 2019; Red Hat Enterprise Linux (RHEL) 6 and 7; SUSE Linux Enterprise Server (SLES) 11, 12, and 15; VMware vSphere 6.0, 6.5, and 6.7.
Cooling	Redundant cooling with two fans built into power and cooling modules (PCMs).
Power supply	Two redundant hot-swap 580 W AC power supplies built into PCMs.
Hot-swap parts	ESMs, drives, PCMs.
Management interfaces	SAS Enclosure Services, 10/100 Mb Ethernet for external management.
Security features	SAS zoning, self-encrypting drives (SEDs).
Warranty	Three-year customer-replaceable unit, parts delivered limited warranty with 9x5 next business day response.
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, remote technical support, hardware installation.
Dimensions	Height: 88 mm (3.5 in), width: 443 mm (17.4 in), depth: 630 mm (24.8 in)
Maximum weight	• D1212: 26 kg (57.3 lb) • D1224: 24 kg (52.9) lb

Models

The following table lists the relationship models of the D1212 and D1224 drive enclosures.

Table 2. D1212 and D1224 relationship models

Description	Part number
LFF models	
Lenovo Storage D1212 LFF Chassis, Dual ESM (US English documentation)	4587A11*
Lenovo Storage D1212 LFF Chassis, Dual ESM (Simplified Chinese documentation)	4587A1C^
Lenovo Storage D1212 LFF Chassis, Dual ESM (Japanese documentation)	4587A1J**
SFF models	
Lenovo Storage D1224 SFF Chassis, Dual ESM (US English documentation)	4587A31*
Lenovo Storage D1224 SFF Chassis, Dual ESM (Simplified Chinese documentation)	4587A3C^
Lenovo Storage D1224 SFF Chassis, Dual ESM (Japanese documentation)	4587A3J**

* Available worldwide (except China and Japan)
^ Available only in China
** Available only in Japan

The following table lists the TopSeller models of the D1212 and D1224 drive enclosures.

Table 3. D1212 and D1224 TopSeller models

Description	Part number
LFF models - North America (NA) and Europe, Middle East, and Africa (EMEA)	
Lenovo Storage D1212 LFF Dual ESM Disk Expansion Enclosure (US English documentation)	4587E11
LFF models - Brazil and Latin America	
Lenovo Storage D1212 LFF Chassis, Dual ESM, 4x 2TB 3.5" HDDs, 4x 0.5m SAS cables	4587EAU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 4x 4TB 3.5" HDDs, 4x 0.5m SAS cables	4587EBU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 4x 6TB 3.5" HDDs, 4x 0.5m SAS cables	4587ECU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 4x 8TB 3.5" HDDs, 4x 0.5m SAS cables	4587EDU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 8x 2TB 3.5" HDDs, 4x 0.5m SAS cables	4587EEU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 8x 4TB 3.5" HDDs, 4x 0.5m SAS cables	4587EFU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 8x 6TB 3.5" HDDs, 4x 0.5m SAS cables	4587EGU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 8x 8TB 3.5" HDDs, 4x 0.5m SAS cables	4587EHU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 12x 2TB 3.5" HDDs, 4x 0.5m SAS cables	4587EIU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 12x 4TB 3.5" HDDs, 4x 0.5m SAS cables	4587EJU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 12x 6TB 3.5" HDDs, 4x 0.5m SAS cables	4587EKU
Lenovo Storage D1212 LFF Chassis, Dual ESM, 12x 8TB 3.5" HDDs, 4x 0.5m SAS cables	4587ELU
SFF models - North America (NA) and Europe, Middle East, and Africa (EMEA)	
Lenovo Storage D1224 SFF Dual ESM Disk Expansion Enclosure (US English documentation)	4587E31
SFF models - Brazil and Latin America	
Lenovo Storage D1224 SFF Chassis, Dual ESM, 9x 1.2TB 10K HDDs, 4x 0.5m SAS cables	4587E6U
Lenovo Storage D1224 SFF Chassis, Dual ESM, 18x 1.2TB 10K HDDs, 1x 0.5m SAS cable	4587E5U

The following table lists the CTO base models of the D1212 and D1224 drive enclosures.

Table 4. D1212 and D1224 CTO base models

Description	Machine Type-Model	Feature code
Lenovo Storage D1224 Disk Expansion Enclosure	4587-HC2	AU15
Lenovo Storage D1212 Disk Expansion Enclosure	4587-HC1	AU14

The D1212 and D1224 drive enclosures include the following items:

- One LFF or SFF chassis with the following components:
  - Dual 3-port environmental service modules
  - Two power and cooling modules
  - Drives (select models; see Table 2 and Table 3 for details)
- Two 1.5m, 10A/100-250V, C13 to IEC 320-C14 rack power cables (models listed in Table 2 and Table 3), or two customer-configured power cables (CTO models)
- External 0.5m 12Gb SAS cables (select models; see Table 2 and Table 3 for details)
- Lenovo Storage 12Gb SAN Rack Mount Kit - Rails 25"-36"
- Documentation package

Host connectivity

The D1212 and D1224 drive enclosures support dual environmental service module (ESM) configurations. Each ESM has three 12 Gb SAS x4 ports (Mini-SAS HD SFF-8644 connectors) labeled A, B, and C. These ports are used for connections to a supported RAID adapter or HBA installed in a server and for daisy chaining the D1212 and D1224 enclosures between each other.

Port A on each ESM is used for connecting the external SAS ports on the RAID controller or HBA to the enclosure, or for connecting Port C on each ESM in the adjacent enclosure for daisy chaining.

Port B on each ESM is used for connecting the external SAS ports on the RAID controller or HBA to the enclosure. Daisy-chaining does not use Port B for connections between adjacent enclosures.

Port C on each ESM is used for connecting the external SAS ports on the RAID controller or HBA to the enclosure, or for connecting Port A on each ESM in the adjacent enclosure for daisy chaining.

The expansion enclosures support single I/O path and dual I/O path connectivity topology. For single I/O path configurations, each port on the adapter can be connected to a separate chain of expansion enclosures by using the ESM A in each connected enclosure. For dual I/O path configurations, each port on the 2-port RAID adapter or HBA is connected to a different ESM chain within the same chain of enclosures. For specific configuration limits, refer to SAS RAID controllers and HBAs .

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

Up to eight D1212 or D1224 drive enclosures, or a combination of both, can be daisy-chained with support for up to four hosts attached to the chain. Without daisy-chaining, a standalone D1224 drive enclosure can support up to six directly attached hosts. In addition, up to two D1212 and up to two D3284 drive enclosures, or one D1224 and up to two D3284 drive enclosures can be daisy-chained with support for up to two hosts attached to the chain.

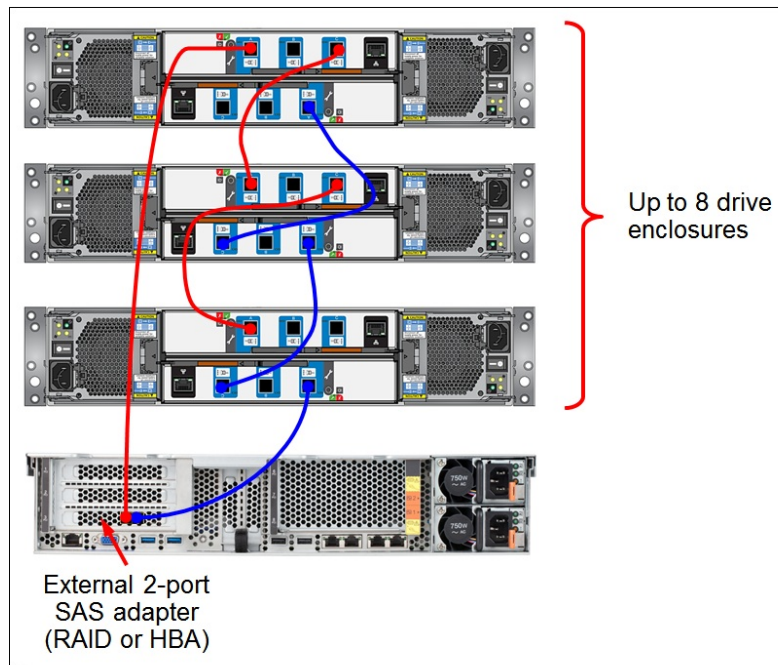The following figures illustrate different host connectivity topologies.

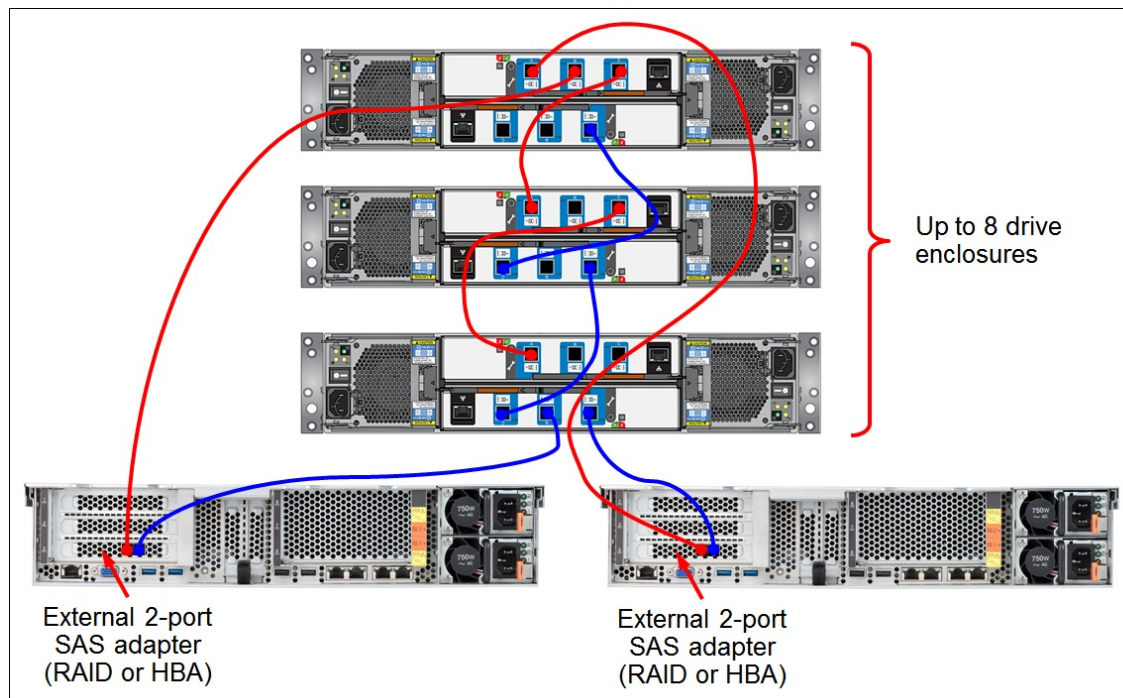Figure 5. Connectivity topology with one host

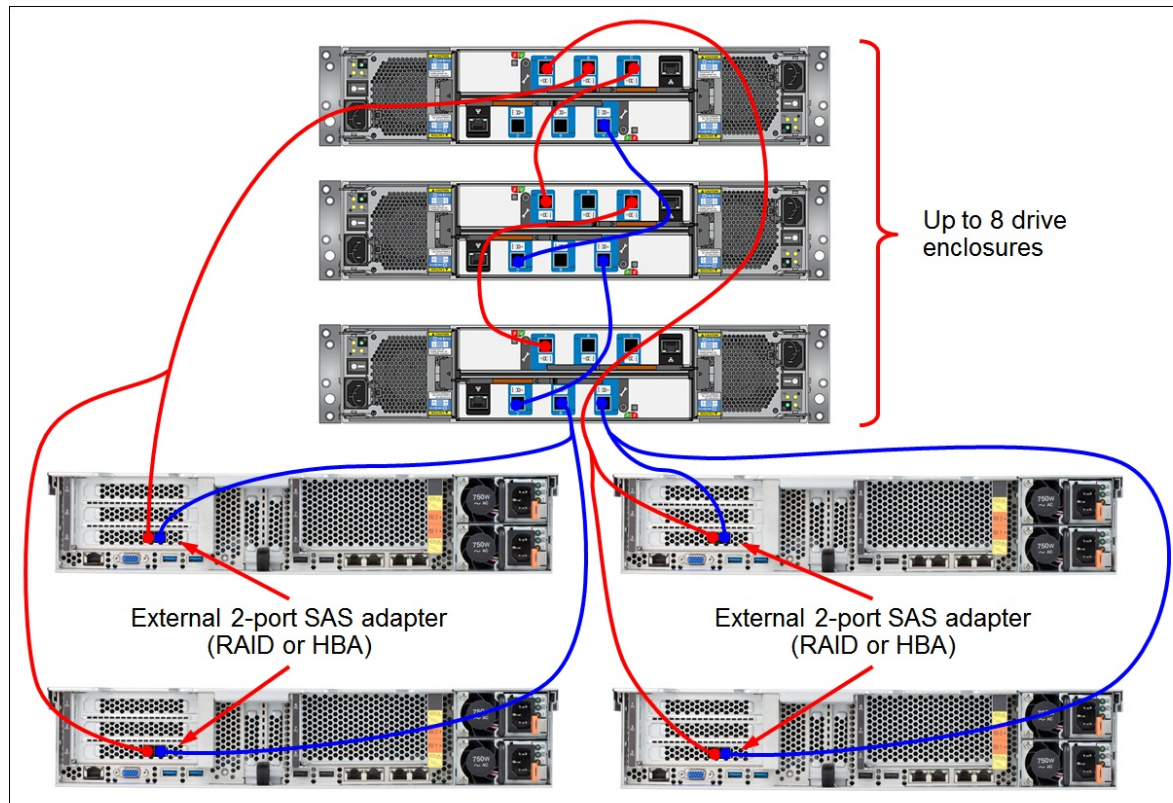Figure 6. Connectivity topology with two hosts

Figure 7. Connectivity topology with four hosts

For topologies with four or more hosts, SAS Y-cables are required to connect the hosts to the drive enclosure. The SAS Y-cable allows two hosts be connected to one SAS port on the ESM. The Y-cables and standard cables are mutually exclusive, that is, either Y-cables or standard cables can be used to connect the hosts to the same drive enclosure, but not both types.

The *SAS zoning* feature of the D1212 and D1224 specifies how multiple hosts access drives in the enclosures. If SAS zoning is disabled, all attached hosts can access all drives in the enclosures, which is typically used in standalone single-host or clustered multi-host environments, where all cluster nodes need access to all drives. If SAS zoning is enabled, each connected host has exclusive access to a predefined set of drives in the same enclosure, and multiple hosts are isolated from each other.

Configuration notes:

- Attachment of more than one host to the same enclosure without SAS zoning is supported with HBAs only (RAID controllers are not supported). While all attached hosts are capable of accessing all drives in the enclosures, the clustering software running on the hosts controls which cluster nodes have access to the drives at any given time.

- With SAS zoning enabled, only standalone enclosures without daisy-chaining can be partitioned for multiple host access.

The supported zone configurations are shown in the following table.

Note: Mode 0 means that zoning is disabled.

Table 5. D1212 and D1224 zoning configurations

Zoning mode	Number of zones	Maximum number of hosts	Zone number	Host ports	Expansion ports	Drive bays	
						D1212	D1224
Zoning with SAS standard cables							
Mode 0	1	2	1	A, B	C	0-11	0-23
Mode 1	2	2	1	A	C	0-1, 4-5, 8-9	0-11
			2	B		2-3, 6-7, 10-11	12-23
Mode 2	3	3	1	A	N/A	0-3	0-7
			2	B		4-7	8-15
			3	C		8-11	16-23
Zoning with SAS Y-cables							
Mode 3	3	3	1	A.1	C	0-3	0-7
			2	A.2		4-7	8-15
			3	B.1		8-11	16-23
Mode 4	4	4	1	A.1	C	0, 4, 8	0-5
			2	A.2		1, 5, 9	6-11
			3	B.1		2, 6, 10	12-17
			4	B.2		3, 7, 11	18-23
Mode 5	6	6	1	A.1	N/A	N/A	0-3
			2	A.2			4-7
			3	B.1			8-11
			4	B.2			12-15
			5	C.1			16-19
			6	C.2			20-23

The following table lists ordering information for the SAS cables.

Table 6. SAS cable options

Description	Part number	Feature code	Maximum quantity per one D1212 or D1224
Connectivity cables - Mini-SAS HD Host Adapter to Expansion			
External MiniSAS HD 8644/MiniSAS HD 8644 0.5M Cable	00YL847	AU16	6
External MiniSAS HD 8644/MiniSAS HD 8644 1M Cable	00YL848	AU17	6
External MiniSAS HD 8644/MiniSAS HD 8644 2M Cable	00YL849	AU18	6
External MiniSAS HD 8644/MiniSAS HD 8644 3M Cable	00YL850	AU19	6
External MiniSAS HD 8644/MiniSAS HD 8644 6M Cable	00KH452	AUJY	6
External MiniSAS HD 8644/2xMiniSAS HD 8644 2M Y-Cable	01DC164	AU1A	6
Connectivity cables - Expansion to Expansion			
External MiniSAS HD 8644/MiniSAS HD 8644 0.5M Cable	00YL847	AU16	2
External MiniSAS HD 8644/MiniSAS HD 8644 1M Cable	00YL848	AU17	2
External MiniSAS HD 8644/MiniSAS HD 8644 2M Cable	00YL849	AU18	2
External MiniSAS HD 8644/MiniSAS HD 8644 3M Cable	00YL850	AU19	2
External MiniSAS HD 8644/MiniSAS HD 8644 6M Cable	00KH452	AUJY	2

Drives

The D1212 drive enclosure supports up to 12 LFF hot-swap drives, and the D1224 drive enclosure supports up to 24 SFF hot-swap drives. The following tables list drive options for the D1212 and D1224 drive enclosures.

Table 7. LFF drive options

Description	Part number	Feature code	Maximum quantity per one D1212
3.5-inch NL SAS hot-swap HDDs			
Lenovo Storage 2TB 7.2K 3.5" NL-SAS HDD	00YH993	AU1F	12
Lenovo Storage 4TB 7.2K 3.5" NL-SAS HDD	01DC487	AU1D	12
Lenovo Storage 6TB 7.2K 3.5" NL-SAS HDD	00YG668	AU1C	12
Lenovo Storage 8TB 7.2K 3.5" NL-SAS HDD	00YG663	AU1B	12
Lenovo Storage 10TB 7.2K 3.5" NL-SAS HDD	01DC626	AU3S	12
Lenovo Storage 12TB 7.2K 3.5" NL-SAS HDD	4XB7A09100	B102	12
Lenovo Storage 14TB 7.2K 3.5" NL-SAS HDD	4XB7A12038	B4T8	12
Lenovo Storage 16TB 7.2K 3.5" NL-SAS HDD	4XB7A62771	BAVL	12
3.5-inch NL SAS hot-swap SEDs			
Lenovo Storage 4TB 7.2K 3.5" NL-SAS SED HDD	00YG673	AU1E	12
3.5-inch SAS hot-swap SSDs (3 DWD)			
Lenovo Storage 800GB 3DWD SAS SSD (2.5" in 3.5" Hybrid Tray)	4XB7A60799	BAVJ	12
3.5-inch SAS hot-swap SSDs (10 DWD)			
Lenovo Storage 400GB 10DWD SAS SSD (2.5" in 3.5" Hybrid Tray)	01CX642	AV2G	12

Table 8. SFF drive options

Description	Part number	Feature code	Maximum quantity per one D1224
2.5-inch SAS hot-swap HDDs			
Lenovo Storage 300GB 15K 2.5" SAS HDD	01DC197	AU1J	24
Lenovo Storage 600GB 10K 2.5" SAS HDD	01DC427	AU1Q	24
Lenovo Storage 600GB 15K 2.5" SAS HDD	01DC192	AU1H	24
Lenovo Storage 900GB 15K 2.5" SAS HDD	01KP040	AVP5	24
Lenovo Storage 1.2TB 10K 2.5" SAS HDD	01DC407	AU1L	24
Lenovo Storage 1.8TB 10K 2.5" SAS HDD	01DC402	AU1K	24
Lenovo Storage 2.4TB 10K 2.5" SAS HDD	4XB7A09101	B103	24
2.5-inch SAS hot-swap SED HDDs			
Lenovo Storage 1.2TB 10K 2.5" SAS SED HDD	01DC412	AU1M	24
2.5-inch NL SAS hot-swap HDDs			
Lenovo Storage 1TB 7.2K 2.5" NL-SAS HDD	01DC442	AU1S	24
Lenovo Storage 2TB 7.2K 2.5" NL-SAS HDD	01DC437	AU1R	24
2.5-inch SAS hot-swap SSDs (1 DWD)			
Lenovo Storage 3.84TB 1DWD 2.5" SAS SSD	01CX632	AV2F	24
Lenovo Storage 3.84TB 1DWD 2.5" SAS SSD	01KP065	AVPA	24
Lenovo Storage 7.68TB 1DWD 2.5" SAS SSD	01KP060	AVP9	24
2.5-inch SAS hot-swap SSDs (3 DWD)			
Lenovo Storage 800GB 3DWD 2.5" SAS SSD	01DC477	AU1U	24
Lenovo Storage 1.6TB 3DWD 2.5" SAS SSD	01DC472	AU1T	24
2.5-inch SAS hot-swap SSDs (10 DWD)			
Lenovo Storage 400GB 10DWD 2.5" SAS SSD	01DC462	AUDK	24
Lenovo Storage 800GB 10DWD 2.5" SAS SSD	01DC452	AUDH	24
Lenovo Storage 1.6TB 10DWD 2.5" SAS SSD	01DC447	AUDG	24

Power cables

The D1212 and D1224 ship standard with two 1.5m, 10A/100-250V, C13 to IEC 320-C14 rack power cables. Other power cable options are also available, and the part numbers and feature codes to order the power cables are listed in the following table (two power cables are required per each D1212 and D1224).

Table 9. Power cable options

Description	Part number	Feature code
Rack power cables		
1.2m, 10A/100-250V, 2 Short C13s to Short C14 Rack Power Cable	47C2487	A3SS
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
2.5m, 10A/100-250V, 2 Long C13s to Short C14 Rack Power Cable	47C2488	A3ST
2.5m, 16A/100-250V, 2 Long C13s to Short C20 Rack Power Cable	47C2492	A3SX
2.8m, 10A/100-250V, 2 Short C13s to Long C14 Rack Power Cable	47C2489	A3SU
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	None*	6311
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, 10A/100-250V, 2 Long C13s to Long C14 Rack Power Cable	47C2490	A3SV
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
Line cords		
10A/125V C13 to NEMA 5-15P 4.3m line cord	39Y7931	6207
10A/250V C13 to NEMA 6-15P 2.8m line cord	46M2592	A1RF
Argentina 10A/250V C13 to IRAM 2073 2.8m line cord	39Y7930	6222
Australia/NZ 10A/250V C13 to AS/NZ 3112 2.8m line cord	39Y7924	6211
Brazil 10A/250V C13 to NBR 14136 2.8m line cord	69Y1988	6532
China 10A/250V C13 to GB 2099.1 2.8m line cord	39Y7928	6210
Denmark 10A/250V C13 to DK2-5a 2.8m line cord	39Y7918	6213
European 10A/230V C13 to CEE7-VII 2.8m line cord	39Y7917	6212
India 10A/250V C13 to IS 6538 2.8m line cord	39Y7927	6269
Israel 10A/250V C13 to SI 32 2.8m line cord	39Y7920	6218
Italy 10A/250V C13 to CEI 23-16 2.8m line cord	39Y7921	6217
Japan 12A/125V C13 to JIS C-8303 2.8m line cord	46M2593	A1RE
Korea 12A/250V C13 to KETI 2.8m line cord	39Y7925	6219
South Africa 10A/250V C13 to SABS 164 2.8m line cord	39Y7922	6214
Switzerland 10A/250V C13 to SEV 1011-S24507 2.8m line cord	39Y7919	6216
Taiwan 15A/125V C13/CNS 10917 2.8m line cord	00CG267	6402
United Kingdom 10A/250V C13 to BS 1363/A 2.8m line cord	39Y7923	6215

Physical specifications

The D1212 and D1224 have the following dimensions and weight (approximate):

- Height: 88 mm (3.5 in.)
- Width: 443 mm (17.4 in.)
- Depth: 630 mm (24.8 in.)
- Maximum weight
    - D1212: 26 kg (57.3 lb)
    - D1224: 24 kg (52.9 lb)

Operating environment

The D1212 and D1224 are supported in the following environment:

- Air temperature:
    - Operating: 5 °C to 40 °C (41 °F to 104 °F)
    - Storage: -40 °C to +60 °C (-40 °F to 140 °F)
    - Maximum altitude: 3,045 m (10,000 ft)
- Humidity:
    - Operating: 20% to 80% (non-condensing)
    - Storage: 5% to 100% (no precipitation)
- Electrical:
    - 100 to 127 (nominal) V AC; 50 Hz to 60 Hz; 6.11 A
    - 200 to 240 (nominal) V AC; 50 Hz to 60 Hz; 3.05 A
- BTU output: 1979 BTU/hr (580 W)
- Noise level: 6.5 bels

Warranty and support

The D1212 and D1224 have 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 additional 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 Data Center Group (DCG) 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 customer success. Lenovo's goal for customers is to reduce capital outlays, mitigate IT risks, and accelerate time to productivity.

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

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

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

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

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

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

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

Integration, Migration, and Expansion Services allow to move existing physical and virtual workloads easily, or to determine technical requirements to support increased workloads while maximizing performance. These services include tuning, validation, and documenting ongoing run processes, and they leverage migration assessment planning documents to perform necessary migrations.

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

Regulatory compliance

The D1212 and D1224 drive enclosures conform to the following regulations:

- BSMI CNS 13438, Class A; CNS 14336 (Taiwan)
- CCC GB 4943.1, GB 17625.1, GB 9254 Class A (China)
- CE Mark (European Union)
- CISPR 22, Class A
- EAC (Russia)
- EN55022, Class A
- EN55024
- FCC Part 15, Class A (United States)
- ICES-003/NMB-03, Class A (Canada)
- IEC/EN60950-1
- KC Mark (Korea)
- NOM-019 (Mexico)
- Reduction of Hazardous Substances (ROHS)
- UL/CSA IEC 60950-1
- VCCI, Class A (Japan)

Interoperability

Lenovo provides end-to-end storage compatibility testing to deliver interoperability throughout the network. The Lenovo Storage D1212 and D1224 support 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 D1212 and D1224 enclosures support the RAID adapters and HBAs listed in the following table.

Table 10. RAID controllers and HBAs

Description	Part number	Maximum quantity of enclosures per adapter	
		Single I/O path	Dual I/O path
ThinkSystem adapters			
ThinkSystem RAID 930-8e 4GB Flash PCIe 12Gb Adapter	7Y37A01087	8	8 / 4*
ThinkSystem 430-8e SAS/SATA 12Gb HBA	7Y37A01090	8	8
ThinkSystem 430-16e SAS/SATA 12Gb HBA	7Y37A01091	8	8
ThinkSystem 440-16e SAS/SATA PCIe Gen4 12Gb HBA	4Y37A09724	8	8
System x adapters			
ServeRAID M5225-2GB SAS/SATA Controller	00AE938	8	8 / 4*
N2225 SAS/SATA HBA	00AE912	8	8
N2226 SAS/SATA HBA	00AE916	8	8
ThinkServer adapters			
ThinkServer 9300-8e PCIe 12Gb 8-port External SAS Adapter by LSI	4XB0F28703	8	8
ThinkServer 8885e PCIe 12Gb 8-port External SAS Adapter by PMC	4XB0G88727	1	1

* The maximum quantity of D1212 / D1224 enclosures.

The following tables summarize features of supported adapters.

Table 11. ThinkSystem adapter features and specifications summary

Feature	RAID 930-8e	430-8e HBA	430-16e HBA	440-16e HBA
Form factor	PCIe LP	PCIe LP	PCIe LP	PCIe LP
SAS controller chip	SAS3508	SAS3408	SAS3416	SAS3816
Host interface	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 4.0 x8
Port interface	12 Gb SAS	12 Gb SAS	12 Gb SAS	12 Gb SAS
Number of ports	8	8	16	16
Connector type	SFF-8644 x4	SFF-8644 x4	SFF-8644 x4	SFF-8644 x4
Number of connectors	2	2	4	4
Drive interface	SAS, SATA	SAS, SATA	SAS, SATA	SAS, SATA
Drive type	HDD, SSD, SED	HDD, SSD, SED*	HDD, SSD, SED*	HDD, SSD, SED*
Number of devices	240^	1024	1024	1024
RAID levels	0/1/10/5/50/6/60	None	None	None
JBOD mode	Yes	Yes	Yes	Yes
Cache	4 GB (Included)	None	None	None
Cache protection	Flash backup (Included)	None	None	None
SED key management (SafeStore)	Yes	No	No	No
SSD I/O acceleration (FastPath)	Yes	No	No	No
SSD Caching (CacheCade Pro 2.0)	No**	No	No	No

* HBAs do not support key management for SEDs; third-party host software is responsible for managing the keys.
^ The support for 240 devices requires the firmware version 5.030 or newer and the activation of the profile 12 on the RAID 930-8e controller via UEFI or StorCLI. By default, the profile 10 is activated on the controller, which provides support for up to 64 devices.
** The SSD caching feature has been phased out in the new generation of advanced RAID controllers.

Table 12. System x and ThinkServer adapter features and specifications summary

Feature	M5225-2GB	N2225	N2226	9300-8e	8885e
Form factor	Low profile	Low profile	Low profile	Low profile	Low profile
SAS controller chip	SAS3108	SAS3008	SAS3008	SAS3008	PM8063
Host interface	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8
Port interface	12 Gbps SAS	12 Gbps SAS	12 Gbps SAS	12 Gbps SAS	12 Gbps SAS
Number of ports	8	8	16	8	8
Connector type	SFF-8644 x4	SFF-8644 x4	SFF-8644 x4	SFF-8644 x4	SFF-8644 x4
Number of connectors	2	2	4	2	2
Drive interface	SAS	SAS	SAS	SAS	SAS
Drive type	HDD, SSD, SED	HDD, SSD, SED*	HDD, SSD, SED*	HDD, SSD, SED*	HDD, SSD, SED*
Number of devices	240	1024	1024	1024	256
RAID levels	0/1/10/5/50; Optional 6/60 (47C8706)	None	None	None	None
JBOD mode	No	Yes	Yes	Yes	Yes
Cache	2 GB (Included)	None	None	None	1 GB

Feature	M5225-2GB	N2225	N2226	9300-8e	8885e
Cache protection	Flash backup (Included)	None	None	None	None
SED key management (SafeStore)	Yes	No	No	No	No
SSD I/O acceleration (FastPath)	Optional (47C8710)	No	No	No	No
SSD Caching (CacheCade Pro 2.0)	Optional (47C8712)	No	No	No	No

* HBAs do not support key management for SEDs; third-party host software is responsible for managing the keys.

Rack cabinets

The following table lists the supported rack cabinets.

Table 13. Rack cabinets

Part number	Description
93072RX	25U Standard Rack
93072PX	25U Static S2 Standard Rack
93634PX	42U 1100mm Dynamic Rack
93634EX	42U 1100mm Dynamic Expansion Rack
93604PX	42U 1200mm Deep Dynamic Rack
93614PX	42U 1200mm Deep Static Rack
93084EX	42U Enterprise Expansion Rack
93084PX	42U Enterprise Rack
93074RX	42U Standard Rack

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

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

Power distribution units

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

Table 14. Power distribution units

Part number	Description
0U Basic PDUs	
00YJ776	0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord
00YJ777	0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord
00YJ778	0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 line cord
00YJ779	0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord
Switched and Monitored PDUs	
00YJ780	0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 line cord
00YJ781	0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P line cord

Part number	Description
00YJ782	0U 18 C13/6 C19 Switched / Monitored 32A/200-240V/346-415V/3Ph PDU w/ IEC60309 532P6 cord
00YJ783	0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 line cord
46M4003	1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord
46M4004	1U 12 C13 Switched and Monitored DPI PDU (without line cord)
46M4005	1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord
Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)	
71762NX	Ultra Density Enterprise C19/C13 PDU Module (without line cord)
71763NU	Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord
C13 Enterprise PDUs (12x IEC 320 C13 outlets)	
39M2816	DPI C13 Enterprise PDU+ (without line cord)
39Y8941	DPI Single Phase C13 Enterprise PDU (without line cord)
C19 Enterprise PDUs (6x IEC 320 C19 outlets)	
39Y8948	DPI Single Phase C19 Enterprise PDU (without line cord)
39Y8923	DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord
Front-end PDUs (3x IEC 320 C19 outlets)	
39Y8938	DPI 30amp/125V Front-end PDU with NEMA L5-30P line cord
39Y8939	DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord
39Y8934	DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
39Y8940	DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
39Y8935	DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
NEMA PDUs (6x NEMA 5-15R outlets)	
39Y8905	DPI 100-127V PDU with Fixed NEMA L5-15P line cord
Line cords for PDUs that ship without a line cord	
40K9611	DPI 32a Line Cord (IEC 309 3P+N+G)
40K9612	DPI 32a Line Cord (IEC 309 P+N+G)
40K9613	DPI 63a Cord (IEC 309 P+N+G)
40K9614	DPI 30a Line Cord (NEMA L6-30P)
40K9615	DPI 60a Cord (IEC 309 2P+G)
40K9617	DPI Australian/NZ 3112 Line Cord
40K9618	DPI Korean 8305 Line Cord

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 15. 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 countries in the Asia Pacific region.

For more information, see the list of Product Guides in the UPS category:
https://lenovopress.com/servers/options/ups

Lenovo Financial Services

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

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

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

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

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

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

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

Related publications and links

For more information, see the following documents:

- Lenovo Storage product page
  http://www.lenovo.com/systems/storage
- Lenovo Data Center Solution Configurator
  http://dcsc.lenovo.com
- Lenovo Storage support
  http://support.lenovo.com/us/en/products/servers/lenovo-storage
- Lenovo Storage D1224 Drive Enclosure for SAP HANA Product Guide
  http://lenovopress.com/lp0590

Related product families

Product families related to this document are the following:

- Direct-Attached Storage

Notices

This document, LP0512, was created or updated on November 3, 2020.

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