

NexentaStor 5.x Reference Architecture



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Preface

Intended Audience

This document is intended for Nexenta partners and Nexenta customer-facing organizations. The latest version of this document is available through the Nexenta Partner Portal.

Comments

For comments and inquiries, send email to pm@nexenta.com. Refer to specific pages, sections, and paragraphs whenever possible.

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1 Lenovo Reference Architectures

1.1 Lenovo ThinkSystem SR650 All-Flash – D1224

NexentaStor All-Flash configurations deliver very high IOPS and sub millisecond latency for small random IO workloads that are typical of databases, enterprise applications and high performance private cloud (VMware, OpenStack and Hyper-V) environments.

Lenovo All-Flash RA	NL-AF-24	NL-AF-48	NL-AF-72	NL-AF-96
Raw Capacity	Up to 368TB	Up to 737TB	Up to 1,105TB	Up to 1,474TB
Device Slots	24	48	72	96
Form Factor (total system)	6U	8U	10U	12U
Memory (total system)	384GB to 768GB			
Software	NexentaStor 5.x			

Lenovo All-Flash RA	NL-AF-24	NL-AF-48	NL-AF-72	NL-AF-96
Controller	2x Lenovo ThinkSystem SR650			
Chassis	ThinkSystem SR650 3.5" Chassis With 3.5" SATA/SAS 8-Bay Backplane			
RAID Config	No RAID			
PCIe Riser	ThinkSystem 2U x8/x8/x8 PCIe FH Riser 1 ThinkSystem (x16/x8)/(x16/x16) PCIe FH Riser 2 Kit			
CPU	Intel Xeon Gold 6128 6C 115W 3.4GHz Processor			
DRAM	192GB (12x 16GB) 384GB (12x 32GB)			
Boot Drive	2x ThinkSystem 3.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD			
SAS HBA	1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 1x ThinkSystem 430-16e SAS/SATA 12Gb HBA		1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 2x ThinkSystem 430-16e SAS/SATA 12Gb HBA	
LOM & PCIe NICs	ThinkSystem 10Gb 2-port Base-T LOM ThinkSystem 10Gb 4-port Base-T LOM Intel X550-T2 Dual Port 10GBase-T Adapter Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter			
FC HBA (optional)	Emulex 16Gb Gen6 FC Dual-port HBA			
Storage Enclosure	1x Lenovo Storage D1224	2x Lenovo Storage D1224	3x Lenovo Storage D1224	4x Lenovo Storage D1224
Total Drive #	Up to 24	Up to 48	Up to 72	Up to 96
Flash Device	High Performance SAS SSDs – 1.6TB 10 DWPD Capacity Optimized SAS SSDs – 3.84TB 3 DWPD Capacity Optimized SAS SSDs – 7.68TB 1 DWPD Capacity Optimized SAS SSDs – 15.36TB 1 DWPD			
L2ARC	n/a			
ZIL/SLOG	n/a			

Note 1: Lenovo ThinkSystem SR650 reference architectures are supported with NexentaStor 5.1.2-FP1 and above.

Note 2: If using Fibre Channel HBA, please contact Nexenta support to get the appropriate drivers.

Note 3: BIOS for the SR650 servers must be IVE122D-1.30 or newer. BMC firmware version must be CDI324Q-1.90 or newer.

Note 4: There is no need for separate ZIL or L2ARC devices in all-SSD configurations. Use dual SAS path for configurations with up to 4 enclosures.

1.2 Lenovo Hybrid Configurations

NexentaStor Hybrid configurations deliver great sync write performance and are best suited for mixed read/write workloads with small random IO that are typical of private cloud (VMware, OpenStack and Hyper-V) storage backend, generic file services and high performance backup and archive use cases.

1.2.1 Lenovo ThinkSystem SR650 Hybrid – D1224

Lenovo Hybrid RA	NL-H-2x24	NL-H-4x24	NL-H-6x24	NL-H-8x24
Raw Capacity	Up to 108TB	Up to 223TB	Up to 331TB	Up to 446TB
Device Slots	48	96	144	192
Form Factor (total)	8U	12U	16U	20U
Memory (total)	192GB to 384GB			
Read Cache	400GB		800GB	
Software	NexentaStor 5.x			

Lenovo Hybrid RA	NL-H-2x24	NL-H-4x24	NL-H-6x24	NL-H-8x24
Controller	2x Lenovo ThinkSystem SR650			
Chassis	ThinkSystem SR650 3.5" Chassis With 3.5" SATA/SAS 8-Bay Backplane			
RAID Config	No RAID			
PCIe Riser	ThinkSystem 2U x8/x8/x8 PCIe FH Riser 1 ThinkSystem (x16/x8)/(x16/x16) PCIe FH Riser 2 Kit			
CPU	Intel Xeon Silver 4114 10C 85W 2.2GHz Processor			
DRAM	96GB (12x 8GB) 192GB (12x 16GB)			
Boot Drive	2x ThinkSystem 3.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD			
SAS HBA	1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 1x ThinkSystem 430-16e SAS/SATA 12Gb HBA		1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 2x ThinkSystem 430-16e SAS/SATA 12Gb HBA	
LOM & PCIe NICs	ThinkSystem 10Gb 2-port Base-T LOM ThinkSystem 10Gb 4-port Base-T LOM Intel X550-T2 Dual Port 10GBase-T Adapter Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter			
FC HBA (optional)	Emulex 16Gb Gen6 FC Dual-port HBA			
Storage Enclosure	2x Lenovo Storage D1224	4x Lenovo Storage D1224	6x Lenovo Storage D1224	8x Lenovo Storage D1224
Data HDD	Lenovo Storage 1.2TB 10K 2.5" SAS HDD Lenovo Storage 1.8TB 10K 2.5" SAS HDD Lenovo Storage 2.4TB 10K 2.5" SAS HDD Lenovo Storage 1TB 7.2K 2.5" NL-SAS HDD Lenovo Storage 2TB 7.2K 2.5" NL-SAS HDD			

Data Drive #	Up to 45	Up to 93	Up to 138	Up to 186
L2ARC (optional)	1x 400GB SAS SSD (3 DWPDP) per pool		1x 400GB SAS SSD (3 DWPDP) per pool (2 pools recommended)	
ZIL/SLOG	2x 400GB SAS SSD (10 DWPDP) per pool		2x 400GB SAS SSD (10 DWPDP) per pool (2 pools recommended)	

Note 1: Lenovo ThinkSystem SR650 reference architectures are supported with NexentaStor 5.1.2-FP1 and above.

Note 2: If using Fibre Channel HBA, please contact Nexenta support to get the appropriate drivers.

Note 3: BIOS for the SR650 servers must be IVE122D-1.30 or newer. BMC firmware version must be CDI324Q-1.90 or newer.

Note 4: Use dual SAS paths and SAS loops with no more than 2 enclosures per loop for configurations up to 8 enclosures.

1.2.2 Lenovo ThinkSystem SR650 Hybrid – D1212

Lenovo Hybrid RA	NL-H-2x12	NL-H-4x12	NL-H-6x12	NL-H-8x12
Raw Capacity	Up to 252TB	Up to 540TB	Up to 828TB	Up to 1,116TB
Device Slots	24	48	72	96
Form Factor (total)	8U	12U	16U	20U
Memory (total)	192GB to 384GB			
Read Cache	400GB		800GB	
Software	NexentaStor 5.x			

Lenovo Hybrid RA	NL-H-2x12	NL-H-4x12	NL-H-6x12	NL-H-8x12
Controller	2x Lenovo ThinkSystem SR650			
Chassis	ThinkSystem SR650 3.5" Chassis With 3.5" SATA/SAS 8-Bay Backplane			
RAID Config	No RAID			
PCIe Riser	ThinkSystem 2U x8/x8/x8 PCIe FH Riser 1 ThinkSystem (x16/x8)/(x16/x16) PCIe FH Riser 2 Kit			
CPU	Intel Xeon Silver 4114 10C 85W 2.2GHz Processor			
DRAM	96GB (12x 8GB) 192GB (12x 16GB)			
Boot Drive	2x ThinkSystem 3.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD			
SAS HBA	1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 1x ThinkSystem 430-16e SAS/SATA 12Gb HBA		1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 2x ThinkSystem 430-16e SAS/SATA 12Gb HBA	
LOM & PCIe NICs	ThinkSystem 10Gb 2-port Base-T LOM ThinkSystem 10Gb 4-port Base-T LOM Intel X550-T2 Dual Port 10GBase-T Adapter Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter			
FC HBA (optional)	Emulex 16Gb Gen6 FC Dual-port HBA			
Storage Enclosure	2x Lenovo Storage D1212	4x Lenovo Storage D1212	6x Lenovo Storage D1212	8x Lenovo Storage D1212
Data HDD	Lenovo Storage 2TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 4TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 6TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 8TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 10TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 12TB 7.2K 3.5" NL-SAS HDD			

Data Drive #	Up to 21	Up to 45	Up to 69	Up to 93
L2ARC (optional)	1x 400GB SAS SSD (3 DWPD) per pool			
ZIL/SLOG	2x 400GB SAS SSD (10 DWPD) per pool			

Note 1: Lenovo ThinkSystem SR650 reference architectures are supported with NexentaStor 5.1.2-FP1 and above.

Note 2: If using Fibre Channel HBA, please contact Nexenta support to get the appropriate drivers.

Note 3: BIOS for the SR650 servers must be IVE122D-1.30 or newer. BMC firmware version must be CDI324Q-1.90 or newer.

Note 4: Use dual SAS paths and SAS loops with no more than 2 enclosures per loop for configurations up to 8 enclosures.

1.2.3 Lenovo ThinkSystem SR650 Hybrid – D3284

Lenovo Hybrid RA	NL-H-1x84	NL-H-2x84	NL-H-3x84	NL-H-4x84
Raw Capacity	Up to 972TB	Up to 1.98PB	Up to 2.95PB	Up to 3.96PB
Device Slots	84	168	252	336
Form Factor (total)	9U	14U	19U	24U
Memory (total)	384GB to 768GB			
Read Cache	400GB	800GB	800GB	1.6TB
Software	NexentaStor 5.x			

Lenovo Hybrid RA	NL-H-1x84	NL-H-2x84	NL-H-3x84	NL-H-4x84
Controller	2x Lenovo ThinkSystem SR650			
Chassis	ThinkSystem SR650 3.5" Chassis With 3.5" SATA/SAS 8-Bay Backplane			
RAID Config	No RAID			
PCIe Riser	ThinkSystem 2U x8/x8/x8 PCIe FH Riser 1 ThinkSystem (x16/x8)/(x16/x16) PCIe FH Riser 2 Kit			
CPU	Intel Xeon Silver 4114 10C 85W 2.2GHz Processor			
DRAM	192GB (12x 16GB) 384GB (12x 32GB)			
Boot Drive	2x ThinkSystem 3.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD			
SAS HBA	1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 1x ThinkSystem 430-16e SAS/SATA 12Gb HBA		1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 2x ThinkSystem 430-16e SAS/SATA 12Gb HBA	
LOM & PCIe NICs	ThinkSystem 10Gb 2-port Base-T LOM ThinkSystem 10Gb 4-port Base-T LOM Intel X550-T2 Dual Port 10GBase-T Adapter Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter			
FC HBA (optional)	Emulex 16Gb Gen6 FC Dual-port HBA			
Storage Enclosure	1x Lenovo Storage D3284 (84 Bay)	2x Lenovo Storage D3284 (84 Bay)	3x Lenovo Storage D3284 (84 Bay)	4x Lenovo Storage D3284 (84 Bay)
Data HDD	Lenovo Storage 2TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 4TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 6TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 8TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 10TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 12TB 7.2K 3.5" NL-SAS HDD			

Data Drive #	Up to 81	Up to 165	Up to 246	Up to 330
L2ARC (optional)	1x 400GB SAS SSD (3 DWPD) per pool		1x 400GB SAS SSD (3 DWPD) per pool (2 pools recommended)	
ZIL/SLOG	2x 400GB SAS SSD (10 DWPD) per pool		2x 400GB SAS SSD (10 DWPD) per pool (2 pools recommended)	

Note 1: Lenovo ThinkSystem SR650 reference architectures are supported with NexentaStor 5.1.2-FP1 and above.

Note 2: If using Fibre Channel HBA, please contact Nexenta support to get the appropriate drivers.

Note 3: BIOS for the SR650 servers must be IVE122D-1.30 or newer. BMC firmware version must be CDI324Q-1.90 or newer.

1.3 Lenovo ThinkSystem SR650 Single Node Appliances

NexentaStor Single Node configurations leverage disk capacity internal to the storage controller. **The single controller architecture determines that there is no high availability for storage services.** Full data protection services are available including data Mirror and RAID. NexentaStor Single-Node configurations are best suited for generic file services and backup and archive use cases.

1.3.1 Lenovo ThinkSystem SR650 Single Node (No HA) – All-Flash

Lenovo Single Node	NL-SN-AF-24
Raw Capacity	Up to 368TB
Device Slots	24 x 2.5"
Form Factor	2U
Memory	192GB
LOM 10 GbE ports	Up to 4
Software	NexentaStor 5.x

Controller	Lenovo ThinkSystem SR650
Chassis	ThinkSystem SR650 2.5" Chassis with 24 bays With 3x 2.5" SATA/SAS 8-Bay Backplane ThinkSystem SR590/SR650 Rear HDD Kit
RAID Config	No RAID
PCIe Riser	ThinkSystem SR550/SR590/SR650 (x16/x8)/(x16/x16) PCIe FH Riser 2 Kit
CPU	2 x Intel Xeon Silver 4114 10C 85W 2.2GHz Processor
DRAM	192GB (12x 16GB)
Boot Drive	2x ThinkSystem 2.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD (Front Bays)
SAS HBA	2x ThinkSystem 430-16i SAS/SATA 12Gb HBA
LOM & PCIe NIC	ThinkSystem 10Gb 2-port Base-T LOM ThinkSystem 10Gb 4-port Base-T LOM Intel X550-T2 Dual Port 10GBase-T Adapter Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter
Data Device #	24
Data Devices	High Performance SAS SSDs – 1.6TB 10 DWPD Capacity Optimized SAS SSDs – 3.84TB 3 DWPD Capacity Optimized SAS SSDs – 7.68TB 1 DWPD Capacity Optimized SAS SSDs – 15.36TB 1 DWPD
L2ARC	n/a
ZIL/SLOG	n/a

Note 1: Lenovo ThinkSystem SR650 reference architectures are supported with NexentaStor 5.1.2-FP1 and above.

Note 2: BIOS for the SR650 servers must be IVE122D-1.30 or newer. BMC firmware version must be CDI324Q-1.90 or newer.

Note 3: There is no need for separate ZIL or L2ARC devices in all-SSD configurations.

1.3.2 Lenovo ThinkSystem SR650 Single Node (No HA) – Hybrid 2.5”

Lenovo Single Node	NL-SN-H-24
Raw Capacity	Up to 52TB
Device Slots	24 x 2.5”
Form Factor	2U
Memory	96GB
LOM 10 GbE ports	Up to 4
Software	NexentaStor 5

Controller	Lenovo ThinkSystem SR650
Chassis	ThinkSystem SR650 2.5" Chassis with 24 bays With 3x 2.5" SATA/SAS 8-Bay Backplane ThinkSystem SR590/SR650 Rear HDD Kit
RAID Config	No RAID
PCIe Riser	ThinkSystem SR550/SR590/SR650 (x16/x8)/(x16/x16) PCIe FH Riser 2 Kit
CPU	2 x Intel Xeon Silver 4114 10C 85W 2.2GHz Processor
DRAM	96GB (12x 8GB)
Boot Drive	2x ThinkSystem 2.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD (Front Bays)
SAS HBA	2x ThinkSystem 430-16i SAS/SATA 12Gb HBA
LOM & PCIe NIC	ThinkSystem 10Gb 2-port Base-T LOM ThinkSystem 10Gb 4-port Base-T LOM Intel X550-T2 Dual Port 10GBase-T Adapter Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter
Data Device #	22
Data Devices	Lenovo Storage 1.2TB 10K 2.5" SAS HDD Lenovo Storage 1.8TB 10K 2.5" SAS HDD Lenovo Storage 2.4TB 10K 2.5" SAS HDD Lenovo Storage 1TB 7.2K 2.5" NL-SAS HDD Lenovo Storage 2TB 7.2K 2.5" NL-SAS HDD
L2ARC	n/a
ZIL/SLOG	2x 400GB SAS SSD 10 DWPD

Note 1: Lenovo ThinkSystem SR650 reference architectures are supported with NexentaStor 5.1.2-FP1 and above.

Note 2: BIOS for the SR650 servers must be IVE122D-1.30 or newer. BMC firmware version must be CDI324Q-1.90 or newer.

1.3.3 Lenovo ThinkSystem SR650 Single Node (No HA) – Hybrid 3.5”

Lenovo Single Node	NL-SN-H-12
Raw Capacity	Up to 120TB
Device Slots	12 x 3.5”
Form Factor	2U
Memory	96GB
LOM 10 GbE ports	Up to 4
Software	NexentaStor 5.x

Controller	Lenovo ThinkSystem SR650
Chassis	ThinkSystem SR650 3.5" Chassis with 8 or 12 bays With 1x 3.5" SATA/SAS 12-Bay Backplane ThinkSystem SR590/SR650 Rear HDD Kit
RAID Config	No RAID
PCIe Riser	ThinkSystem SR550/SR590/SR650 (x16/x8)/(x16/x16) PCIe FH Riser 2 Kit
CPU	2 x Intel Xeon Silver 4114 10C 85W 2.2GHz Processor
DRAM	96GB (12x 8GB)
Boot Drive	2x ThinkSystem 3.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD (Front Bays)
SAS HBA	1x ThinkSystem 430-16i SAS/SATA 12Gb HBA
LOM & PCIe NIC	ThinkSystem 10Gb 2-port Base-T LOM ThinkSystem 10Gb 4-port Base-T LOM Intel X550-T2 Dual Port 10GBase-T Adapter Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter
Data Device #	10
Data Drives	Lenovo Storage 2TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 4TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 6TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 8TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 10TB 7.2K 3.5" NL-SAS HDD Lenovo Storage 12TB 7.2K 3.5" NL-SAS HDD
L2ARC	n/a
ZIL/SLOG	2x 400GB SAS SSD 10 DWPD

Note 1: Lenovo ThinkSystem SR650 reference architectures are supported with NexentaStor 5.1.2-FP1 and above.

Note 2: BIOS for the SR650 servers must be IVE122D-1.30 or newer. BMC firmware version must be CDI324Q-1.90 or newer.

1.4 Lenovo and HGST Storage Platform Configurations

1.4.1 Lenovo ThinkSystem SR650 and HGST 2U24 All-Flash

The following reference architectures are based on the following [HGST 2U24 Flash Storage](#) Platforms:

HGST Model Number	Configuration
1ES0107	12x 3.84TB 1 DWPD SAS SSDs
1ES0110	24x 3.84TB 1 DWPD SAS SSDs
1ES0108	12x 7.68TB 1 DWPD SAS SSDs
1ES0111	24x 7.68TB 1 DWPD SAS SSDs

Lenovo and HGST RA	NLHG-AF-24	NLHG-AF-48	NLHG-AF-72	NLHG-AF-96
Raw Capacity	Up to 184TB	Up to 368TB	Up to 552TB	Up to 737TB
Device Slots	24	48	72	96
Form Factor (total)	6U	8U	10U	12U
Memory (total)	384GB to 768GB			
10GbE Ports	8			
Software	NexentaStor 5.x			

Lenovo and HGST RA	NLHG-AF-24	NLHG-AF-48	NLHG-AF-72	NLHG-AF-96
Controller	2x Lenovo ThinkSystem SR650			
Chassis	ThinkSystem SR650 3.5" Chassis With 3.5" SATA/SAS 8-Bay Backplane			
RAID Config	No RAID			
PCIe Riser	ThinkSystem 2U x8/x8/x8 PCIe FH Riser 1 ThinkSystem (x16/x8)/(x16/x16) PCIe FH Riser 2 Kit			
CPU	Intel Xeon Gold 6128 6C 115W 3.4GHz Processor			
DRAM	192GB (12x 16GB) 384GB (12x 32GB)			
Boot Drive	2xThinkSystem 3.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD			
SAS HBA	1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 1x ThinkSystem 430-16e SAS/SATA 12Gb HBA	1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 2x ThinkSystem 430-16e SAS/SATA 12Gb HBA		
LOM & PCIe NICs	ThinkSystem 10Gb 2-port Base-T LOM ThinkSystem 10Gb 4-port Base-T LOM Intel X550-T2 Dual Port 10GBase-T Adapter Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter			
FC HBA (optional)	Emulex 16Gb Gen6 FC Dual-port HBA			
Storage Enclosure	1x HGST 2U24	2x HGST 2U24	3x HGST 2U24	4x HGST 2U24
Total Device #	Up to 24	Up to 48	Up to 72	Up to 96
Flash Device	3.84TB SAS SSD (1 DWPD) 7.68TB SAS SSD (1 DWPD)			
L2ARC	n/a			
ZIL /SLOG	n/a			

Note 1: Lenovo ThinkSystem SR650 reference architectures are supported with NexentaStor 5.1.2-FP1 and above.

Note 2: If using Fibre Channel HBA, please contact Nexenta support to get the appropriate drivers.

Note 3: BIOS for the SR650 servers must be IVE122D-1.30 or newer. BMC firmware version must be CDI324Q-1.90 or newer.

Note 4: There is no need for separate ZIL or L2ARC devices in all-SSD configurations.

6.4.2 Lenovo ThinkSystem SR650 and HGST Ultrastar Data 60 Hybrid / All-Disk

Lenovo HGST RA	NLHG -1x60	NLHG -2x60	NLHG -3x60	NLHG -4x60
Raw Capacity	Up to 696TB	Up to 1,416TB	Up to 2,136TB	Up to 2,856TB
Device Slots	60	120	180	240
Form Factor (total)	8U	12U	16U	20U
Memory (total)	384GB to 768GB			
Software	NexentaStor 5.x			

Lenovo HGST RA	NLHG -1x60	NLHG -2x60	NLHG -3x60	NLHG -4x60
Controller	2x Lenovo ThinkSystem SR650			
Chassis	ThinkSystem SR650 3.5" Chassis With 3.5" SATA/SAS 8-Bay Backplane			
RAID Config	No RAID			
PCIe Riser	ThinkSystem 2U x8/x8/x8 PCIe FH Riser 1 ThinkSystem (x16/x8)/(x16/x16) PCIe FH Riser 2 Kit			
CPU	Intel Xeon Silver 4114 10C 85W 2.2GHz Processor			
DRAM	192GB (12x 16GB) 384GB (12x 32GB)			
Boot Drive	2x ThinkSystem 3.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD			
SAS HBA	1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 1x ThinkSystem 430-16e SAS/SATA 12Gb HBA		1x ThinkSystem 430-8i SAS/SATA 12Gb HBA 2x ThinkSystem 430-16e SAS/SATA 12Gb HBA	
LOM & PCIe NICs	ThinkSystem 10Gb 2-port Base-T LOM ThinkSystem 10Gb 4-port Base-T LOM Intel X550-T2 Dual Port 10GBase-T Adapter Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter			
FC HBA (optional)	Emulex 16Gb Gen6 FC Dual-port HBA			
Storage Enclosure	1x HGST Data60	2x HGST Data60	3x HGST Data60	4x HGST Data60
Data Drive #	Up to 60	Up to 120	Up to 180	Up to 240
Data HDD	HGST Ultrastar 6TB air HDDs HGST Ultrastar 8TB helium HDDs HGST Ultrastar 10TB helium HDDs HGST Ultrastar 12TB helium HDDs			
L2ARC (optional)	800GB SAS SSD (3 DWPD) per pool			
ZIL/SLOG	2x 400GB SAS SSD (10 DWPD) per pool			

Note 1: Lenovo ThinkSystem SR650 reference architectures are supported with NexentaStor 5.1.2-FP1 and above.

Note 2: If using Fibre Channel HBA, please contact Nexenta support to get the appropriate drivers.

Note 3: BIOS for the SR650 servers must be IVE122D-1.30 or newer. BMC firmware version must be CDI324Q-1.90 or newer.

Note 4: Chassis management for the HGST 4U60G2 enclosure is supported in NexentaStor 5.1 and up. Chassis management for the Ultrastar Data60 is supported in NexentaStor 5.2.0 and up

2 About Nexenta

Nexenta is the global leader in Open Source-driven Software-Defined Storage (OpenSDS). Founded in 2005 with 6,000+ customers and more than 1,500 petabytes of storage under management, our privately held company delivers **100% Software**-based storage solutions, providing organizations with **Total Freedom** to choose an easy-to-use, secure and ultra-low cost storage solution to fit their needs. Nexenta enables everyday apps; from the Internet of Things to Big Data; from OpenStack to Containers – and all types of Clouds – Private, Public, and Hybrid. Founded around an open source platform and industry-disrupting vision, Nexenta delivers its award- and patent-winning software-only unified storage management solutions 24x7 - around the globe - service and support. Nexenta has an **All Love** approach with its global partner network, including solution integration with top hardware partners to deliver validated and certified OpenSDS solutions to fit your business requirements.

For more information, visit www.nexenta.com, [Twitter](#), [Facebook](#), [LinkedIn](#) and [YouTube](#).

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