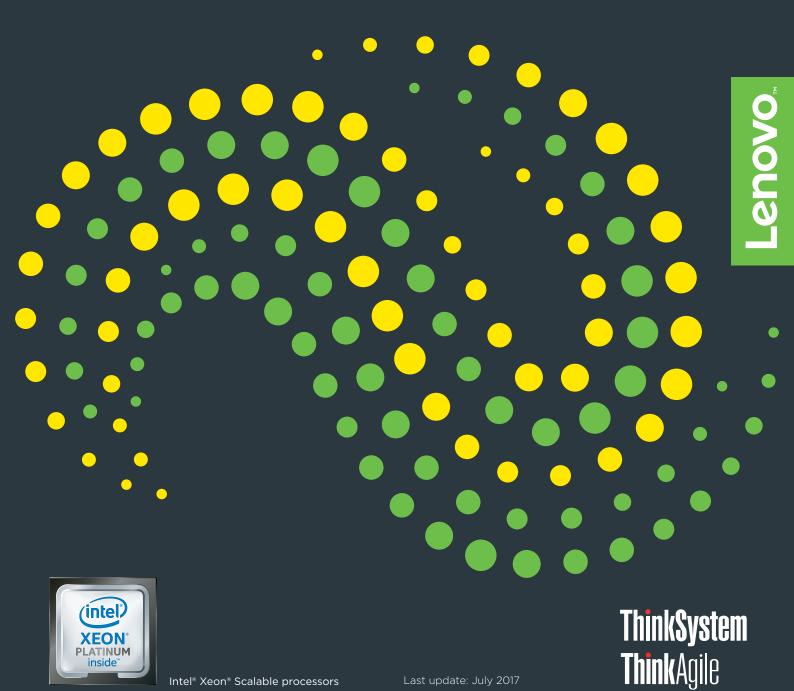
Different is better

### Lenovo for the Data Centre Portfolio Guide





Last update: July 2017

### Enabling the Future-Defined Data Centre

By providing the strongest foundation of performance, reliability and security in the industry, Lenovo delivers an end-to-end portfolio of compute, storage and networking capabilities that seamlessly integrate and interoperate with any environment. And thanks to Lenovo Services expertise offered across every phase of the IT lifecycle, we can help clients deliver the most from their technology investment.

- Most reliable: Lenovo servers ranked #1 in uptime of any x86 systems for the past 4 years running, according to 2016-2017 ITIC reliability survey.<sup>1</sup>
- Most secure: Lenovo provides the best and most airtight platform security with our Trusted Platform Assurance. Even after adding options at additional cost, our competitors offer fewer security capabilities than come standard on Lenovo ThinkSystem.
- **Highest satisfaction:** TBR's 2Q16 Corporate IT Buying & Customer Satisfaction Study reports Lenovo as Number 1 x86 vendor in customer satisfaction rating for the 6th consecutive study going back to January 2015.<sup>2</sup>
- Strategic Relationships: Unlike our major competitors, Lenovo does not have a proprietary software business and remains more open for industry leading partnerships. Because of this, Lenovo's customers can benefit from an open standards strategy that allows them to grow and change their IT systems as needed.

With our all new-portfolios, powered by the Intel® Xeon® processor Scalable family, with open, modular technologies designed to adapt easily and scale quickly, Lenovo's clients can excel now and accelerate into the future.

# ThinkSystem

ThinkSystem ™: Server, storage and

# **Think**Agile

ThinkAgile ™: Next generation IT



Intel<sup>®</sup> Xeon<sup>®</sup> Scalable processors



Find out more.

ITIC 2016-2017 Global Hardware, Server OS Reliability Report <u>http://lnv.gy/2lXpp13</u> <sup>2</sup> TBR Corporate IT Buying Behavior and Customer Satisfaction 2H2016 Study", December 2016 <u>http://lnv.gy/2m101DS</u>

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### Data Centre Infrastructure

Continuing with its policy of designing exceptional products, Lenovo has recently announced ThinkSystem – the new brand for server, storage and networking platforms building solutions for the future-defined data centre.

#### Rack & Tower Servers

# Flexible for even the most demanding workloads

Driving new levels of storage density and connectivity, Lenovo ThinkServer, System x and newest ThinkSystem servers powered by Intel® Xeon® Scalable processor family are the ideal platform to host private and public cloud, virtualisation, VDI, web serving, analytics and big data solutions.

#### Purpose-built for availability.

Tower systems designed to operate at whisper quiet acoustic levels and equipped with physical security features, allowing the server to be comfortably placed in an office or retail environment.

### Tools based on open standards for the real world.

Comprehensive systems management tool set.

#### Trust Lenovo to be your expert.

Single point of contact for hardware, firmware and software support.



#### ThinkSystem ST550





Intel® Xeon® Scalable processors

#### Rack Servers

Lenovo Models	ThinkSystem SR630	ThinkSystem SR650
Form Factor/Height	Rack/ 1U	Rack/ 2U
Processor	1 or 2 Xeon® Bronze, Silver, Gold or Platinum processors, up to 205W	1 or 2 Xeon® Bronze, Silver, Gold or Platinum processors, up to 205W
Memory	Up to 3TB <sup>+</sup> in 24x slots, using 128GB <sup>+</sup> DIMMs; 2666MHz TruDDR4	Up to 3TB <sup>+</sup> in 24x DIMM slots using 128GB DIMMs; 2666MHz TruDDR4
Expansion slots	Up to 4x PCIe 3.0 slots (with two CPUs), incl. 1x dedicated PCIe for RAID adapter	Up to 7x PCIe 3.0 via multiple riser options, including 1x dedicated PCIe slot for RAID adapter
Drive Bays	Up to 12 SFF bays (10 front, 2 rear) or up to 4 LFF bays - plus up to 2 mirrored M.2 boot drives	Up to 24 HS bays, or up to 14 LFF bays (12 front, 2 rear) plus up to 2x mirrored M.2 boot drives
RAID Support	Hardware RAID (up to 16 ports) with flash cache; up to 16-port HBAs	Hardware RAID (up to 24 ports) with flash cache; up to 16-port HBAs
Network Interface	2/4-port 1GbE LOM; 2/4-port 10GbE LOM with Base-T or SFP+; 1x dedicated 1GbE management port	2/4-port 1GbE LOM; 2/4-port 10GbE LOM (Base-T or SFP+); 1x dedicated 1GbE management port
Power Supply	2x hot-swap/redundant: 550W/750W/1100W AC 80 PLUS* Platinum; or 750W AC 80 PLUS* Titanium	2x hot swap/redundant: 550W/750W/1100W/1600W 80 PLUS* Platinum; or 750W 80 PLUS* Titanium
Systems Management	XClarity Controller embedded management, XClarity Administrator centralised infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralised server power management	XClarity Controller embedded management, XClarity Administrator centralised infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralised server power Management
OS Support	Microsoft Windows Server Red Hat Enterprise Linux SUSE Linux Enterprise server VMware vSphere. Visit <u>lenovopress.com/osig</u> for more information	Microsoft Windows Server Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware vSphere Visit <u>lenovopress.com/osig</u> for more details
Warranty	1-year and 3-year customer replaceable unit and onsite service, next business day 9x5; opt. service upgrades	1-year and 3-year customer replaceable unit and onsite service, next business day 9x5; opt. service upgrades

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+1.5TB at GA; 128GB DIMMs available in the near future. Available prior to GA via special bid.







Intel® Xeon® Scalable processors

ThinkSystem SR650

Lenovo Models	ThinkSystem SR530	ThinkSystem SR550
Form Factor/Height	Rack/1U	Rack/2U
Processor	Up to 2x Xeon® Bronze, Silver, Gold or Platinum processors, up to 125W	Up to 2x Xeon® Bronze, Silver, Gold or Platinum processors, up to 125W
Memory	Up to 768GB in 12x slots, using 64GB DIMMs; 2666MHz TruDDR4	Up to 768GB in 12x slots, using 64GB DIMMs; 2666MHz TruDDR4
Expansion Slots	Up to 3x PCIe 3.0, via multiple riser options (either all-PCIe, or PCIe and ML2)	Up to 6x PCle 3.0 (with 2x processors) via multiple riser options (PCle-only or PCle + ML2)
Drive Bays	Up to 8 bays. SFF: 8x HS SAS/SATA; or LFF: 4x HS SAS/SATA; or 4x simple-swap (SS) SATA; plus up to 2x mirrored M.2 boot (opt. RAID 1)	Up to 16x HS or 8x SS LFF; plus up to 2x mirrored M.2 boot (opt. RAID 1) SW RAID std. (up to 8 ports); up to 16-port HBAs/ or HW RAID with flash cache; plus up to 2x mirrored M.2 boot
RAID Support	Software RAID (up to 8 ports); optional hardware RAID (up to 8 ports) with flash cache; up to 8-port HBAs	Software RAID (up to 8 ports); up to 16-port HBAs/ or hardware RAID with flash cache
Network Interface	2x 1GbE ports + 1x dedicated 1GbE management port; optional modular LOM supports 2x 1GbE Base-T or 2x 10GbE with Base-T or SFP+	2x 1GbE ports + 1x dedicated 1GbE management port; optional modular LOM supports 2x 1GbE Base-T or 2x 10GbE with Base-T or SFP+
Power Supply	2x hot-swap/redundant (Energy Star 2.1): 550W/750W 80 PLUS® Platinum; or 750W 80 PLUS® Titanium	2x hot-swap/redundant (Energy Star 2.1): 550W/750W 80 PLUS* Platinum; or 750W 80 PLUS* Titanium
System Management	XClarity Controller embedded management, XClarity Administrator centralised infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralised server power management	XClarity Controller embedded management, XClarity Administrator centralised infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralised server power management
OS Support	Microsoft Windows Server Red Hat Enterprise Linux SUSE Linux Enterprise server VMware vSphere Visit <u>lenovopress.com/osig</u> for details	Microsoft Windows Server Red Hat Enterprise Linux SUSE Linux Enterprise server VMware vSphere Visit <u>lenovopress.com/osig</u> for more information
Warranty	1-year and 3-year customer replaceable unit and onsite service, next business day 9x5, opt. service upgrades	1-year and 3-year customer replaceable unit and onsite service, next business day 9x5; opt. service upgrades



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Intel® Xeon® Scalable processors

Lenovo Models	System x3650 M5	System x3550 M5
Form Factor/Height	Rack/2U	Rack/1U
Processor	Up to 2x Intel <sup>®</sup> Xeon <sup>®</sup> processors E5-2600 v4 (22- core) up to 145W	Up to 2x Intel <sup>®</sup> Xeon <sup>®</sup> processors E5-2600 v4 (22-core) up to 145W
Memory	Up to 1.5TB in 24x slots, using 64GB DIMMs; 2400MHz	Up to 1.5TB in 24x slots, using 64GB DIMMs; 2400MHz
Expansion Slots	Up to 8x PCIe 3.0 slots plus one dedicated RAID slot	Up to 3x PCIe3.0 slots plus one dedicated RAID slot
Maximum Internal Storage	Up to 215TB with 10TB 3.5NL SAS or NL SATA and 7.68TB 2.5" SAS SSDs	Up to 92TB with 7.68TB SAS SSDs
RAID Support	12 Gb SAS/SATA RAID: RAID 0, 1, 10 with M1215 or M5210. Optional upgrade to RAID 5, 50 is available for M1215. Optional upgrade to RAID 5, 50 is available for M5210 (zero-cache; 1 GB non-backed cache; 1 GB, 2 GB or 4 GB flash-backed cache). Optional upgrade to RAID 6, 60 is available for M5210 (requires a cache upgrade). Optional SSD Caching and Performance Accelerator upgrades are available for M5210. 12 Gb SAS/SATA non-RAID: N2215 HBA	12 Gb SAS/SATA RAID: RAID 0, 1, 10 with M1215 or M5210. Optional upgrade to RAID 5, 50 is available for M1215. Optional upgrade to RAID 5, 50 is available for M5210 (zero-cache; 1 GB non-backed cache; 1 GB, 2 GB, or 4 GB flash-backed cache). Optional upgrade to RAID 6, 60 is available for M5210 (requires a cache upgrade). Optional SSD Caching and Performance Accelerator upgrades are available for M5210. 12 Gb SAS/SATA non-RAID: N2215 HBA
Network Interface	Quad-port GbE with additional port GbE for dedicated remote management	Quad-port GbE with additional port GbE for dedicated remote management
Power Supply	Redundant 550W/750W/900W/1500W AC 80 PLUS® Platinum, or redundant 750W/1300W AC 80 PLUS® Titanium. 900W -48VDC option	Redundant 550W/750W/900W/1500W AC 80 PLUS* Platinum, or redundant 750W AC 80 PLUS* Titanium
OS Support	Microsoft Windows Server 2016 SUSE Linux Enterprise Server RedHat Enterprise Linux Server VMware ESXi Visit <u>lenovopress.com/osig</u> for more information.	Microsoft Windows Server 2016 SUSE Linux Enterprise Server RedHat Enterprise Linux Server VMware ESXi Visit <u>lenovopress.com/osig</u> for more information.
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5	3-year customer replaceable unit and onsite service, next business day 9x5

Lenovo Model	System x3250 M6
Form Factor/Height	Rack/1U
Processor	Intel® Xeon® processor E3-1220 v6 series or Core i3 or Pentium or Celeron
Memory	Up to 64GB in 4x slots, using 16GB DIMMs; 2133/2400MHz
Expansion Slots	One PCIe 3.0 and one PCIe 3.0 slot dedicated for ServerRAID M1210
Maximum internal storage	Up to 40TB storage with 10TB 3.5" NL SAS or NL SATA HDDs
RAID Support	<ul> <li>6 Gb SATA RAID: RAID 0, 1, 10, 5 with C110. 12 Gb SAS/6 Gb SATA RAID: RAID 0, 1, 10 with M1210, M1215, or M5210.</li> <li>Optional upgrade to RAID 5, 50 is available for M1210, M1215.</li> <li>Optional upgrade to RAID 5, 50 is available for M5210 (zero-cache; 1 GB non-backed cache; 1 GB, 2 GB, or 4 GB flash-backed cache).</li> <li>Optional upgrade to RAID 6, 60 is available for M5210 (requires a cache upgrade). Optional SSD Caching and Performance Accelerator upgrades are available for M5210.</li> <li>12 Gb SAS/6 Gb SATA non-RAID: N2215 HBA</li> </ul>
Network Interface	Two GbE ports with shared network/management or dedicated management on one port
Power Supply	Single 300W AC fixed 80 PLUS* Gold; or up to two redundant hot-swap 460W AC 80 PLUS* Gold
OS Support	Microsoft Windows Server 2016 Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware/ESXi Ubuntu (certified) Visit <u>lenovopress.com/osig</u> for more information.
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5

Lenovo Models	ThinkServer RD450	ThinkServer RD350
Form Factor/Height	Rack/2U	Rack/1U
Processor	Up to 2x Intel* Xeon* processors E5-2600 v4 series (14-core), up to 105W	Up to 2x Intel® Xeon® processors E5-2600 v4 series (14-core), up to 105W
Memory	Up to 1TB in 16x slots, using 64GB; 2400MHz	Up to 1TB in 16x slots, using 64GB; 2400MHz
Expansion Slots	Up to 6x PCle 3.0 slots	Up to 2x PCIe 3.0 slots
Maximum Internal Storage	Up to 80TB with 8x 10TB 3.5" NL SATA	Up to 40 TB with 4x 10 TB 3.5" NL SAS/SATA HDDs
RAID Support	ThinkServer RAID 110i AnyRAID (0/1/10, optional 5)* ThinkServer RAID RD450 510i AnyRAID (0/1/10, optional 5/50)* ThinkServer RAID RD450 720i AnyRAID (0/1/10/5/50/6/60)* ThinkServer RAID RD450 720ix AnyRAID (0/1/10/5/50/6/60)* ThinkServer RAID 110i (0/1/10, optional 5) ThinkServer RAID 520i (0/1/10, optional 5/50) ThinkServer RAID 720i (0/1/10/5/50/6/60)	ThinkServer RAID 110i (0/1/10, optional 5) ThinkServer RAID 520i (0/1/10, optional 5/50) ThinkServer RAID 720i (0/1/10/5/50/6/60)
Network Interface	Dual-port GbE with additional port GbE for dedicated remote management	Dual-port GbE with additional port GbE for dedicated remote management
Power Supply	Redundant 450W 80 PLUS® Gold, or redundant 550W/750W/1100W 80 PLUS® Platinum, or redundant 750W 80 PLUS® Titanium	Redundant 450W, 550W, or 750W AC 80 PLUS® Platinum or redundant 750W AC 80 PLUS® Titanium
OS Support	Microsoft Windows Server 2016 SUSE Linux Enterprise Server RedHat Enterprise Linux Server VMware ESXi XenServer 6.5.1 Visit <u>lenovopress.com/osig</u> for more information	Microsoft Windows Server 2016 SUSE Linux Enterprise Server RedHat Enterprise Linux Server VMware ESXi XenServer 6.5.1 Visit <u>lenovopress.com/osig</u> for more information
Warranty	1-year or 3-year onsite service, next business day 9x5	1-year or 3-year onsite service, next business day 9x5

\* AnyRAID available on 2.5-inch chassis



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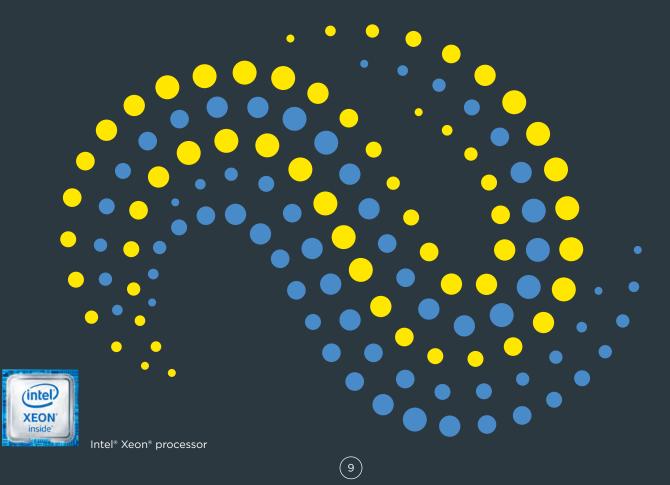


Intel® Xeon® Scalable processors

Lenovo Model	ThinkServer RS160
Form Factor/Height	Rack/1U
Processor	Intel <sup>®</sup> Xeon <sup>®</sup> processor E3-1200 v6 <sup>°</sup> product family with four cores up to 3.7 GHz, 8 MB cache, and up to 2133 MHz memory speed; or Intel <sup>®</sup> Core i3 processor 6100/6300 product families with two cores up to 3.9 GHz, up to 4 MB cache, and 2133 MHz memory speed; or Intel <sup>®</sup> Pentium processor G4400/G4500 product families with two cores up to 3.6 GHz, 3 MB cache, and up to 2133 MHz memory speed
Memory	Up to 64GB in 4x DIMM slots, using 16GB DIMMs; 2400MHz
Expansion Slots	Up to one PCIe 3.0 x16 (x16 wired) low-profile slot with an optional riser card
Maximum Internal Storage	Up to 20TB with 2x10TB 3.5" SATA HDDs
RAID Support	RAID 0, 1, 10, 5, and 50 with RAID 720i or 720ix Optional (for 720i) or mandatory (for 720ix) cache memory upgrades are available: 1 GB non-backed; 1 GB, 2 GB, or 4 GB flash-backed. Cache upgrades include RAID 6 and 60 support. Flash backup upgrades include FastPath and Cache Cade Pro 2.0 features
Network interface	Two integrated GbE (10/100/1000 Mbps) RJ-45 ports (Intel I210) One GbE (10/100/1000 Mbps) RJ-45 port for systems management
Power Supply	One fixed 300W AC (100 - 240 V) power supply (80 PLUS <sup>®</sup> Gold)
OS Support	Windows Server 2012/2012 R2/2016 Red Hat Enterprise Linux (RHEL) Server 6 SUSE Linux Enterprise Server (SLES) 11 VMware vSphere (ESXi) 6.0 Visit <u>lenovopress.com/osig</u> for more information
Warranty	1-year or 3-year (model dependent) customer replaceable unit and onsite service, next business day 9x5

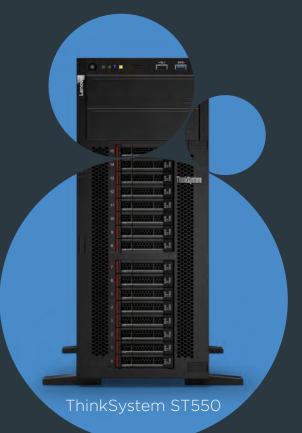
# Data Centre Portfolio at your fingertips





#### Tower Servers

Lenovo Models	ThinkSystem ST550
Form Factor/Height	Tower/4U
Processor	Up to 2x Xeon* Bronze, Silver, Gold or Platinum processors, up to 125W
Memory	Up to 1.5TB in 12x DIMM slots using 768GB DIMMs; 2666MHz TruDDR4
Expansion Slots	Up to 6x PCIe 3.0 (with 2x processors)
Drive Bays	Up to 16 SFF (including 4 NVMe) or 8 LFF bays; plus up to 4 SFF (in optical bay) and 2x internal M.2 boot
RAID Support	Software RAID (4x ports) std; opt. hardware RAID (up to 24x ports); up to 16-port HBAs
Network Interface	2x 1GbE ports std; optional 1GbE, 10GBASE-T, and 10Gb SFP+; 1x dedicated 1GbE management port
Power(Energy Star 2.1 compliant)	1x 450W 80 PLUS* Gold (fixed); or 2x 550W/750W/1100W 80 PLUS* Platinum (hot-swap/ redundant N+1); or 2x 750W 80 PLUS* Titanium (hot-swap/redundant)
Systems Management	XClarity Controller embedded management, XClarity Administrator centralised infrastructure delivery, XClarity Integrator plugins, XClarity Energy Manager centralised server power management
OS Supported	Microsoft Windows Server Red Hat Enterprise Linux SUSE Linux Enterprise server VMware vSphere Visit <u>lenovopress.com/osig</u> for more information
Warranty	1-year or 3-year (model dependent) customer replaceable unit and onsite service, next business day 9x5



Lenovo Models	ThinkServer TS150	ThinkServer TS460
Form Factor/Height	Tower/4U	Tower/4U
Processor	Intel® Xeon® processor E3-1220 v6 series or Core i3 or Pentium or Celeron (4-core), up to 2400MHz	Intel® Xeon® proceesor E3-1200 v6 series; Core i3 and Pentium; up to 8MB cache maximum
Memory	Up to 64GB in 4x slots, using 16GB DIMMs; 2400MHz ECC TruDDR4	Up to 64GB in 4x slots, using 16GB DIMMs; 2400MHz ECC TruDDR4
Expansion Slots	4x PCIe 3.0 slots	4x PCIe 3.0 slots: x4/x4, x16/x16 (x8 when slot 4 is used), x1/x1, x8/x8
Maximum Internal Storage	Up to 40TB with 4x 10TB 3.5" SATA HDD	Up to 80TB with 8x 10TB SAS HDDs
RAID Support	ThinkServer RAID 121i SW RAID 0/1/10/5 std; opt. PCIe ThinkServer RAID 520i 12Gb HW RAID 0/1/10/5	ThinkServer RAID 121i software RAID; optional hardware PCIe RAID: ThinkServer RAID 520i 12Gb, ThinkServer RAID 720i 12Gb (optional cache and BBU), LSI 9300-8e 12Gb SAS (JBOD)
Network Interface	Up to 9 ports: 1x onboard 1Gbps Ethernet std; 2 optional 2/4-port 1Gb Ethernet adapters	2x on-board 1Gb Ethernet standard; 2 optional 2/4- port 1Gb and 1/2-port 10Gb Ethernet adapters
Power Supply	One fixed 250W AC (100 - 240 V) power supply 80 PLUS® Bronze or one fixed 400 W AC (100 - 240 V) power supply 80 PLUS® Platinum	1/1; 300W 80 PLUS® Bronze (non-hot-swap); 1/2 450W 80 PLUS® Gold (hot-swap/redundant)
OS Support	Microsoft Windows Server 2016 and 2012R2 VMware Vsphere (ESXi) Red Hat Enterprise Linux Server Client (Microsoft Windows 10) Visit <u>lenovopress.com/osig</u> for more information	Microsoft Windows Server & Hypervisor 2012 R2 and 2016 Microsoft Windows Storage 2012R2 and 2016 Client OS Windows 10 supported VMware Vsphere (ESXi) Red Hat Enterprise Linux Server SUSE Visit <u>lenovopress.com/osig</u> for more information
Warranty	1-year or 3-year (model dependent) customer replaceable unit and onsite service, next business day 9x5	1-year or 3-year (model dependent) customer replaceable unit and onsite service, next business day 9x5

Lenovo Model	System x3500 M5
Form Factor/Height	Tower/5U
Processor	Up to 2x Intel® Xeon® processor E5-2600 v3 series (18-core)
Memory	Up to 1.5TB in 24x slots, using 64GB DIMMs; 2133MHz TruDDR4
Expansion Slots	Up to 7x PCIe 3.0 slots
Maximum Internal Storage	122.9 TB with 32x 3.84TB 2.5-inch SAS hot-swap SSDs
RAID Support	Up to two 12Gbps hardware RAID adapters -0, -1, -10 with RAID-5, -50, -6, -60 upgrades
Network Interface	Quad-port Gigabit Ethernet and single-port IMM2 standard; optional 10GbE and 40GbE PCIe adapters
Power Supply	1/2 hot-swap redundant 550/750/900/1500W AC, 80 PLUS* Platinum or 750W 80 PLUS* Titanium
OS Support	Microsoft Windows Server 2016 Red Hat Enterprise Linux SUSE Linux Enterprise server VMware ESXi Visit <u>lenovopress.com/osig</u> for more information
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5

Lenovo Model	ThinkServer TD350
Form Factor/Height	Tower/4U
Processor	Up to 2x Intel <sup>®</sup> Xeon <sup>®</sup> processors E5-2600 v4 series (20 core), up to 2400MHz
Memory	Up to 1TB in 16x slots, using 64GB DIMMs; 2400 MHz TruDDR
Expansion Slots	Up to 7x PCIe 3.0 slots
Maximum Internal Storage	Up to 245TB with 32x 7.68TB Enterprise Capacity SAS SSDs; M.2 SSD and SD Card options available
RAID Support	ThinkServer RAID 110i,510i,520i AnyRAID,(0/1/10, optional 5 ThinkServer RAID 720i,720ix AnyRAID Adapter (0/1/10/5/50/6/60)
Network Interface	Dual-port GbE with dedicated management port
Power Supply	Up to two redundant hot-swap 450W, 80 PLUS* Gold, 550W, 750W, or 1100W 80 PLUS* Platinum or 750W High Efficiency 80 PLUS* Titanium
OS Support	Microsoft Windows Server 2016 SUSE Linux Enterprise Server Red Hat Enterprise Linux Server VMware ESXi Visit <u>lenovopress.com/osig</u> for more information
Warranty	1-year or 3-year onsite service, next business day 9x5

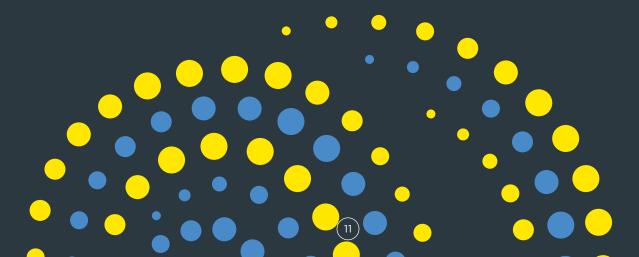
#### Get Ready for the Future-Defined Data Centre



Watch the video to learn how Lenovo can help you innovate.

# Data Centre Portfolio at your finger tips





### High End

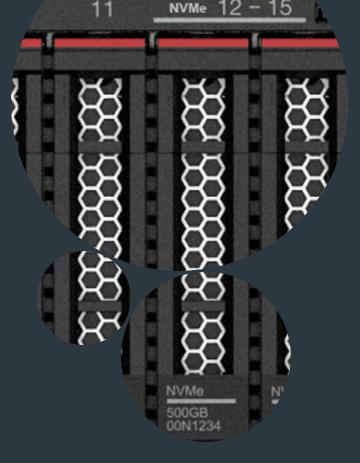
#### Designed with your missioncritical workloads in mind

Lenovo's high-end rack servers are suited for heavy vertical workloads, virtualisation and legacy system replacements. The newly announced ThinkSystem portfolio brings new models designed for your most demanding, mission-critical workloads, such as in-memory databases, large transactional databases, batch and real-time analytics, ERP, CRM, and virtualised server workloads.

**Always on reliability on x86.** Self-monitoring, error detection, and self-healing. Consistently ranked number 1 in reliability.<sup>1</sup>

**Real time insights for real time business.** 31% better TCO than competitors for analytics, leadership benchmarks, massive onboard storage, direct NVMe.

**Everything within reach.** Unmatched scalability with 4S & 8S in one 4U platform, modular drive tray, highest drive density, front and rear access for 12% faster serviceability.



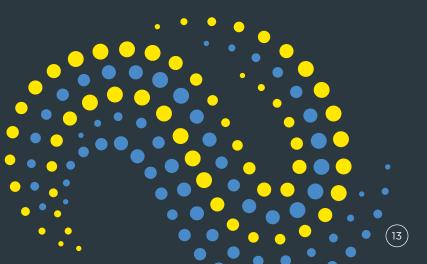
#### ThinkSystem SR850

Lenovo Model	ThinkSystem SR850
Form Factor/Height	Rack/2U
Processor	2x or 4x Intel® Xeon® Gold or Platinum processors, up to 28x cores per processor, up to 165W
Memory	Up to 6TB in 48x slots using 128GB <sup>1</sup> DIMMS; 2666MHz TruDDR4
Expansion Slots	Up to 9x PCIe plus 1x LOM; optional 1x ML2 slot
Maximum Internal Storage	Up to 16x 2.5" storage bays supporting SAS/SATA HDD and SSDs or up to 8x 2.5" NVMe SSD; plus up to 2x mirrored M.2 boot
RAID Support	Hardware RAID (up to 16 ports) with flash cache; up to 16-port HBAs
Power Supply	2x hot-swap/redundant: 750W/1100W/1600W AC 80 PLUS Platinum
RAID support	Hardware RAID (up to 16 ports) with flash cache; up to 16-port HBAs
Network Interface	One (2-/4-port) 1GbE or 10GbE LOM card; Multiple options with 1GbE, 10GbE, 25GbE, 40GbE or InfiniBand PCIe adapters; 1x dedicated 1GbE management port
Power Supply	2x hot-swap/redundant: 750W/1100W/1600W AC 80 PLUS* Platinum
OS Supported	Microsoft Windows Server Red Hat Enterprise Linux Server SUSE Linux Enterprise Server VMware vSphere Visit <u>lenovopress.com/osig</u> for more information
Warranty	1- year and 3-year customer replaceable unit and onsite service, next business day 9x5; opt. service upgrades

<sup>1</sup>2016-2017 Global Hardware, Server OS Reliability Report , ITIC, October 2016 <u>http://lnv.gy/2lXpp13</u>

Lenovo Model	ThinkSystem SR950		
Form Factor/Height	Rack/4U		
Processor	2x, 4x or 8x Intel® Xeon® Platinum processors, up to 28x cores per processor, up to 205W, or 2x or 4x Intel® Gold processors		
Memory	Up to 12TB in 96 slots, using 128GB DIMMs; 2666MHz Tru	JDDR4	
Expansion Slots	Up to 14x rear PCIe, (11x x16 +, 3x x8), 2x shared ML2 and	d PCIe (x16) and 1x LOM; plus 2x front dedicated RAID	
Maximum Internal Storage	Up to 24x SFF bays supporting SAS/SATA HDDs/SSDs, i	including 12x SFF NVMe SSDs	
RAID Support	Optional hardware RAID; M.2 boot support with optiona	I RAID.	
Network Interface	One (2-/4-port) 1GbE or 10GbE LOM card; Multiple optic InfiniBand FDR PCIe adapters; 1x dedicated 1GbE manag		
Power Supply	Up to 4x shared 1100W or 1600W AC 80 PLUS® Platinum	n	
OS Supported	Microsoft Windows Server Red Hat Enterprise Linux Server SUSE Linux Enterprise Server VMware vSphere Visit <u>lenovopress.com/osig</u> for more information		
Warranty	1-year or 3-year customer replaceable unit and onsite se	rvice, next business day 9x5; opt. service upgrade	
Lenovo Models	System x3850 X6	System x3950 X6	
Form Factor/Height	Rack/4U	Rack/8U	
Processor	Up to 24 cores per processor	Up to 24 cores per processor	
Memory	Up to 6TB in 96x slots, using 64GB DIMMs; 1866MHz TruDDR4 / 1600MHz TruDDR3	Up to 12TB in 192x slots, using 64GB DIMMs; 1866MHz Tru DDR4 / 1600 MHz DDR3	
Expansion Slots	Up to 11 PCle; Gen3 (up to 11), Gen2 (up to 2), up to five x16 slots; up to six full-length, full-height	Up to 22 PCle; Gen3 (up to 22), Gen2 (up to 4), up to ten x16 slots; up to 12 full-length, full-height	
Maximum Internal Storage	Up to 61.44TB with 8x 3.84TB 2.5" SAS SSDs, Up to 16TB with 8x 2TB 2.5" NL SAS HDDs, or Up to 8TB with 4x 2TB 2.5" PCIe NVMe SSDS	Up to 122.9TB with 16x 7.68TB 2.5" SAS SSDs, Up to 32TB with 16x 2TB 2.5" SAS HDDs, Up to 16TB with 8x 2TB 2.5" PCIe NVMe SSDs	
RAID Support	12 Gb SAS/SATA RAID 0, 1, or 10 with ServeRAID M5210; optional upgrades to RAID 5 or 50 are available (zero-cache; 1 GB non-backed cache; 1 GB or 2 GB flash-backed cache). Upgrades to RAID 6 or 60 available for M5210 with 1 GB or 2 GB upgrades12 Gb SAS/SATA RAID 0, 1, or 10 with ServeRAID M5210; optional upgrades to RAID 5 or 50 are available (zero-cache; 1 GB non-backed cache; 1 GB or 2 GB flash-backed cache). Upgrades to RAID 6 or 60 available for M5210 with 1 GB or 2 GB upgrades		
Network Interface	One ML2 Socket; ML2 card choices include: 4 x 1GbE copper or 2 x 10GbE SFP+ or 2 x 10GbE 10BaseT; Dedicated 1GbE on-board management port Two ML2 Sockets; ML2 card choices include: 4x 1GbE copper or 2 x 10GbE SFP+ or 2 x 10GbE 10BaseT; Two dedicated 1GbE onboard management ports		
Power Supply	Up to four redundant hot swap 900W or 1400W AC 80 PLUS® Platinum or -48V 750W DC Up to Eight redundant hot swap 900W or 1400W AC 80 PLUS® Platinum, or -48V 750W DC		
OS Support	Microsoft Windows Server 2016 Red Hat Enterprise Linux Server SUSE Linux Enterprise Server VMware ESXi Visit <u>lenovopress.com/osig</u> for more information	Microsoft Windows Server 2016 SUSE Linux Enterprise Server Red Hat Enterprise Linux Server VMware vSphere Hypervisor Visit <u>lenovopress.com/osig</u> for more information	
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5	3-year customer replaceable unit and onsite service, next business day 9x5	

<sup>1</sup>2016-2017 Global Hardware, Server OS Reliability Report , ITIC, October 2016 <u>http://lnv.gy/2lXpp13</u>



#### Data Centre Portfolio at your fingertips





ThinkSystem SN850

enovo

### **Beyond Blades**

# The orchestration platform for conducting tomorrow's business

This integrated infrastructure platform supports a mix of compute, storage, systems management and networking resources to meet the demands of your applications. This robust enterprise chassis is designed to deploy simply now and scale to meet your needs in the future. Designed for major enterprise applications like virtualisation, cloud, database and analytics for clients across banking / finance, education, government, telecom and manufacturing.

#### Flexible infrastructure for ever-changing

**workloads.** Resource management that leverages both hardware and systems management.

**Efficient on multiple levels.** XClarity reduces time management; the modular, integrated design and zone adaptive cooling reduces data centre costs.

**Proven platform, investment protection.** An architecture that supports newly announced ThinkSystem blades powered by Intel® Xeon® processors and future server generations for leading investment protection.



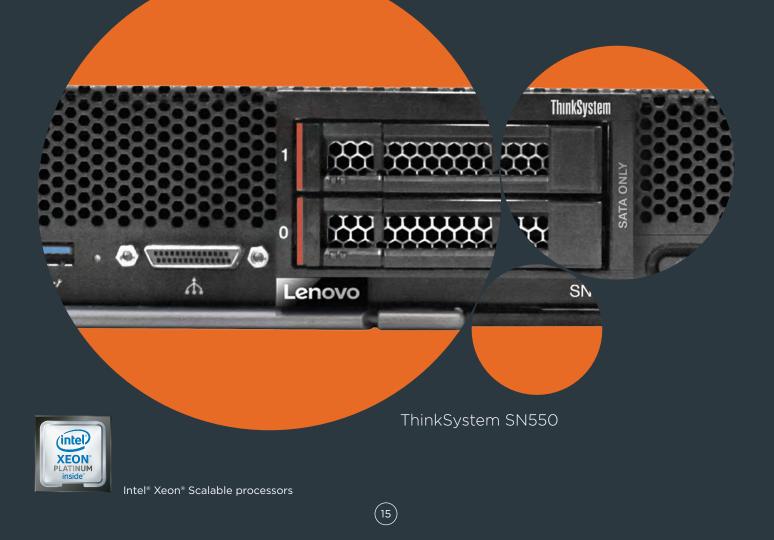


Intel® Xeon® Scalable processors



Lenovo Models	ThinkSystem SN550	Flex System x240 M5
Form Factor	Standard-width flex system compute node Up to 14 per chassis	Standard-width flex system compute node Up to 14 per chassis
Processor	Up to two Intel Xeon processor Scalable family CPUs, Bronze, Silver, Gold or Platinum up to 165W: from 4 cores to 28 cores; core speeds from 1.7 GHz to 3.6 GHz; up to 38.5 MB L3 cache. Two UPI links up to 10.4 GT/s each. Up to 2666 MHz memory speed	Up to two Intel <sup>®</sup> Xeon <sup>®</sup> processor E5-2600 v4 product family CPUs: from 4 cores to 22 cores; core speeds from 1.7 GHz to 3.5 GHz; up to 55 MB L3 cache. Two QPI links up to 9.6 GT/s each. Up to 2400 MHz memory speed
Memory	Up to 3TB <sup>+</sup> in 24x slots, using 128GB <sup>+</sup> DIMMs (requires M-suffix processors that support greater than 786GB memory per processor); 2666MHz TruDDR4	Up to 1.5TB in 24 slots, using 64GB DIMMs; 2400MHz
Expansion Slots	Up to 2x PCIe x16 I/O Adapters	Up to 2 PCIe Gen 3 Flex Adapters Gen 2 with up to 2 x16 slots and 2 x8 slots and 2 I/O adapters
Maximum Internal Storage	Up to 2x 2.5" storage bays supporting SAS/SATA HDDs/SSDs, or NVMe/U.2 SSDs; plus 1x or 2x (mirrored) M.2 (SATA) fixed boot drives (opt. RAID 1)	Up to 7.68TB by using 3.84TB 2.5" SATA SSDs or up to 4TB by using 2 TB NL SATA HDD Up to 4TB by using 2 TB NVMe PCIe SSDs Up to 3.2TB by using 800 GB 1.8-inch SSDs
RAID Support	Software RAID std. (6Gbps SATA); optional hardware basic RAID (12Gbps SAS/SATA); optional hardware advanced RAID (12Gbps SAS/SATA 2GB flash-backed cache)	RAID -0, -1, 1E optional -5
Network Interface	4x 10GbE LOM with fabric connector; or 2x 10GbE, 4x 10GbE or converged network I/O Adapters	LOMless. 2 PCIe I/O Adapter card slots supporting 1/10/40Gb Ethernet, Fibre Channel or Infiniband adapters
OS Support	Microsoft Windows Server Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware vSphere Visit <u>lenovopress.com/osig</u> for more information	Microsoft Windows Server 2016 Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware ESXi Visit <u>lenovopress.com/osig</u> for more information
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5	3-year customer replaceable unit and onsite service, next business day 9x5

<sup>+</sup> 1.5TB TB at GA; 128GB DIMMs available in the near future. Available prior to GA via special bid.



Lenovo Models	ThinkSystem SN850	Flex System x480
Form Factor	Double-width flex system compute node Up to 7 per chassis	Double-width flex system compute node Up to 7 per chassis
Processor	Up to four Intel Xeon processor Scalable product family CPUs, Gold or Platinum, from 4 cores to 28 cores; core speeds from 1.7 GHz to 3.6 GHz; up to 38.5 MB L3 cache. Up to 3 UPI links with up to 10.4 GT/s each (processor dependent). Up to 2666 MHz memory speed.	Two Intel® Xeon® E7-4800 v3 processors, each with 14 cores (2.2 GHz), 12 cores (2.1 GHz), 10 cores (1.9 GHz), or 8 cores (2.1 GHz). Three QPI links.
Memory	Up to 6TB <sup>+</sup> in 48x slots, using 128GB <sup>+</sup> DIMMs (requires M-suffix processors that support greater than 786GB memory per processor); 2666MHz TruDDR4	Up to 6TB in 96x slots, using 64GB DIMMs; 1600 MHz DDR3
Expansion Slots	Up to 4x PCIe x16 I/O Adapters	Up to 8 PCIe Gen3 Adapters
Maximum Internal Storage	Up to 4x 2.5-inch storage bays supporting SAS/SATA HDDs/SSDs or U.2 NVMe SSDs; plus up to 2x mirrored M.2 boot drives (opt. RAID 1)	Up to 4x 2.5-inch storage bays supporting SAS/SATA HDDs/SSDs
RAID Support	Software RAID std. (6Gbps SATA); opt. hardware basic RAID (12Gbps SAS/SATA); opt. hardware advanced RAID (12Gbps SAS/SATA 2GB flash-backed cache)	RAID -0, -1, Optional -5,-50
Network Interface	4x 10GbE LOM with fabric connector; or 2x 10GbE, 4x 10GbE or converged network I/O Adapters	LOMless. 16 (x880) or 8 (x480) PCIe I/O Adapter slots supporting 1/10/40Gb Ethernet, Fibre Channel or Infiniband adapters. (Some models ship with 10GbE Embedded)
OS Support	Microsoft Windows Server Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware vSphere Visit <u>lenovopress.com/osig</u> for more information	Microsoft Windows Server 2016 Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware ESXi Visit <u>lenovopress.com/osig</u> for more information
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5	3-year customer replaceable unit and onsite service, next business day 9x5

<sup>+</sup> 3TB TB at GA; 128GB DIMMs available in the near future. Available prior to GA via special bid.







Intel® Xeon® Scalable processors

#### Data Centre Portfolio at your fingertips



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### Dense-Optimised

#### Ready to adapt when you are

Engineered to excel at a wide range of workloads and flexible architectures for evolving needs, Lenovo's high-density systems are powerful platforms for compute-intensive workloads, ranging from technical computing, to grid deployments, to analytics workloads, to largescale cloud and virtualisation infrastructures - all in more cost and energy-efficient ways than ever before.

More in less space. Innovative chassis enables greater density for hyperconverged workloads.

**Ready to adapt.** Stackable node design that supports GPUs and specialised IO adapters.

**Modularity to transform.** Disaggregated IO design which allows for multiple fabrics, and the scalable management design simplifies infrastructure costs. Front and rear access for easy serviceability.



ThinkSystem SD530





Intel<sup>®</sup> Xeon<sup>®</sup> Scalable processors

#### Data Centre Portfolic at your fingertips



Lenovo Model	ThinkSystem SD530
Form Factor/Height	2U Enclosure; 4 nodes per enclosure
Processor	1x or 2x Intel® Xeon® Bronze, Silver, Gold or Platinum processors, up to 165W
Memory	Up to 1TB in 16x slots, using 64GB LRDIMMs; 2666MHz TruDDR4
Expansion Slots	1x shuttle per D2 enclosure: either x8 PCIe Shuttle with 8x PCIe 3.0 x8 slots (2 per node); or x16 PCIe Shuttle with 4x PCIe 3.0 x16 slots (1 per node). Up to 2x external GPU trays per chassis (with up to 2 GPUs in each tray); one tray per node
Drive Bays	Up to 24x (6x per node) HS SFF SAS/SATA HDDs/SSDs; up to 8x (2x per node) HS SFF NVMe SSDs
Network Interface	Opt. 8-port EIOM 10Gb SFP+ (two ports per node); Opt. 8-port EIOM 10GbaseT RJ45 (two ports per node)
Power Supply	1x or 2x hot-swap, redundant power supplies 2000W, 1600W or 1100W
RAID Support	SW RAID supports JBOD; Entry RAID; opt. HW RAID 12Gb supports JBOD; plus M.2 boot support with optional RAID
Systems Management	XClarity Controller embedded management XClarity Administrator centralised infrastructure delivery XClarity Integrator plugins XClarity Energy Manager centralised server power
OS Support	Microsoft Windows Server Red Hat Enterprise Linux SUSE Linux Enterprise Server VMware vSphere Visit <u>lenovopress.com/osig</u> for more information
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades

Lenovo Models	NeXtScale nx360 M5	ThinkServer sd350
Form Factor/Height	Half-wide 1U compute node	Half-wide 1U compute node
Processor	2x Intel <sup>®</sup> Xeon <sup>®</sup> processors E5-2600 v4 series	Intel <sup>®</sup> Xeon <sup>®</sup> processor E5-2600 v4 series (up to 20 cores)
Memory	Up to 512GB in 16x slots, using 32GB DIMMs; 2400MHz DDR4	Up to 512GB in 16x slots, using 32GB; 2400MHz
Chassis Support	NeXtScale n1200 6U Enclosure 12 nodes per enclosure	n400 2U enclosure 4 nodes per enclosure
Local Storage	Choice of one 3.5" hard disk drive (HDD), two 2.5" HDDs/solid-state drives (SSDs) (simple swap), or four 1.8" SSDs. Optional two front hot-swap 2.5" HDDs. Optional support for SD Media Adapter	Up to six 2.5" hot-swap SAS/SATA drive bays per server. Drive bays are located in the n400 enclosure, outside the sd350 servers. Also supports one SATADOM flash drive internal to the sd350
Storage Native Expansion (NeX) Tray	7x 3.5-inch SAS/SATA HDDs	-
Internal RAID	Onboard SATA controller with RAID options	RAID Support: SW RAID 0/1/10/5 standard; optional HW RAID 0/1/10
USB Ports	One internal USB port and two USB 1.1 ports for local console connectivity with KVM connector	Two USB 3.0 ports
Input/Output	One ML2 slot for Infiniband FDR, 10GbE, 25GbE, 40GbE, two 10GbE, one PCIe (x16 PCI Express 3.0)	Three PCIe 3.0 adapter slots and support for Ethernet ports via OCP adapter installed in a dedicated mezzanine slot; two-port 1 GbE adapter or a two-port 10 GbE adapter
Systems Management	1x shared port with 1GbE per 1/2 wide server	1x GbE port for dedicated systems management support
OS Support	SUSE Linux Enterprise Server Red Hat Enterprise Linux Microsoft Windows Server VMware ESXi Visit <u>lenovopress.com/osig</u> for more information	Red Hat Enterprise Linux SUSE Linux Enterprise Server Microsoft Windows Server VMware ESXi Visit <u>lenovopress.com/osig</u> for more information
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5	1-year customer replaceable unit and onsite service, next business day 9x5

### Storage

Thanks to our storage portfolio growing relentlessly stronger, Lenovo offers a wide range of enterprise grade storage solutions that address the ever-growing needs of businesses, fit into existing budget and ensure data is ready when it is needed. The offering includes key features from storage tiering and thin provisioning to data encryption, all through a user-friendly interface.

## The Storage Portfolio at your fingertips



Take a 3D tour and get to know the broad portfolio. Visit <u>www.lenovofiles.com/3dtours</u>



Lenovo ThinkSystem DS2200

### SAN

#### Shared storage delivering high performance access to critical data

#### Lenovo ThinkSystem DS-Series

Lenovo developed the ThinkSystem DS-Series offering, all-flash & hybrid SAN arrays, to revolutionise storage economics – enterprise-class functionality at entry level price point.

Affordable. Industry leading in both price/performance and cost/GB without compromise.

**Intuitive.** Setup in less than 15 minutes, manage all storage arrays from common GUI, XClarity integrated hardware management.

Fast. More than 375K IOPS at less than 1 millisecond latency.



Lenovo Models	Lenovo ThinkSystem DS2200	Lenovo ThinkSystem DS4200	Lenovo ThinkSystem DS6200
Form Factor/Height	2U	2U	2U
Drive Bays	12x 3.5"; 24x 2.5"	12x 3.5"; 24x 2.5"	24x 2.5"
Maximum Internal Storage	480TB (3.5"); 737.28TB (2.5")	1.2PB (3.5"); 737.28TB (2.5")	1.26PB (2.5" and 3.5")
Controllers	Dual (active/active)	Dual (active/active)	Dual (active/active)
Maximum Enclosures	1 node + 3 expansion units (2U12/2U24); mix-and-match expansion units in an array	1 node + 9 expansion units (2U12/2U24); mix-and-match expansion units in an array	1 node + 9 expansion units (2U12/2U24); mix-and-match expansion units in an array
Maximum Drives	96 (using 2.5" drives and 3 expansion units)	240 (using 2.5" drives and 9 expansion units)	240 (using 2.5" drives and 9 SFF expansion units)
Drive Types Supported	All drives 12Gb SAS: 7,200rpm, 10,000rpm, and 15,000 rpm HDDs; MLC SSDs; SED HDDs and SSDs	All drives 12Gb SAS: 7,200rpm, 10,000rpm, and 15,000rpm HDDs; MLC SSDs; SED HDDs and SSDs	All drives 12Gb SAS: 7,200rpm, 10,000rpm, and 15,000rpm HDDs; MLC SSDs; SED HDDs and SSDs
Host Ports	2-port SAS, 2-port FC, 2-port iSCSI; single connectivity	4-port SAS, 4-port FC, 4-port iSCSI, hybrid connectivity	4-port SAS, 4-port FC, 4-port iSCSI, hybrid connectivity (FC/iSCSI)
Performance	Up to 100,000 random-read IOPS; up to 3.5GBps read throughput; up to 3GBps write throughput	Up to 235,000 random-read IOPS; up to 7.0GBps read throughput; up to 5.5GBps write throughput	Up to 375,000 random-read IOPS; up to 7GBps read throughput; up to 5.5GBps write throughput
RAID Support	RAID 0, 1, 10, 5, 6	RAID 0, 1, 10, 5, 6	RAID 0, 1, 10, 5, 6
Fans and Power Supplies	Hot-swap/redundant	Hot-swap/redundant	Hot-swap/redundant
Total Dual Controller Memory	16GB	16GB	32GB
Max Volumes per System	1024 (up to 128TB each)	1024 (up to 128TB each)	1024 (up to 128TB each)
Energy Star Certified	Yes	Yes	Yes
Snapshots	Base 128; optional 512 or 1024	Base 128; optional 512 or 1024	Base 128; optional 512 or 1024
SSD Support/Read Caching	Included	Included	Included
Asynchronous Replication	Optional (iSCSI)	Optional (iSCSI)	Optional (iSCSI)
Intelligent Real-Time Tiering	Base HDD; optional HDD+SSD	Base HDD; optional HDD+SSD	Base HDD; optional HDD+SSD
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades	3-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades	3-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades



#### Lenovo V Series

Lenovo V Series is a hybrid storage system designed with sophisticated capabilities, efficiency and flexibility through built-in thin provisioning and non-disruptive migration of data from existing storage. These enterprise-class SAN appliances provide excellent management for all types of data centres thanks to;

- Real-time compression
- Data virtualisation
- Hyper-Swap
- Extreme scalability

Lenovo Models	Lenovo Storage V3700 V2	Lenovo Storage V5030
Connectivity (Standard)	12Gb SAS 1Gb iSCSI	12Gb SAS 1Gb iSCSI
Connectivity (Optional)	16GbFC 12Gb SAS 1Gb iSCSI 10Gb iSCSI / FCoE	16Gb FC 12Gb SAS 10Gb iSCSI / FCoE
Cache (per controller)	16GB	32GB
Max. number of drives	240 drives (up to 9 expansions)	504 drives (up to 20 expansions)
Capacity (per clustered system)		Up to 1008 drives
Internal Virtualisation	Yes	Yes
Thin Prov.	Yes	Yes
Data Migration	Yes	Yes
FlashCopy	Yes	Yes
Remote Mirroring	Yes	Yes
Easy Tier	Yes	Yes
Encryption		Yes
System Clustering		Yes (2-way)
External Virtualisation		Yes
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades	3-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades

Lenovo Models	Lenovo Storage V3700 V2 XP	Lenovo Storage V5030F
Connectivity (Standard)	12 Gb SAS 1 Gb iSCSI	10 Gb iSCSI
Connectivity (Optional)	16 Gb FC 12 Gb SAS 1 Gb iSCSI 10 Gb iSCSI / FCoE	16 Gb FC 12 Gb SAS 1 Gb iSCSI 10 Gb iSCSI
Cache (per controller)	32 Gb	64 GB
Max. number of drives	240 drives (up to 9 expansions)	504 drives (up to 20 expansions)
Capacity (per clustered system)		Up to 1008 drives
Internal Virtualisation	Yes	Yes
Thin Prov.	Yes	Yes
Data Migration	Yes	Yes
FlashCopy	Yes	Yes
Remote Mirroring	Yes	Yes
Easy Tier	Yes	Yes
Encryption		Yes
System Clustering		Yes
External Virtualisation		Yes
Warranty	3-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades	3-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades

#### Lenovo Fibre Channel Switches & Directors

Combining Lenovo Servers and Lenovo Storage with Lenovo Fibre Channel SAN switches and directors provides customers a complete, innovative and affordable end-to-end solution to address dynamic business needs.

Affordable innovation without boundaries. Faster data transfer, fewer links and devices reduce overall footprint and cost.

**Implement with confidence.** 99.999% reliability with non-disruptive, hot-pluggable components maximises uptime. Designed for high availability and reliability.

**Management without complexity.** Simply manage your network through integrated dashboards and easy-to-use GUI.



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Features	Lenovo ThinkSystem DB610S
Base Models *	6559HC3/D3C - 8ports with no transceivers 6559HC2/D2B - 8ports with 16Gbps SWL FC transceivers 6559HC1/D1A - 24ports with 16Gbps SWL FC transceivers, plus Enterprise SW Bundle
Scalability	Full-fabric architecture with a maximum of 239 switches
Certified Maximum	9,000 active nodes; 56 switches, 19 hops in Brocade Fabric OS* fabrics; larger fabrics certified as required
Fibre Channel Ports	Maximum of 24 ports configuration Switch mode (default): 8-, 16-, and 24-port configs. can be an E, F, M and D ports Brocade Access Gateway default port mapping: 16 F Ports, 8 N Ports
Port on Demand (PoD)	8-Port SW Licence with no transceivers Part #01KP863 8-Port SW Licence with 8 x 16Gbps SWL FC transceivers Part #01KP862
Performance	Fibre Channel: 4.25Gbps line speed, full duplex; 8.5Gbps line speed, full duplex; 14.025 Gbps line speed, full duplex; auto-sensing of 4, 8, 16 and 32Gbps port speeds
Aggregate Bandwidth	768Gbps end-to-end full duplex
Maximum Fabric Latency	Latency for locally switch ports is 900 $\mu$ s (including FEC)
Port Types	F_Port, E_Port, M_Port, D_Port (ClearLink Diagnostic Port) on 24 SFP+ ports Brocade Access Gateway mode: F_Port and NPIV-enabled N_Port
Media Types	Support any combination of 16/32Gbps Short Wavelength (SWL) and 16/32Gbps Long Wavelength (LWL) or 16Gbps Extended Long Wavelength (ELWL) hot-pluggable transceivers.
Rack-mount Rail Kits	Fixed rail kit is included standard, Mid-mount rack kit (Part # 01KP864) -optional
Software Offerings	Enterprise Software Bundle includes Trunking, Fabric Vision, Extended Fabric: included standard or optional depending on model
Power & Cooling	Base switch includes a single, fixed power supply with four integrated system cooling fans.
Power Consumption	76.52W with all 24 ports populated with 32Gbps SWL optics 55.83W for idle configuration (all optics loaded but not initialized)
Warranty	1-year hardware and 3-year firmware/Fibre Operating System (upgrades available)

\*Part of the Enterprise Bundle

Features	Lenovo ThinkSystem DB620S
Base Models	6415HC1/G11- 24 ports with 32Gbps SWL FC transceivers 6415HC2/G2A- 48 ports with 32Gbps SWL FC transceivers, plus Enterprise Software Bundle
Fibre Channel Ports	Minimum of 24 ports and maximum of 64 ports configuration. Both models reach 64 ports through one 4-port QSFP PoD, providing 16-port increments through a Q-Flex licence . Also supports: E_Ports, F_Ports, D_Ports, EX_Ports
Port on Demand Options	12-Port Software Licence (12 transceivers 32Gbps) Part #01KN760 QSFP+ Port Software Licence (4 transceivers 128Gbps) Part #01KN762 QSFP+ Port Software Licence (no transceivers) Part # 01KN767
Performance	Fibre Channel: 4.25Gbps line speed, full duplex; 8.5Gbps line speed, full duplex; 10.53Gbps line speed, full duplex; 14.025Gbps line speed, full duplex; 28.05Gbps, full duplex; 112.2Gbps, full duplex; auto-sensing of 4, 8, 16, 32Gbps port speeds and capable of supporting 128Gbps speeds; 10Gbps optionally programmable to fixed port speed
ISL Trunking*	Frame-based trunking with up to eight 32Gbps SFP+ ports per ISL trunk or up to two 128Gbps QSFP ports per ISL trunk. Exchange-based load balancing across ISLs with DPS included in Brocade Fabric OS
Aggregate Bandwidth	2Tbps
Maximum Fabric Latency	Latency for locally switched ports is 900 ns; compression is 1 $\mu$ s per node
Media Types	32Gbps SWL SFP Transceivers come standard with each switch or with ports on demand software licence packs. Optional transceivers are also supported for longer distances. Optional hot-pluggable QSFP+ options are also available for the 128Gbps Q-Flex ports
Rack-Mount Rail Kits	Fixed rail kit is included standard, midmount rack kit (Part # 01KN770) -optional
Software Offerings	Enterprise Software Bundle includes Trunking, Fabric Vision, Extended Fabric: included standard or optional depending on model Optional: Mainframe Enterprise Bundle Software (Trunking, Fabric Vision, Extended Fabric and Control Unit Port) Optional: Integrated Routing Software
Power Supply	Dual, hot-swappable redundant power supplies standard with integrated cooling fans
Warranty	1-year hardware and 3-year firmware/Fibre Operating System (upgrades available)

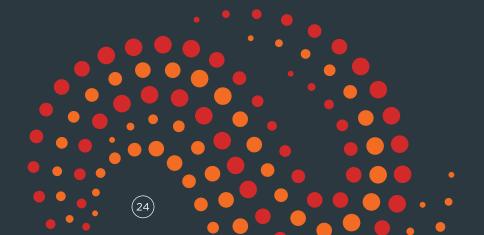
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\*Part of the Enterprise Bundle



Base Models         DB400D (6684-HCI/B2A) and DB800D (6682-HCI/B1A) include: 2 core routing blades, 2 control processor modules and enterprise software bundle (Fabric Vision, Trunking, Extended Fabrics and CUP)           Chassis         The DB400D has 4 open blade slots, while the DB800D has 8 open blade slots.           Fibre Channel Blades         FC32-48-port blade provides 48 ports of 320bps Generation 6 FC -900 ns (including FEC); any-port-to any-port-to any-port bocal switching and 2.7 µs blade to blade at 320bps, cut-through routing • Part # 01KN845 includes 48-port licence , no optics.           Extension Blades         • Part # 01KN845 includes 48-port licence and 48 x 320bps FC ports) and IP extension over IP networks (f6x1/10GbE and 2×40GbE ports). <900ns (including FEC) and 2.7 µs, cut-through routing • Part # 01KN850 includes 16 x 326b SWL FC SFPs standard and no 1/10/40GbE SFPs	Features	Lenovo ThinkSystem DB400D/DB800D
Fibre Channel Blades       FC32-48-port blade provides 48 ports of 32Gbps Generation 6 FC <900 ns (including FEC); any-port-to any-port local switching and 2.7 us blade to blade at 32Gbps, cut-through routing Part # 01KN848 includes 48-port licence, no optics         Extension Blades       SX6 external blade provides FC extension (16×32Gbps FC ports) and IP extension over IP networks (16×1/10GbE and 2×40GbE ports). <900ns (including FEC) and .7 µs, cut-through routing         Part # 01KN845 includes 16 x 32Gb SWL FC SFPs standard and no 1/10/40GbE SFPs         Performance       4/8/10/16/32Gbps line speed, full duplex. Autosensing of 4/8/16/32Gbps port speeds depending on SFPs used, support for speed matching. 10Gbps port speeds with dedicated SFPs         Multi-chassis with UltraScale ICL ports       Up to 4,608 nonblocking 32Gbps FC ports; UltraScale ICL ports (32 for 8-slot or 16 per 4-slot chassis, optical QSFP). Up to 9 chassis in a full-mesh topology or 12 chassis in a core-edge topology         Chassis Power       DB8000D: 12.2Tbps per chasis data rate + 4.096Tbps UltraScale ICL bandwidth (32×128Gbps) DB400D: 6.1Tbps per chassis data rate + 4.048Tbps UltraScale ICL bandwidth (16×128Gbps) DB400D: Minimum: requires 3 PSUs for 2+1 redundancy. Maximum 4 PSUs for 2+2 redundancy DB400D: Minimum: requires 3 PSUs for 2+1 redundancy.         Cooling       DB800D: Requires 3 fan tray assemblies; DB400D: Requires 2 fan tray assemblies A fan assembly can be hot-swapped and should be replaced immediately in the event of a failure         Solution Availability       Designed to provide 99.999% uptre capabilities; hot-pluggable redundant power supplies, fans, WWN cards, processors, core switching, port blades, and optics; online diagnostics; nondis	Base Models	control processor modules and enterprise software bundle (Fabric Vision, Trunking, Extended
Fibre Channel Bladesany-port-to any-port local switching and 2.7 µs blade to blade at 32Gbps, cut-through routing Part # 01KN845 includes 48-port licence , no optics • Part # 01KN845 includes 48-port licence and 48 x 32Gbps SWL SFPsExtension BladesSX6 external blade provides FC extension (16×32Gbps FC ports) and IP extension over IP networks (16×1/10GbE and 2×40GbE ports). <900ns (including FEC) and 2.7 µs, cut-through routing • Part # 01KN850 includes 16 x 32Gb SWL FC SFPs standard and no 1/10/40GbE SFPsPerformance4/8/10/16/32Gbps line speed, full duplex. Autosensing of 4/8/16/32Gbps port speeds depending on SFPs used, support for speed matching. 10Gbps port speeds depending on SFPs used, support for speed matching. 10Gbps port speeds depending on SFPs used. Support for speed matching. 10Gbps port speeds depending on SFPs used. Support for speed matching. 10Gbps port speeds depending on SFPs used. Support for speed matching. 10Gbps port speeds depending on SFPs used. Support Ports; UltraScale ICL ports (32 for 8-slot or 16 per 4-slot chassis orbical QSFP). Up to 9 chassis in a full-mesh topology or 12 chassis in a core-edge topologyChassis BandwidthDB800D: 12.2Tbps per chassis data rate + 4.096Tbps UltraScale ICL bandwidth (32×128Gbps) DB400D: Minimum: requires 3 PSUs for 2+1 redundancy. Maximum 4 PSUs for 2+2 redundancy DB400D: Minimum: requires 2 PSUs for 1+1 redundancy.CoolingDB800D: Requires 3 fan tray assemblies; DB400D: Requires 2 fan tray assemblies A fan assembly can be hot-swaped and should be replaced immediately in the event of a failureSolution AvailabilityNon-port-side intake to port-side exhaustDimensions/WeightDB400D: Height: 34.4Scm (13.54cm (17.23in); Depth: 61.0Scm (24.04in.)/ Weight: 68.95g (51.51b) fully loaded; DB800D; Height: 45.74cm<	Chassis	The DB400D has 4 open blade slots, while the DB800D has 8 open blade slots.
Extension Bladesnetworks (16×1/10GbE and 2×40GbE ports). <900ns (including FEC) and 2.7 µs, cut-through routing • Part # 01KN850 includes 16 x 32Gb SWL FC SFPs standard and no 1/10/40GbE SFPs • Part # 01KN854 includes 16 x 32Gb LWL FC SFPs standard and no 1/10/40GbE SFPsPerformanced/8/10/16/32Gbps line speed, full duplex. Autosensing of 4/8/16/32Gbps port speeds depending on SFPs used, support for speed matching. 10Gbps port speeds with dedicated SFPsMulti-chassis with UltraScale ICL portsUp to 4,608 nonblocking 32Gbps FC ports; UltraScale ICL ports (32 for 8-slot or 16 per 4-slot chassis, optical QSFP). Up to 9 chassis in a full-mesh topology or 12 chassis in a core-edge topologyChassis BandwidthDB800D: 12.Tbps per chassis data rate + 4.096Tbps UltraScale ICL bandwidth (32×128Gbps) DB400D: 6.1Tbps per chassis data rate + 2.048Tbps UltraScale ICL bandwidth (16×128Gbps) DB400D: 16.1Tbps per chassis data rate + 2.048Tbps UltraScale ICL bandwidth (16×128Gbps) DB400D: Minimum: requires 3 PSUs for 2+1 redundancy. Maximum 4 PSUs for 2+2 redundancy DB400D: Minimum: requires 2 PSUs for 1+1 redundancy. Maximum 4 PSUs for 2+2 redundancy DB400D: Minimum: requires 3 fan tray assemblies; DB400D: Requires 2 fan tray assemblies A fan assembly can be hot-swapped and should be replaced immediately in the event of a failureAirflowNon-port-side intake to port-side exhaustDesigned to provide 99.999% uptime capabilities; hot-pluggable redundant power supplies, fans, wWN cards, processors, core switching, port blades, and optics; online diagnostics; nondisruptive firmware download and activationDimensions/WeightDB400D: Height: 34.45cm (13.56in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/ Weight: 68.95kg (152lbs) fully loaded; DB800D: Height: 145.83kg (321.5lbs) fully loaded<	Fibre Channel Blades	any-port-to any-port local switching and 2.7 μs blade to blade at 32Gbps, cut-through routing • Part # 01KN845 includes 48-port licence , no optics
Performancedepending on SFPs used, support for speed matching. 10Gbps port speeds with dedicated SFPsMulti-chassis with UltraScale ICL portsUp to 4,608 nonblocking 32Gbps FC ports; UltraScale ICL ports (32 for 8-slot or 16 per 4-slot chassis, optical QSFP). Up to 9 chassis in a full-mesh topology or 12 chassis in a core-edge topologyChassis BandwidthDB800D: 12.2Tbps per chassis data rate + 4.096Tbps UltraScale ICL bandwidth (32×128Gbps) DB400D: 61Tbps per chassis data rate + 2.048Tbps UltraScale ICL bandwidth (16×128Gbps)Chassis PowerDB800D: 10.1Tbps per chassis data rate + 2.048Tbps UltraScale ICL bandwidth (16×128Gbps)CoolingDB800D: Minimum: requires 3 PSUs for 2+1 redundancy. Maximum 4 PSUs for 2+2 redundancy 	Extension Blades	networks (16×1/10GbE and 2×40GbE ports). <900ns (including FEC) and 2.7 μs, cut-through routing • Part # 01KN850 includes 16 x 32Gb SWL FC SFPs standard and no 1/10/40GbE SFPs
Multi-chassis with UltraScale ICL portschassis, optical QSFP). Up to 9 chassis in a full-mesh topology or 12 chassis in a core-edge topologyChassis BandwidthDB800D: 12.2Tbps per chassis data rate + 4.096Tbps UltraScale ICL bandwidth (32×128Gbps) DB400D: 6.1Tbps per chassis data rate + 2.048Tbps UltraScale ICL bandwidth (16×128Gbps)Chassis PowerDB800D: Minimum: requires 3 PSUs for 2+1 redundancy. Maximum 4 PSUs for 2+2 redundancy DB400D: Minimum: requires 2 PSUs for 1+1 redundancy.CoolingDB800D: Requires 3 fan tray assemblies; DB400D: Requires 2 fan tray assemblies A fan assembly can be hot-swapped and should be replaced immediately in the event of a failureAirflowNon-port-side intake to port-side exhaustSolution AvailabilityDesigned to provide 99.999% uptime capabilities; hot-pluggable redundant power supplies, fans, WWN cards, processors, core switching, port blades, and optics; online diagnostics; 	Performance	
Chassis BandwidthDB400D: 6.1Tbp's per chassis data rate + 2.048Tbp's UltraScale ICL bandwidth (16×128Gbp's)Chassis PowerDB800D: Minimum: requires 3 PSUs for 2+1 redundancy. Maximum 4 PSUs for 2+2 redundancy DB400D: Minimum: requires 2 PSUs for 1+1 redundancyCoolingDB800D: Requires 3 fan tray assemblies; DB400D: Requires 2 fan tray assemblies A fan assembly can be hot-swapped and should be replaced immediately in the event of a failureAirflowNon-port-side intake to port-side exhaustSolution AvailabilityDesigned to provide 99.999% uptime capabilities; hot-pluggable redundant power supplies, fans, WWN cards, processors, core switching, port blades, and optics; online diagnostics; nondisruptive firmware download and activationDimensions/WeightDB400D: Height: 34.45cm (13.56in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/ Weight: 68.95kg (152lbs) fully loaded; DB800D: Height: 145.83kg (321.5lbs) fully loaded	Multi-chassis with UltraScale ICL ports	chassis, optical QSFP). Up to 9 chassis in a full-mesh topology or 12 chassis in a core-edge
Chassis PowerDB400D: Minimum: requires 2 PSUs for 1+1 redundancyCoolingDB800D: Requires 3 fan tray assemblies; DB400D: Requires 2 fan tray assemblies A fan assembly can be hot-swapped and should be replaced immediately in the event of a failureAirflowNon-port-side intake to port-side exhaustSolution AvailabilityDesigned to provide 99.999% uptime capabilities; hot-pluggable redundant power supplies, fans, WWN cards, processors, core switching, port blades, and optics; online diagnostics; nondisruptive firmware download and activationDimensions/WeightDB400D: Height: 34.45cm (13.56in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/ Weight: 68.95kg (152lbs) fully loaded; DB800D: Height: 61.23cm (24.11in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/Weight: 145.83kg (321.5lbs) fully loaded	Chassis Bandwidth	
CoolingA fan assembly can be hot-swapped and should be replaced immediately in the event of a failureAirflowNon-port-side intake to port-side exhaustSolution AvailabilityDesigned to provide 99.999% uptime capabilities; hot-pluggable redundant power supplies, fans, WWN cards, processors, core switching, port blades, and optics; online diagnostics; nondisruptive firmware download and activationDimensions/WeightDB400D: Height: 34.45cm (13.56in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/ Weight: 68.95kg (152lbs) fully loaded; DB800D: Height: 61.23cm (24.11in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/Weight: 145.83kg (321.5lbs) fully loaded	Chassis Power	
Solution AvailabilityDesigned to provide 99.999% uptime capabilities; hot-pluggable redundant power supplies, fans, WWN cards, processors, core switching, port blades, and optics; online diagnostics; nondisruptive firmware download and activationDimensions/WeightDB400D: Height: 34.45cm (13.56in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/ Weight: 68.95kg (152lbs) fully loaded; DB800D: Height: 61.23cm (24.11in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/Weight: 145.83kg (321.5lbs) fully loaded	Cooling	A fan assembly can be hot-swapped and should be replaced immediately in the event of a
Solution Availabilityfans, WWN cards, processors, core switching, port blades, and optics; online diagnostics; nondisruptive firmware download and activationDimensions/WeightDB400D: Height: 34.45cm (13.56in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/ Weight: 68.95kg (152lbs) fully loaded; DB800D: Height: 61.23cm (24.11in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/Weight: 145.83kg (321.5lbs) fully loaded	Airflow	Non-port-side intake to port-side exhaust
Dimensions/Weight       Weight: 68.95kg (152lbs) fully loaded; DB800D: Height: 61.23cm (24.11in.); Width: 43.74cm (17.23in.); Depth: 61.05cm (24.04in.)/Weight: 145.83kg (321.5lbs) fully loaded	Solution Availability	fans, WWN cards, processors, core switching, port blades, and optics; online diagnostics;
Warranty 1-year hardware and 3-year firmware/Fibre Operating System (upgrades available)	Dimensions/Weight	Weight: 68.95kg (152lbs) fully loaded; DB800D: Height: 61.23cm (24.11in.); Width: 43.74cm
	Warranty	1-year hardware and 3-year firmware/Fibre Operating System (upgrades available)

Features	Lenovo B300	Lenovo B6505	Lenovo B6510
Total Bandwidth	192Gbps	384Gbps	768Gbps
Total Line-Rate Ports	24 Ports	24 Ports	48 Ports
Support Port Speed	8, 4, or 2 Gbps	16, 8, 4, or 2 Gbps	16, 10, 8, 4, or 2 Gbps
Full Fabric / Access Gateway (NPIV)	Optional / Included	Included / Included	Included / Included
Frame-Based ISL Trunking	64 Gbps frame-based	128 Gbps frame-based	128 Gbps frame-based
Diagnostic Ports	Not Available	Included	Included
In-Flight Encryption and Compression	Not Available	Not Available	2 ports @ 16 Gb 4 ports @ 8 Gb
10Gbps Native Fibre Channel	Not Available	Not Available	Optional
Forward Error Correction (FEC)	Not Available	-	Included
Buffer Credit Loss Recovery	Included	Included	Included
Integrated Routing	Not Available	Not Available	Optional
Virtual Fabrics	Not Available	Not Available	Included
Warranty	1-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades	1-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades	1-year customer replaceable unit and onsite service, next business day 9x5, optional service upgrades



### DAS

#### Capacity expansion for servers or Software Defined Storage

The Lenovo DAS portfolio provides traditional, D1212/D1224, as well as high density, D3284, storage for high capacity applications, such as digital media, big data, HPC and video surveillance, at an affordable price. At near limitless scalability with disruptive levels of performance, the DAS portfolio easily satisfies your ever-growing storage needs.

Components	Lenovo D12 Series (D1212 / D1224)
Form factor	Rack/2U
Number of ESMs	2
Expansion ports	3x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) ports (A, B, C) per ESM
Drive bays	<ul> <li>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.</li> <li>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.</li> <li>Intermix of SFF and LFF enclosures is supported.</li> </ul>
Drive technologies	SAS and NL SAS HDDs and SEDs; SAS SSDs. Intermix of HDDs, SEDs (not supported in a RAID group) and SSDs (supported within an enclosure but not within a RAID array).
Drive connectivity	Dual-ported 12 Gb SAS drive attachment infrastructure.
Storage capacity	<ul> <li>D1212: Up to 960 TB (96x 10 TB LFF NL SAS HDDs)</li> <li>D1224: Up to 384 TB (192x 2 TB SFF NL SAS HDDs)</li> </ul>
Host adapters	<ul> <li>RAID adapters:</li> <li>ServeRAID M5225 (2-port 12 Gb SAS; RAID 0, 1, 10, 5, 50; optional RAID 6, 60)</li> <li>Host bus adapters (non-RAID)</li> <li>N2225 (2-port 12 Gb SAS)</li> <li>N2226 (4-port 12 Gb SAS)</li> <li>ThinkServer 9300-8e (2-port 12 Gb SAS)</li> <li>ThinkServer 8885e (2-port 12 Gb SAS)</li> </ul>
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.
Warranty	3-year customer-replaceable unit, parts delivered limited warranty, next business day 9x5

Components	Lenovo High-Density D3284	
Form Factor	Rack/5U	
Number of ESMs	2	
Expansions Slots	3x 12 Gb SAS x4 (Mini-SAS HD SFF-8644) ports (A, B, C) per ESM	
Drive Bays	84 LFF hot-swap drive bays in two drawers. Each drawer has three drive rows, and each row has 14 drives. Up to 4x D3284 enclosures can be daisy chained on a supported adapter for a total of up to 336 LFF drives	
Drive Technologies	NL SAS HDDs and SAS SSDs. Intermix of HDDs and SSDs is supported within an enclosure/drawer, but not within a row	
Drive Connectivity	Dual-ported 12 Gb SAS drive attachment infrastructure	
Drives	<ul> <li>4 TB, 6 TB, 8 TB, and 10 TB 7.2K rpm NL SAS HDDs</li> <li>400 GB SSDs</li> </ul>	
Storage Capacity	Up to 3.36 PB (336x 10 TB LFF NL SAS HDDs)	
Host Adapters	<ul> <li>RAID controllers:</li> <li>M5120 (8-port 6 Gbps SAS, 2x SFF-8088 connectors)</li> <li>M5225 (8-port 12 Gbps SAS, 2x SFF-8644 connectors)</li> <li>9286CV-8e (8-port 6 Gbps SAS, 2x SFF-8088 connectors)</li> <li>9380-8e (8-port 12 Gbps SAS, 2x SFF-8644 connectors)</li> <li>Host bus adapters (non-RAID):</li> <li>N2125 (8-port 6 Gbps SAS, 2x SFF-8088 connectors)</li> <li>N2225 (8-port 12 Gbps SAS, 2x SFF-8644 connectors)</li> <li>N2226 (16-port 12 Gbps SAS, 2x SFF-8644 connectors)</li> <li>9300-8e (8-port 12 Gbps SAS, 2x SFF-8644 connectors)</li> </ul>	
Host Operating Systems	Microsoft Windows Server 2012 R2 and 2016 Red Hat Enterprise Linux (RHEL) 6 and 7 SUSE Linux Enterprise Server (SLES) 11 and 12 VMware vSphere ESXi 5.5 and 6.0	
Cooling	N+1 redundant cooling with five hot-swap fans	
Power Supply	Two redundant hot-swap 2214 W AC power supplies	
Hot-Swap Parts	ESMs, drives, sideplanes, power supplies, and fans	
Warranty	3-year customer-replaceable unit, parts delivered limited warranty, next business day 9x5	

### Archive

#### Cost-effective long-term retention or infrequent access

IBM Tape Series stores digital information on tape. Tape is the perfect choice for storing long term data, such as system back-up, disaster recovery or archive. Using less energy and space, infinitely scalable and media life of up to 30 years all speak in favour of the IBM TS Series portfolio.

Features	IBM TS2260 Tape Drive	IBM TS2270 Tape Drive
Available Configurations	Model 6160 H6S—One LTO Ultrium 6 tape drive, 6Gbps         Model 6160 H7S—One LTO Ultrium 7 tape dr           SAS interface         SAS interface	
Tape Drive Type	LTO Ultrium 6	LTO Ultrium 7
Physical Capacity	2.5TB native; 6.25TB with 2.5:1 compression	6TB native; 165TB with 2.5:1 compression
Number of Tape Drives	1	1
Number of Tape Cartridges	1	1
Data Transfer Rate	Up to 160MBps native	Up to 300MBps native
Media Type	<b>Read and write:</b> LTO Ultrium 6 LTO Ultrium 5 <b>Read only:</b> LTO Ultrium 4 <b>Also Available:</b> LTO Ultrium cleaning cartridge	Read and write: LTO Ultrium 7 6TB data cartridge LTO Ultrium 6 2.5TB data cartridge Read only: LTO Ultrium 5 1.5TB data cartridge Also Available: LTO Ultrium cleaning cartridge
Power Requirements	Ranging 100 - 240V ac, 50 - 60Hz auto	Ranging 100 - 240V ac, 50 - 60Hz auto
Warranty	3-year limited warranty, customer replaceable unit and onsite, next-business-day 9x5, service upgrades available	3-year limited warranty, customer replaceable unit and onsite, next-business-day 9x5, service upgrades available

Features	IBM TS2290 Tape Autoloader
Available Models	<ul> <li>LTO Ultrium 7 6171 S7H</li> <li>LTO Ultrium 6 6171 S6H</li> <li>LTO Ultrium 5 6171 S5H</li> <li>LTO Ultrium 4 6171 S4H</li> </ul>
Drive Options	<ul> <li>Half-eight LTO Ultrium 7: 6Gbps SAS</li> <li>Half-eight LTO Ultrium 6: 6Gbps SAS</li> <li>Half-eight LTO Ultrium 5: 6Gbps SAS</li> <li>Half-eight LTO Ultrium 4: 6Gbps SAS</li> </ul>
Number of Tape Drives	1
Tape Cartridge Capacity	9
I/O Stations	1
Physical Capacity	<ul> <li>LTO Ultrium 7: Up to 54TB (135TB with 2.5:1 compression)</li> <li>LTO Ultrium 6: Up to 22.5TB (56.25TB with 2.5:1 compression)</li> <li>LTO Ultrium 5: Up to 13.5TB (27TB with 2:1 compression)</li> <li>LTO Ultrium 4: Up to 7.2TB (14.4TB with 2:1 compression)</li> </ul>
Data Transfer Rate	<ul> <li>LTO Ultrium 7: Up to 300 MBps</li> <li>LTO Ultrium 6: Up to 160 MBps</li> <li>LTO Ultrium 5: Up to 140 MBps</li> <li>LTO Ultrium 4: Up to 120 MBps</li> </ul>
Warranty	1-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available



Features	IBM TS3100 Tape Library
Available Models	TS3100 Tape Library Model L2U 6173 L2U
Drive Options	LTO 7: FH Fibre - ATPO/00WF765, HH SAS - ATP1/00WF767, HH Fibre-ATP2/00WF769; LTO 6: FH Fibre - AS1Y/00NA115, HH SAS - AS1Z/00NA117, HH Fibre - AS21/00NA119; LTO 5: FH Fibre - AS1S/00NA107, FH SAS - AS1T/00NA109, HH SAS - AS1U/00NA111, HH Fibre - AS1W/00NA113; LTO 4: FH Fibre-AS1M/ 00NA101, FH SAS - AS1N/00NA121, HH SAS - AS1Q/00NA105, HH Fibre - AS1P/00NA103
LTO Ulltrium Tape Cartridges	LTO 7: ATNZ/00WF771 LTO 6: AS24/00NA025 LTO 5: AS23/00NA023 LTO 4: AS22/00NA021
LTO Ultrium Cleaning Cartridge	ASIE/00NA017
Number of Drives/Cartridges	1-2/24
Number of Mail Slots	1
Physical Capacity (compressed/native) Compression assumes 2.5:1 for LTO 7 and LTO 6, 2:1 for LTO 5 and LTO 4	Cartridge capacity LTO 7: 15TB/6TB LTO 6: 6.25TB/2.5TB LTO 5: 3TB/1.5TB LTO 4: 1.6TB/800GB Library capacity LTO 7: 360TB/144TB LTO 6: 150TB/60TB LTO 5: 72TB/36TB LTO 5: 72TB/36TB LTO 4: 38TB/19TB
Data Transfer Rate	LTO7: up to 300MBps LTO6: up to 160MBps LTO5: up to 140MBps LTO4: up to 120MBps
Operating Systems Support	Native device driver support is available for selected Lenovo servers and other Linux and Microsoft Windows open-system servers.
Warranty	3-year, customer-replaceable unit and onsite, next business day 9x5

Features	IBM TS3200 Tape Library
Available Models	TS3200 Tape Library Model 6173 L4U
Drive Options	LTO7: FH Fibre - ATP0/00WF765, HH SAS - ATP1/00WF767, HH Fibre - ATP2/00WF769; LTO6: FH Fibre - AS1Y/00NA115, HH SAS - AS1Z/00NA117, HH Fibre - AS21/00NA119; LTO5: FH Fibre - AS1S/00NA107, FH SAS - AS1T/00NA109, HH SAS - AS1U/00NA111, HH Fibre - AS1W/00NA113; LTO4: FH Fibre -AS1M/00NA101, FH SAS - AS1N/00NA121, HH SAS - AS1Q/00NA105, HH Fibre - AS1P/00NA103
LTO Ulltrium Tape Cartridges	LTO 7: ATNZ/00WF771 LTO 6: AS24/00NA025 LTO 5: AS23/00NA023 LTO 4: AS22/00NA021
LTO Ultrium Cleaning Cartridge	ASIE/00NA017
Number of Drives/Cartridges	1-4/48
Number of Mail Slots	3
Physical Capacity (compressed/native) Compression assumes 2.5:1 for LTO 7 and LTO 6, 2:1 for LTO 5 and LTO 4	Cartridge capacity LTO 7: 15TB/6TB LTO 6: 6.25TB/2.5TB LTO 5: 3TB/1.5TB LTO 4: 1.6TB/800GB Library capacity LTO 7: 720TB/288TB LTO 6: 300TB/120TB LTO 5: 144TB/72TB LTO 5: 144TB/72TB LTO 4: 76.8TB/38.4TB
Data Transfer Rate	LTO7: up to 300MBps LTO6: up to 160MBps LTO5: up to 140MBps LTO4: up to 120MBps
Operating Systems Support	Native device-driver support is available for selected Lenovo servers and other Linux and Microsoft Windows open-system servers
Warranty	3-year, customer-replaceable unit and onsite, next business day 9x5

### Networking

Lenovo has been specialising in data centre networking for over 15 years, offering products that are completely interoperable with other vendor's switches. This allows us to build customised solutions and integrate them into a client's infrastructure easily.

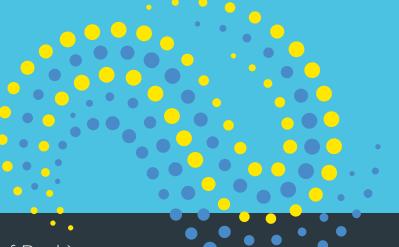


Lenovo ThinkSystem NE1072T RackSwitch

#### Networking Portfolio at your fingertips



Take a 3D tour and get to know the broad portfolio. Visit <u>lenovofiles.com/3dtours</u>



#### Ethernet RackSwitch (Top of Rack)

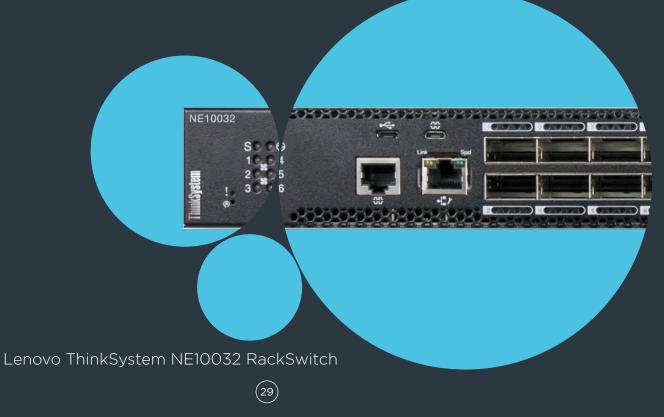
Deliver speed and intelligence to the edge of your network, where it's closer to your business and your users. The product line ranges from low-cost 1/10GE switches to 2U 10/40GE switch/ routers, with all 10/40GE switches supporting DCB/ROCE. The new Cloud NOS (CNOS) for the Lenovo Top of rack switches is based on open, industry Linux standards to enable support of the most common automation and orchestration applications for simple and tight integration into the data centre ecosystem.

Lenovo Models	G7028	G7052	G8052	G8124E
Performance	100% line rate performance, 128Gbps nonblocking switching throughput	176Gbps nonblocking switching throughput	176Gbps nonblocking switching throughput	100% line rate performance, 480Gbps nonblocking switching throughput
Ports	24 x 1GbE RJ-45 4 x 10GbE SFP+	48 x 1GbE RJ-45 4 x 10GbE SFP+	48 x 1GbE RJ-45 4 x 10GbE SFP+	24 x 10GbE SFP+
Latency	3.3 μs	3.3 μs	1.8 μs	0.57 μs
Virtualisation / SDN			VMready, OpenFlow	VMready
Availability	Layer 2 Failover, Option Ext. redundant power	Layer 2 Failover, Option Ext. redundant power	vLAG, Hot-swap redundant power/fans	vLAG, redundant power & fans
Other			Stacking	DCB/CEE
Power	Single power, 50 - 60 Hz, 100 - 240 V AC, optional external Lenovo RackSwitch G7000 Redundant Power Supply with support for up to four RackSwitch G7028 switches	Single power, 50 - 60 Hz, 100 - 240 V AC, optional external Lenovo RackSwitch G7000 Redundant Power Supply with support for up to four RackSwitch G7052 switches	Redundant load-sharing hot-swap power modules, 50 - 60 Hz, 100 - 240 V AC auto switching per module	The AC-powered G8124E has dual load-sharing internal power modules, 50 - 60 Hz, 100 - 240 V AC auto- switching per module.
Warranty	3-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available	3-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available	3-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available	3-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available

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Lenovo Model	G8272
Performance	100% line rate performance, 1.44Tbps nonblocking switching throughput
Ports	48 x 10GbE SFP+ 6 x 40GbE QSFP+
Latency	0.6 μs
Virtualisation / SDN	VMready Virtual Fabric OpenFlow VXLAN
Availability	vLAG Hot-swap redundant power/fans
Other	DCB/CEE
Power	Dual load-sharing hot-swap internal power modules, 50 - 60 Hz, 100 - 240 V ac auto-switching per module
Warranty	3-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available

Lenovo Models	G8264	G8296	G8264CS	G8332
Performance	1.28Tbps nonblocking switching throughput	100% line rate performance, 2.56Tbps nonblocking switching throughput	100% line rate performance, 1.28Tbps nonblocking switching throughput	100% line rate performance, 2.56Tbps nonblocking switching throughput
Ports	48 x 10GbE SFP+ 4 x 40GbE QSFP+	86 x 10GbE SFP+ 10 x 40GbE QSFP+	36 x 10GbE SFP+ 12 Omni (10GbE/8GB FC) 4 x 40GbE QSFP+	32 x 40GbE QSFP+
Max Bidirectional Throughput	1,280Gbps	2,560 Gbps	1,280 Gbps	2,560 Gbps
Latency	0.88 μs	0.6 μs	Varies based on configuration	0.6 μs
Virtualisation / SDN	VMready Virtual Fabric OpenFlow	VMready Virtual Fabric OpenFlow VXLAN	VMready Virtual Fabirc	VMready Virtual Fabric OpenFlow VXLAN
Availability	vLAG, Hot-swap redundant power/fans	vLAG, Hot-swap redundant power/fans	vLAG, Hot-swap redundant power/fans	vLAG, Hot-swap redundant power/fans
Other	DCB/CEE	DCB/CEE	DCB/CEE/FCoE, FC ports	DCB/CEE
Power	Dual load-sharing hot-swap internal power modules, 50 - 60 Hz, 100 - 240 V AC auto- switching per module	Dual load-sharing hot-swap internal power modules, 50 - 60 Hz, 100 - 240 V AC auto- switching per module	Dual load-sharing hot-swap internal power modules, 50 - 60 Hz, 100 240 V AC auto- switching per module	Dual load-sharing hot-swap internal power modules, 50 - 60 Hz, 100 240 V AC auto- switching per module
Warranty	3-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available	3-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available	3-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available	3-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available



Features	Lenovo ThinkSystem NE10032 RackSwitch	
Performance	100% line rate performance, up to 6.4Tbps switching throughput	
Ports	32x 40Gb QSFP+/100Gb QSFP28	
Interface Configurations	<ul> <li>32x 100Gb Ethernet ports supporting various combinations:</li> <li>Up to 32x QSFP28 100GbE QSFP28 transceivers</li> <li>Up to 32x QSFP28 100GbE QSFP transceivers</li> <li>Up to 32x QSFP28 100Gb DAC cable or AOC cable. (Various lengths: 1m, 3m, 5m, etc.)</li> <li>Up to 128x SFP28 25GbE ports using special (QSFP28-to-4xQSFP28) break-out DAC cable or optics with break-out fibres. (Various lengths: 1m, 3m, 5m, etc.)</li> <li>Up to 64x QSFP28 50GbE ports using special (QSFP28-to-2xQSFP28) break-out DAC cable or optics with break-out fibres. (Various lengths: 1m, 3m, 5m, etc.)</li> <li>Up to 128x SFP+ 10GbE ports using special (QSFP-to-4xSFP+) break-out DAC cable or optics with break-out fibres. (Various lengths: 1m, 3m, 5m, etc.)</li> <li>Up to 128x SFP+ 10GbE ports using special (QSFP-to-4xSFP+) break-out DAC cable or optics with break-out fibres. (Various lengths: 1m, 3m, 5m, etc.)</li> <li>Up to 128x SFP+ 10GbE ports using special (QSFP-to-4xSFP+) break-out DAC cable or optics with break-out fibres. (Various lengths: 1m, 3m, 5m, etc.)</li> <li>Up to 128x SFP+ 10GbE ports using special (QSFP-to-4xSFP+) break-out DAC cable or optics with break-out fibres. (Various lengths: 1m, 3m, 5m, etc.)</li> <li>Up to 128x SFP+ 10GbE port or sund special (QSFP-to-4xSFP+) break-out DAC cable or optics with break-out fibres. (Various lengths: 1m, 3m, 5m, etc.)</li> <li>Us 10/100/1000 MbE RJ-45 port for out-of-band management</li> <li>Standard mini-USB RS232 port or Standard RJ-45 RS232 port</li> <li>USB 2.0 interface type A connection (processor on CPU-board is host)</li> </ul>	
Latency	0.49 μs	
Virtualisation	vLAG VM-aware network automation and integration	
Cooling	Front-to-rear or rear-to-front cooling, redundant hot-swappable field-replaceable fans with variable speed to reduce power draw	
Power	Dual load-sharing hot-swap internal power modules, 50 - 60Hz, 100 - 240V AC auto-switching per module	
Management Software Supported	Lenovo XClarity VMware OpenStack	
Automation / API	Ansible, Python, REST, Telemetry	
Associated Options	For details on the NE10032, transceivers, cables, and other associated options, refer to the Lenovo ThinkSystem NE10032 RackSwitch <u>Product Guide</u>	
Warranty	3-year warranty, customer replaceable unit and onsite, next business day 9x5, opt. service upgrade available	

Features	Lenovo ThinkSystem NE1032	Lenovo ThinkSystem NE1032T	Lenovo ThinkSystem NE1072T
	RackSwitch	RackSwitch	RackSwitch
Performance	100% line rate performance, 1.44Tbps	100% line rate performance, 1.44Tbps	100% line rate performance, 1.44Tbps
	nonblocking switching throughput	nonblocking switching throughput	nonblocking switching throughput
	(full duplex), 1Bpps	(full duplex), 1Bpps	(full duplex), 1Bpps
Interface Configurations	32x 10Gb Ethernet SFP+ ports	24x 10GBase-T + 8x 10Gb SFP+ Ethernet ports	48x 10GBase-T + 6x 40Gb QSFP+ Ethernet ports
Latency	<1.0 μs	0.76 μs (SFP+) or 2.3 μs (10GBASE-T)	0.7 μs (QSFP+) or 2.4 μs (10GBASE-T)
Virtualisation	vLAG	vLAG	vLAG
	VM-aware network automation and	VM-aware network automation and	VM-aware network automation and
	integration	integration	integration
Cooling	Front-to-rear or rear-to-front cooling,	Front-to-rear or rear-to-front cooling,	Front-to-rear or rear-to-front cooling,
	redundant hot-swappable field-	redundant hot-swappable field-	redundant hot-swappable field-
	replaceable fans with variable speed	replaceable fans with variable speed	replaceable fans with variable speed
	to reduce power draw	to reduce power draw	to reduce power draw
Power	Dual load-sharing hot-swap internal	Dual load-sharing hot-swap internal	Dual load-sharing hot-swap internal
	power modules, 50 - 60Hz, 100 -	power modules, 50 - 60Hz, 100 -	power modules, 50 - 60Hz, 100 -
	240V AC auto-switching per module	240V AC auto-switching per module	240V AC auto-switching per module
Management Software Supported	Lenovo XClarity VMware OpenStack	Lenovo XClarity VMware OpenStack	Lenovo XClarity VMware OpenStack
Automation / API	Ansible, Python, REST, Telemetry	Ansible, Python, REST, Telemetry	Ansible, Python, REST, Telemetry
Associated Options	For details on the NE1032,	For details on the NE1032T,	For details on the NE1072T,
	transceivers, cables, and other	transceivers, cables, and other	transceivers, cables, and other
	associated options, refer to the	associated options, refer to the	associated options, refer to the
	Lenovo ThinkSystem NE1032	Lenovo ThinkSystem NE1032T	Lenovo ThinkSystem NE1072T
	RackSwitch <u>Product Guide</u>	RackSwitch <u>Product Guide</u>	RackSwitch <u>Product Guide</u>
Warranty	3-year warranty, customer	3-year warranty, customer	3-year warranty, customer
	replaceable unit and onsite, next	replaceable unit and onsite, next	replaceable unit and onsite, next
	business day 9x5, opt. service	business day 9x5, opt. service	business day 9x5, opt. service
	upgrade available	upgrade available	upgrade available



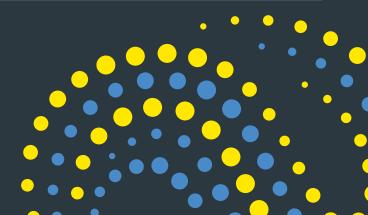
### Ethernet Switches for Flex System

Provide on-demand scalability and flexible port mapping, which offers simple interoperability with existing networks. With Lenovo you can reduce CAPEX, OPEX, while you increase performance with low latency products.

Lenovo Models	EN2092 1GbE Scalable Switch	SI4091 System Interconnect Module	SI4093 System InterconnectModule
Base Configuration Ports	14 x 1GbE internal 10 x 1GbE RJ-45 external	14 x 10GbE internal 10 x 10GbE SFP+ external	13 x 10GbE internal 10 x 10GbE SFP + external
Switch Upgrade 1 Ports	28 x 1GbE internal 20 x 1GbE RJ-45 external	N/A	28 x 10GbE internal 10 x 10GbE SFP + external 2 x 40GbE QSFP + external
Switch Upgrade 2 Ports	4 x 10GbE SFP+ external	N/A	42 x 10GbE internal 14 x 10GbE external 2x 40GbE QSFP + external
Max bidirectional throughput	176 Gbps	480 Gbps	1,280 Gbps
Cloud Ready	VMready Switch Partitioning	N/A	VMready Switch Partitioning UFP
Flexibility & Scalability	FPM FoD	N/A	FPM FoD FSIF
Converged	N/A	DCB, CEE, FCoE transit	DCB, CEE, FCoE transit
Recommended for:	Performance, virtualisation	Lowest cost end host mode, simple management	Low-cost end host mode, simple management, 10/40GbE scalability, performance
Warranty	1-year customer replaceable unit	1-year customer replaceable unit	1-year customer replaceable unit

Lenovo Models	EN4093R 10GbE Scalable Switch	CN4093 10GbE Converged Switch	EN4091 10Gb Ethernet Pass-thru
Base Configuration Ports	14 x 10GbE internal 10 x 10GbE SFP+ external	14 x 10GbE internal 2 x 10GbE SFP+ external 6 x Omni Port external	14 x full duplex 1/10GbE internal ports 10 x 1/10GbE SFP + external transceivers
Switch Upgrade 1 Ports	28 x 10GbE internal 10 x 1GbE SFP+ external 2 x 40GbE QSFP+ external	14 x 10GbE internal 2 x 40GbE external	
Switch Upgrade 2 Ports	42 x 10GbE internal 14 x 10GbE external 2 x 40GbE QFSP+ external	14 x 10GbE internal 6 x Omni Port external	
Max bidirectional throughput	1,280Gbps	1,280Gbps	N/A
Cloud Ready	VMready Switch Partitioning UFP OpenFlow	VMready Switch Partitioning UFP	
Flexibility & Scalability	FPM FoD Stacking	FPM FoD Stacking	FPM FoD FSIF
Converged	DCB, CEE, FCoE transit	DCB, CEE, FCoE break out 8Gb FC	DCB, CEE, FCoE transit
Recommended for:	Performance, virtualisation	Direct FCoE connectivity, FC to external F SAN or in-chassis storage	Low-cost end host mode, simple management, 10/40GbE scalability, performance
Warranty	1-year customer replaceable unit	1-year customer replaceable unit	1-year customer replaceable unit

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Features	EN6131 40Gb Ethernet Switch	Cisco Nexus B22 Fabric Extender
Base Configuration Ports	14 x internal full-duplex 40Gb ports 18 x external ports for 40Gb QSFP+ transceivers for QSFP+ DAC cables	14 x internal full-duplex auto-serving 1/10G ports 8 x external ports for 10Gb SFP+ transceivers
Max bidirectional throughput	1.44Tbps aggregated	400Gbps aggregated
Scalability & Performance	Non-blocking architecture with wire-speed forwarding of traffic Up to 48,000 unicast and up to 16,000 multicast MAC addresses per subnet Static & LACP (IEEE 802.3ad) link aggregation Up to 720 Gb total uplink bandwidth per switch Up to 36 link aggregation groups (LAGs) Support for jumbo frames Broadcast/multicast storm control IGMP v1 and v2 snooping	Wire-speed forwarding of traffic Static and EtherChannel link aggregation Up to 80 Gb (160 Gb full-duplex) total fabric uplink bandwidth per module Support for jumbo frames PortChannel on server ports
Availability & Redundancy	IEEE 802.1D STP for L2 redundancy IEEE 802.1w Rapid STP (RSTP)	Redundant uplinks through Cisco EtherChannel hashing or static port pinning vPCs for dual-homed connectivity
- Virtualisation -	Up to 4094 VLANs per switch 802.1Q VLAN tagging support	802.1Q VLAN tagging support Switch Independent Virtual NIC (vNIC2): Ethernet, iSCSI, or FCoE traffic
Typical Configurations		
Recommended for:	High performance applications	Cisco-Flex System connectivity
Warranty	1-year customer replaceable unit	1-year customer replaceable unit

Lenovo Models	FC5022 16Gb SAN Scalable Switches	
Maximum Port Configuration	28 internal full-duplex 16/8 Gb FC ports supporting 2 and 4 port adapters 20 external ports for 16 Gb or 8 Gb SFP+ transceivers supporting 4 Gb, 8 Gb, and 16 Gb port speeds	
Base Configuration Ports	12 or 24 dynamic ports depending on model	
Switch Upgrade 1 Ports	12 additional dynamic ports	
Switch Upgrade 2 Ports	24 additional dynamic ports	
Key Features	Full fabric Access Gateway Advanced zoning Enhanced Group Management Adaptive Networking ISL Trunking+ Fabric Vision* Advanced Performance Monitoring* Fabric Watch* Extended Fabrics* Server Application Optimisation*	
Recommended for:	Storage-intensive enterprise workloads	
Warranty	1-year customer replaceable unit	

+Requires separate licence or ESB switch \*Requires ESB switch



#### Juniper Products from Lenovo

Extend Lenovo's networking with Juniper products to build the next generation of data centre infrastructure solutions.

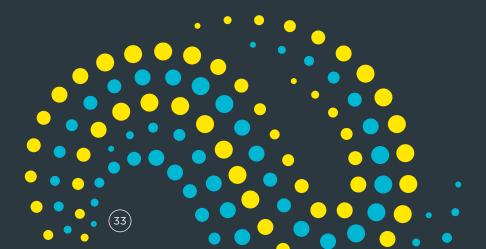
The Juniper EX2300-C-12P and EX2300-24P Ethernet switches for Lenovo with Power over Ethernet (PoE) deliver a compact, high-density, cost-effective solution for small network environments where space and power are at a premium. Featuring a small, 1U footprint, these switches are ideal for access-layer deployments in micro branches, retail and workgroup environments, and converged network access in larger networks.



## Networking Portfolio at your fingertips



Multi Products	Juniper EX2300-C Compact Ethernet Switch	Juniper EX2300-24P Ethernet Switch
GbE Port Density per System	14 (12 access ports + 2 uplink ports)	28 (24 access ports + 4 -port SFP/SFP+)
Backplane	40Gbps Virtual Chassis interconnect to link up to 4 x switches as a single logical device	40Gbps Virtual Chassis interconnect to link up to 4 x switches as a single logical device
Port Speed	12x10/100/1000BASE-T	24 x 10/100/1000BASE-T
Max. System Power Consumption	24W AC	24W AC
Total PoE Power Budget	124W	-
Cooling	Fanless operation	-
Switching Engine Model	Store and forward	-
CPU	125GHz ARM CPU	-
Selected L2 Features	<ul> <li>Maximum MAC addresses in hardware: 16,000</li> <li>Jumbo frames: 9216 bytes</li> <li>Number of VLANs supported: 4093</li> <li>Range of possible VLAN IDs: 1-4094</li> <li>Port-based VLAN</li> <li>MAC-based VLAN</li> <li>Voice VLAN</li> <li>Private VLAN (P-VLAN)</li> </ul>	<ul> <li>Maximum MAC addresses in hardware: 16,000</li> <li>Jumbo frames: 9216 bytes</li> <li>Number of VLANs supported: 4093</li> <li>Range of possible VLAN IDs: 1-4094</li> </ul>
Warranty	Enhanced limited lifetime hardware warranty with shipping of spares within one business day; 5 year coverage for power supplies and fans	Enhanced limited lifetime hardware warranty with shipping of spares within one business day; 5 year coverage for power supplies and fans



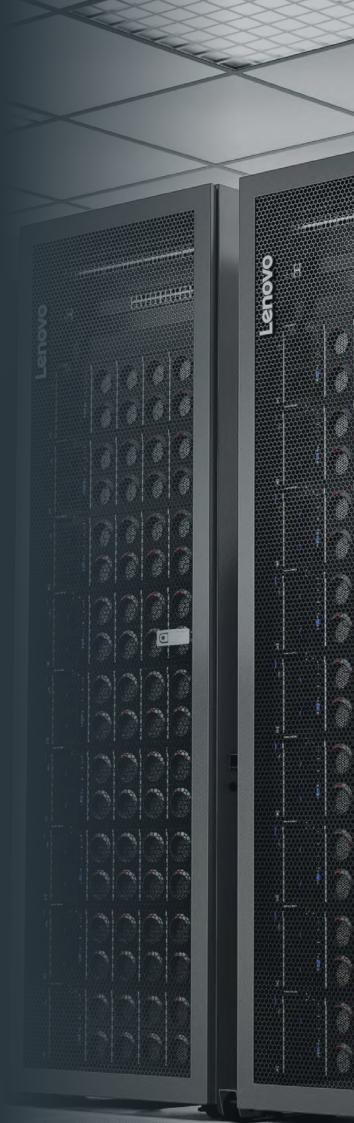
### Lenovo XClarity Administrator

Lenovo XClarity Administrator is a centralised resource management solution that is aimed at reducing complexity, speeding response and enhancing the availability of Lenovo server systems and solutions. Seamlessly integrated with Lenovo servers, Flex System, RackSwitch networking, and S Series Storage, XClarity also centralises control in a single dashboard. With an intuitive graphical user interface, it allows Auto-Discovery & inventory, firmware updates & compliance, configuration patterns and bare metal deployment. With upward integration, you can manage hardware systems from many common IT applications such as Microsoft System Center and VMware vCenter with XClarity Integrator software plugins. External, higher-level cloud orchestration and IT service management software tools can integrate, leveraging available REST APIs.

Lenovo XClarity Energy Manager is an application that helps view, analyse, and control server power usage.



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### Software-Defined Infrastructure

Engineered to simplify the user experience, software-defined infrastructure is designed to adapt to changing IT needs while reducing complexity and cost created by silos in traditional IT. Pre-integrated, pre-built and pre-tested offerings accelerate application deployment and add robust capabilities to your data centre faster.



Lenovo Storage DX8200C powered by Cloudian

#### Software-Defined Storage

The software-defined storage portfolio delivers flexible, easy to scale, and simple to manage data centre storage solutions for Object storage, unified File and Block, and Storage Virtualisation. It offers a full suite of storage services, including dynamic allocation of storage data on underlying x86 servers. Whether you need to manage small chunks of data, in a hierarchy or as objects, SDS appliances offer a full range of data management storage systems across a variety of applications, from database, email, through large data file storing and sharing, all the way to medical and educational records, or online collaboration services.

### 

Features	Lenovo Storage DX8200C powered by Cloudian
Form Factor/Height	Rack/2U
Processor	1x Intel* Xeon* processor E5-2630 v4
Cache	20MB
Memory	64GB
Disk Bays	12 x 3.5" and 2 rear 3.5" HDDs + 2 x 2.5" HDDs/SSDs
Maximum Internal Storage	Up to 140TB
Power Supply	Up to 2 redundant 750W AC, 80 PLUS® Platinum
Hot-Swap Components	Power supplies, fan modules and HDDs/SSDs
Network Interface	2 x 1GbE + 2 x 10Gb (base), optional SFP+, Base-T
Storage Management Software	Cloudian HyperStore
Scale Out Storage	Starts with three nodes and scales to hundreds
Configurable Data Protection	Erasure Coding, Replication, Configurable Consistency
Multi-Tenancy Controls	Role based Group/User level Access Controls QoS services to control usage Configurable cost accounting and chargeback
Data Encryption	AES256 bit encryption support
Systems Management	Lenovo XClarity Administrator with mobile option Lenovo XClarity Pro software bundle Lenovo XClarity Energy Manager IMM2.1, Cloudian Management Console
Support	Lenovo single point of contact for 24/7 assistance
Recommended for	File Distribution & Sharing, backup & archive, Media Content Store, SaaS/Cloud Storage, Object (medical or educational records), Cloud Backend
Warranty	3-year customer replaceable unit and onsite limited warranty, next business day 9x5; upgrades available



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Features	Lenovo Storage DX8200D powered by DataCore
Form Factor/Height	Rack/2U
Processor	2x Intel® Xeon® processor E5-2620 v4
Cache	40MB
Memory	128GB (4 x 32GB) to 512GB (16 x 32GB)
Disk Bays	24 x 2.5" and 2 x 2.5" HDDs/SSDs
Power Supply	Up to 2 redundant 750W AC, 80 PLUS® Platinum
Hot-Swap Components	Power supplies, fan modules and HDDs/SSDs
Network Interface	3 x 10GbE Dual port BaseT adapter (base), optional SFP+, Base-T, or FC
Storage Management Software	DataCore SANsymphony
Scale Out Storage	Two nodes for synchronous mirroring then scale with more nodes or external storage
Supported Networking Protocols	10GbE NFSv3, NFSv4, 10GbE, CIFS, SMB 3.0, 10GbE iSCSI, 8Gbps Fibre Channel, 16Gbps Fibre Channel
Data Availability and Integrity	Synchronous Mirroring, Asynchronous Replication, CDP, Snapshot/Backup
Data Acceleration	High-speed caching, Auto-tiering, Random Write Accelerator, QoS
Systems Management	Lenovo XClarity Administrator with mobile option Lenovo XClarity Pro software bundle Lenovo XClarity Energy Manager IMM2.1, DataCore Management Console
Support	Lenovo single point of Contact for 24/7 assistance
Recommended for	Accelerating applications, Business Continuity/Disaster Recovery, storage consolidation, storage expansion/refresh
Warranty	3-year customer replaceable unit and onsite limited warranty, next business day 9x5; upgrades available



Features	Lenovo Storage DX8200N powered by Nexenta	
Form Factor/Height	Rack/2U	
Processor	2x Intel® Xeon® processor E5-2643 v4	
Cache	20MB	
Memory	256GB (16 x 16GB)	
JBODs	Up to 8 x Lenovo Storage D1212, or Lenovo Storage D1224, or Lenovo Storage D3284 - up to 6.72PB	
Power Supply	Up to 2 redundant 750W AC, 80 PLUS* Platinum	
Hot-Swap Components	Power supplies, fan modules and HDDs/SSDs	
Network Interface	3 x 10GbE Dual port BaseT adapter (base), optional SFP+, Base-T, or FC	
Storage Management Software	NexentaStor 5.0	
Scale Out Storage	Two nodes, plus up to 8 JBODs	
Supported Networking Protocols	10GbE NFSv3, NFSv4, 10GbE CIFS, SMB 2.1, 10GbE iSCSI, 8Gbps Fibre Channel, 16Gbps Fibre Channel	
Data Availability and Integrity	Active/Active controllers, ZFS 256-bit block level checksums, RAID 10 and multi-parity software RAID (n+1, n+2, n+3), Asynchronous replication	
Data Acceleration	High-speed caching, Auto-tiering, Random Write Accelerator, QoS	
Data Services and Optimisation	Flash and HDD hybrid pools, ZFS Copy On Write, unlimited writable snapshots, thin provisioning, inline data compression, CLI & Web UI, SNMP & REST API	
Systems Management	Lenovo XClarity Administrator with mobile option Lenovo XClarity Pro software bundle Lenovo XClarity Energy Manager IMM2.1, Nexenta Management View	
Support	Lenovo single point of contact for 24/7 assistance	
Recommended for	Generic File Share, Home Directories, Near Line Archive, Transactional databases, email, backup & archive block storage	
Warranty	3-year customer replaceable unit and onsite limited warranty, next business day 9x5; upgrades available	

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#### Data Centre Portfolio at your fingertips



Intel Xeon Processors

Take a 3D tour and get to know the broad portfolio of Lenovo's data centre offering. Visit



## ThinkAgile SX for Microsoft Azure Stack

ThinkAgile SX for Microsoft Azure Stack is a turnkey, rack scale hybrid cloud solution optimised with resilient, high performing, and secure software-defined infrastructure. It's the perfect platform to;

- Deliver Azure cloud services from the security of your own data centre
- Enable rapid development and iteration of apps with on-premises deployment tools to help transform your organisation
- Unify app development across the hybrid cloud environment
- Easily move apps and data across private and public clouds

Lenovo and Microsoft have worked closely together to co-engineer the solution components – Azure Stack software and Lenovo software-defined infrastructure - so you can be confident the solution components will perform seamlessly.

# **Think**Agile

ThinkAgile SX for MS Azure Stack



Different Innovates Better Find out how.



ThinkAgile for Microsoft Azure

Lenovo

ThinkAdi

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Stack

## ThinkAgile SX for Nutanix

ThinkAgile SX for Nutanix is a best-in-class hyperconverged turnkey rack scale system optimised for deployments that are intended to scale across multiple data centre racks. Built by Lenovo as a single pre-configured system, shipped with ThinkAgile Network Orchestrator and management by Lenovo XClarity Integrator for Prism, the ThinkAgile SX for Nutanix leverages proven hardware with innovative software in one single virtualisation-ready system.

Lenovo and Nutanix deliver leadership hyperconverged offerings that natively integrate compute, storage and virtualisation into a single x86-based appliance deployed in scale-out clusters to dramatically reduce complexity and cost in data centres of all sizes. ThinkAgile SXN 3000 Series

Lenovo

## **Think**Agile

ThinkAgile SX for Nutanix



Different Innovates Better Find out how

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### Hyperconverged Solutions

Designed for easy deployment and manageability in scale-out clusters, the Lenovo HX Series appliances integrate Nutanix software onto Lenovo's highly reliable and scalable servers. These appliances ship fully integrated, tested, and configured so that you can dramatically accelerate your business growth, while containing your data centre footprint.

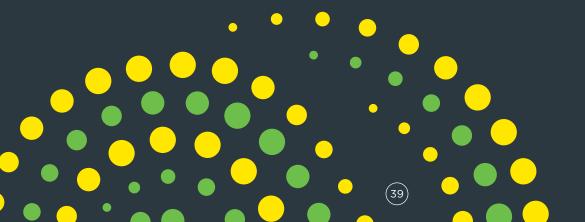
The Lenovo HX Series family includes a variety of models optimised to meet growing business and enterprise needs.

- HX 1000 Series for remote office/branch office environments
- HX 2000 Series for small and medium-sized businesses
- HX 3000 Series for compute-heavy workloads
- HX 5000 Series for storage-heavy requirements
- HX 7000 Series for high-performance requirements

Lenovo Models	HX1310
Form Factor	1U
Processor	Up to 1 x Intel® Xeon® E5-2680 v4 (14 cores)
Memory	Up to 256GB 2400MHz TruDDR4
Maximum Internal Storage	Up to 2 x 1600GB SSD or 6 x 2TB HDD
Network interface	1 x dual-port NIC (10GbE/10Base-T)
Hypervisor Support	Nutanix Acropolis pre-loaded VMware ESXi optional Microsoft Hyper-V 2012 R supported
Systems Management	Lenovo XClarity (hardware) Nutanix Prism (software)
Licence Options	Nutanix Starter, Pro or Ultimate
Warranty	3-year or 5-year customer replaceable unit and onsite limited warranty, next business day 9x5; selectable service levels

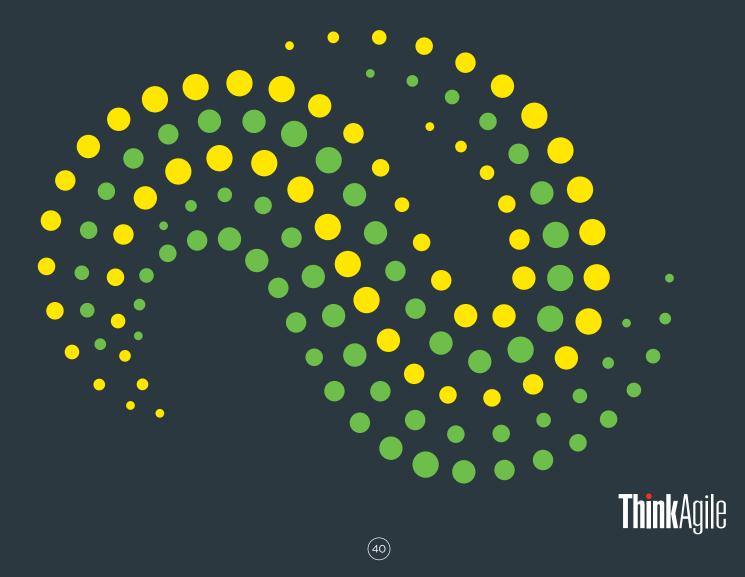
Lenovo Models	НХ2310-Е	НХ2710-Е	
Form Factor	1U	2U 4-node	
Processor	Up to 2 x Intel Xeon E5-2630 v4 (20 cores total)		
Memory	Up to 256GB 2400MHz TruDDR4		
Maximum Internal Storage	Up to 2 x 1600GB SSD or 6 x 2TB HDD	Up to 1 x 1600GB SSD or 5 x 2TB HDD	
Network Interface	1 x dual-port NIC (10GbE/10Base-T)		
Hypervisor Support	Nutanix Acropolis pre-loaded VMware ESXi optional Microsoft Hyper-V 2012 R supported		
Systems management	Lenovo XClarity (hardware) Nutanix Prism (software)		
Licence options	Nutanix Express		
Warranty	3-year customer replaceable unit and onsite limited warranty, next business day 9x5; upgrades available		

**Think**Agile



Lenovo Models	HX3310	HX3510-G	
Form Factor	1U	2U	
Processor	Up to 2 x Intel® Xeon® E5-2699 v4 (44 cores total)		
Memory	Up to 768GB 2400MHz TruDDR4		
Maximum Internal Storage	Up to 2 x 1600GB SSD or 6 x 2TB HDD		
GPU Options	None	2x NVIDIA <sup>®</sup> M60	
Network Interface	1 x dual-port NIC (10GbE/10Base-T), optional 2nd		
Hypervisor Support	Nutanix Acropolis pre-loaded VMware ESXi optional Microsoft Hyper-V 2012 R supported		
Systems Management	Lenovo XClarity (hardware) Nutanix Prism (software)		
Licence Options	Nutanix Starter, Pro or Ultimate		
Warranty	3-year customer replaceable unit and onsite limited warranty, next business day 9x5; upgrades available		

Lenovo Model	НХ3710
Form Factor	10
Processor	Up to 1 x Intel® Xeon® E5-2680 v4 (14 cores)
Memory	Up to 256GB 2400MHz TruDDR4
Maximum Internal Storage	Up to 2 x 1600GB SSD or 6 x 2TB HDD
Network Interface	1 x dual-port NIC (10GbE/10Base-T)
Hypervisor Support	Nutanix Acropolis pre-loaded VMware ESXi optional Microsoft Hyper-V 2012 R supported
Systems Management	Lenovo XClarity (hardware) Nutanix Prism (software)
Licence Options	Nutanix Starter, Pro or Ultimate
Warranty	3-year customer replaceable unit and onsite limited warranty, next business day 9x5; upgrades available



Lenovo Models	НХ5510	HX5510-C	
Form Factor	2U	2U 4-node	
Processor	Up to 2 x Intel <sup>®</sup> Xeon <sup>®</sup> E5-2697 v4 (36 cores)	Up to 1 x Intel® Xeon® E5-2620 v4 (8 cores)	
Memory	Up to 768GB 2400MHz TruDDR4	Up to 64GB 2400MHz TruDDR4	
Network Interface	1 x dual-port NIC (10GbE/10Base-T)		
Hypervisor Support	Nutanix Acropolis pre-loaded VMware ESXi optional Microsoft Hyper-V 2012 R supported		
Systems management	Lenovo XClarity (hardware) Nutanix Prism (software)		
Licence options	Nutanix Starter, Pro or Ultimate		
Warranty	3-year customer replaceable unit and onsite limited warranty, next business day 9x5; upgrades available		

Lenovo Models	нх7510
Form Factor	2U
Processor	Up to 2 x Intel® Xeon® E5-2697 v4 (36 cores)
Memory	Up to 768GB 2400MHz TruDDR4
Network Interface	2 x dual-port NIC (10GbE/10Base-T), 1 optional
Hypervisor Support	Nutanix Acropolis pre-loaded VMware ESXi optional Microsoft Hyper-V 2012 R supported
Systems Management	Lenovo XClarity (hardware) Nutanix Prism (software)
Licence Options	Nutanix Starter, Pro or Ultimate
Warranty	3-year customer replaceable unit and onsite limited warranty, next business day 9x5; upgrades available

## NUTANIX



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enovo HX Series





Intel<sup>®</sup> Xeon<sup>®</sup> Processors

## **Engineered Solutions**

A typical IT department's goals are complex, increasingly costly, and always changing. With Lenovo solutions engineered to optimise resiliency, performance, and TCO, customers can deploy comprehensive, proven solutions that meet requirements from scaling the systems quickly to getting more from their IT budget.

Partnership is in Lenovo's DNA. Collaborating with proven industry partners, Lenovo provides solutions using the best infrastructure and applications to address your workload needs.



**Cloud Solutions** for the next step from virtualisation. Improve resource utilisation and business process efficiency.



**Big data & Analytics** to make sure information and analysis flow seamlessly to support real-time insight and facilitate better decision-making.



Business Applications can benefit from improved productivity with Lenovo's high-performance, scalable, extremely reliable hardware for business critical workloads.



#### Database Solutions to take advantage of optimised solution offering built on top-tier technology, whether for a small department or a data warehouse.



High-Performance Computing & Al Solutions powered by Lenovo platforms with Intel® technology can help you put your business at the forefront of tomorrow. On top of our high-density data centre infrastructure, we bring customised solutions for the high-performance technical computing storage needs in our new DSS family of products.

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Client Virtualisation and Infrastructure

are battle-tested to help IT managers easily deploy, secure and manage their technology.



### Lenovo DSS-G

Lenovo Distributed Storage Solution for IBM Spectrum Scale (DSS-G) is a software-defined storage (SDS) solution for dense scalable file and object storage suitable for high-performance and data-intensive environments. DSS-G combines the performance of Lenovo's latest generation x3650 M5 servers, Lenovo D1224 and D3284 storage enclosures, and industry leading IBM Spectrum Scale software. Designed for Technical Computing, HPC, Analytics and Cloud environments can handle small to very large capacity storage workloads with high performance, in an up-scaling building-block storage approach with easy installation, design and support along our broader HPC offering.



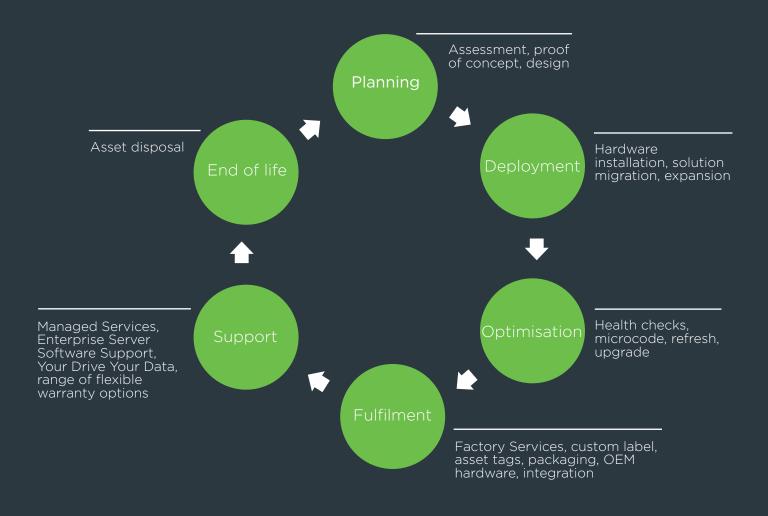
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Lenovo DSS-G



## Lenovo Services

Lenovo offers a comprehensive portfolio of services that support the full lifecycle of a customer's Lenovo IT assets. At every stage—plan, fulfil, deploy, support, optimise, and end of life— Lenovo offer the expertise and services clients need to more accurately budget for IT expenses, deliver better service-level agreements and generate greater end-user satisfaction. With Lenovo Professional Services expertise we can help clients gain the most from their technology investment.



#### Tackle your most complex challenges

Lenovo Services consultants, with deep experience in delivering technology solutions, can help you overcome complicated business challenges with innovative design, architecture, application & integration solutions

#### Making business easier

Clients can focus on their core business with a comprehensive portfolio of deployment, support and managed services that cover the entire suite of enterprise products

#### Peace of mind

Lenovo Services consultants have specialised, understand the latest technology inside out

and employ industry best practices to deliver solutions consistently and reliably

#### Flexible

A range of services to complement your internal team, capabilities and business demands at a global and local level

#### **Improved Service**

Experienced Lenovo Professional Services consultants help maintain and ensure optimal performance and efficiency in the data centre through health checks and preventative maintenance

For more information on Lenovo Services please visit <u>www.lenovo.com</u>

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To learn more about Lenovo server, storage and enterprise services portfolio, contact your Lenovo representative or Business Partner, or visit lenovo.com/datacenter and lenovopress.com



Intel<sup>®</sup> Xeon<sup>®</sup> Scalable processors Intel Inside<sup>®</sup>. New Possibilities Outside.

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