Lenovo System x3550 M5 (Machine Type 5463)
Product Guide (withdrawn product)

Designed in a compact, versatile 1U two-socket rack server, the Lenovo System x3550 M5 rack server fuels almost any workload from infrastructure to high-performance computing (HPC) to cloud or big data with leadership security, efficiency, and reliability. Integrated with up to two Intel Xeon processors of the E5-2600 v3 product family with faster, energy-efficient TruDDR4 Memory, the x3550 M5 delivers exceptional performance. Storage can include up to 12 drives in an impressive selection of sizes and types.

Suggested use: Database, virtualization and cloud computing, infrastructure security, systems management, enterprise applications, collaboration/email, streaming media, web, and HPC.

The following figure shows the System x3550 M5.

Figure 1. Lenovo System x3550 M5

Did you know?

The x3550 M5 incorporates energy smart features for minimized costs and efficient performance. Dual fan zones support operation in up to 40°C environments. 80 PLUS Titanium power supply units (PSUs) can deliver 96% efficiency at 50% load.

The x3550 M5 has outstanding memory performance that is achieved by supporting two-RDIMM-per-channel configurations at speeds up to 12% faster than the Intel specification, while still maintaining world-class reliability.

The x3550 M5 integrates leadership security and reliability. System x Trusted Platform Assurance, an exclusive set of System x features and practices, establishes a foolproof security foundation for your workloads. Enterprise-class data protection is provided with optional self-encrypting drives. Diagnostic tools facilitate reduced downtime and costs.

Key features

The System x3550 M5 is a cost- and density-balanced 1U, 2-socket business-critical server, offering improved performance and pay-as-you grow flexibility along with new features that improve server management capability. New, innovative, energy-smart design with powerful high-performance processors, a large capacity of high-performing DDR4 memory, and an improved feature set are ideal for business-critical applications and cloud deployments.

Combining balanced performance and flexibility, the x3550 M5 is a great choice for small and medium businesses and up to the large enterprise. It can provide outstanding uptime to keep business-critical applications and cloud deployments running safely. Ease-of-use and comprehensive systems management tools make it easy to deploy. Outstanding reliability, availability, and serviceability (RAS) and high-efficiency design improve your business environment and help save operational costs.

Scalability and performance

The x3550 M5 offers numerous features to boost performance, improve scalability, and reduce costs:

- Improves productivity by offering superior system performance with up to 18-core processors, up to 45 MB of L3 cache, and up to 9.6 GT/s QPI interconnect links.
- Supports up to two processors, 36 cores, and 72 threads to maximize the concurrent execution of multithreaded applications.
- Intelligent and adaptive system performance with energy efficient Intel Turbo Boost Technology allows CPU cores to run at maximum speeds during peak workloads by temporarily going beyond processor thermal design power (TDP).
- Intel Hyper-Threading Technology boosts performance for multithreaded applications by enabling simultaneous multithreading within each processor core, up to two threads per core.
- Intel Virtualization Technology integrates hardware-level virtualization hooks that allow operating system vendors to better utilize the hardware for virtualization workloads.
- Intel Advanced Vector Extensions 2.0 (AVX 2.0) enable acceleration of enterprise-class workloads, such as databases, enterprise resource planning, and others.
- Up to 2133 MHz memory speeds with two DIMMs per channel running at 2133 MHz to help maximize system performance.
- Up to 1.5 TB of memory capacity with 64 GB Load Reduced DIMMS (LRDIMMs)
- 12 Gbps serial-attached SCSI (SAS) internal storage connectivity doubles the data transfer rate compared to 6 Gb SAS solutions to maximize performance of storage I/O-intensive applications.
- Flexible and scalable internal storage configurations for up to 46 TB of storage capacity with 3.84 TB 2.5-inch solid-state drives (SSDs) or up to 40 TB with 10 TB 3.5-inch hard disk drives (HDDs) in a dense 1U rack form factor.
- The use of SSDs instead of or along with traditional spinning HDDs can significantly improve I/O performance. An SSD can support a significantly higher number of I/O operations per second (IOPS) than a typical HDD.
- The server has four integrated Gigabit Ethernet ports and optional 10 Gb Ethernet ports with mezzanine LOM (ML2) adapters.
- The server offers up to four PCI Express (PCIe) 3.0 I/O expansion slots in a dense 1U rack form factor.
- With Intel Integrated I/O Technology, the PCI Express 3.0 controller is integrated into the Intel Xeon processor E5 family. This helps to dramatically reduce I/O latency and increase overall system performance.

Availability and serviceability

The x3550 M5 provides many features to simplify serviceability and increase system uptime:

- Tool-less cover removal provides easy access to upgrades and serviceable parts, such as processors, memory DIMMs, and adapter cards.
- The server offers hot-swap drives supporting RAID redundancy for data protection and greater system uptime.
- The server offers redundant hot-swap power supplies and hot-swap redundant fans to provide availability for business-critical applications.
- The new next-gen light path diagnostics LCD display panel simplifies servicing, speeds up problem resolution, and helps improve system availability.
- Proactive Platform Alerts (including PFA and SMART alerts): Processors, voltage regulators, memory, internal storage (SAS/SATA HDDs and SSDs, M.2 storage, flash storage adapters), fans, power supplies, RAID controllers, and server ambient and sub-component temperatures. Alerts can be surfaced through the system IMM to managers such as Lenovo XClarity Administrator, VMware vCenter, and Microsoft System Center. These proactive alerts let you take appropriate actions in advance of possible failure, thereby increasing server uptime and application availability.
- SSDs offer significantly better reliability than traditional mechanical HDDs for greater uptime.
- Built-in Integrated Management Module II (IMM2) continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failure, to minimize downtime.
- Built-in diagnostics using Dynamic Systems Analysis (DSA) Preboot speed up troubleshooting to reduce service time.
- Three-year customer replaceable unit and onsite limited warranty, next business day 9x5. Optional service upgrades available.

Manageability and security

Powerful systems management features simplify local and remote management of the x3550 M5 and deliver enterprise-class data protection:

- The server includes an Integrated Management Module II (IMM2) to monitor server availability and perform remote management.
- An integrated industry-standard Unified Extensible Firmware Interface (UEFI) enables improved setup, configuration, and updates, and simplifies error handling.
- XClarity Administrator offers comprehensive hardware management tools that help to increase uptime, reduce costs and improve productivity through advanced server management capabilities.
- An integrated Trusted Platform Module (TPM) supports the enablement of advanced cryptographic functionality, such as digital signatures and remote attestation.
- System x Trusted Platform Assurance, an exclusive set of System x security features and practices, establishes a foolproof security foundation for workloads by delivering firmware that is securely built, tested, digitally signed, and verified prior to execution.
- The server offers enterprise-class data protection with optional self-encrypting drives and simple, centralized key management through IBM Security Key Lifecycle Management.
- There is industry-standard AES NI support for faster, stronger encryption.
- Intel Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when combined with a supporting operating system.
- Intel Trusted Execution Technology provides enhanced security through hardware-based resistance to malicious software attacks, allowing an application to run in its own isolated space protected from all other software running on a system.

Energy efficiency

The x3550 M5 offers the following energy-efficiency features to save energy, reduce operational costs, increase energy availability, and contribute to a green environment:

- Energy-efficient planar components help lower operational costs.
- High-efficiency power supplies with 80 PLUS Platinum and Titanium certifications.
- Intel Intelligent Power Capability powers individual processor elements on and off as needed, to reduce power draw.
- Low-voltage Intel Xeon processors draw less energy to satisfy the demands of power and thermally constrained data centers and telecommunication environments.
- Low-voltage 1.2 V DDR4 memory DIMMs offer energy efficiency compared to 1.35 V and 1.5 V DDR3 DIMMs.
- The server uses hexagonal ventilation holes, a part of Calibrated Vectored Cooling™ technology. Hexagonal holes can be grouped more densely than round holes, providing more efficient airflow through the system.
- Intel Node Manager provide advanced data center power notification and management to help achieve lower heat output and reduced cooling needs.

Components and connectors

The following figure shows the front of the server.

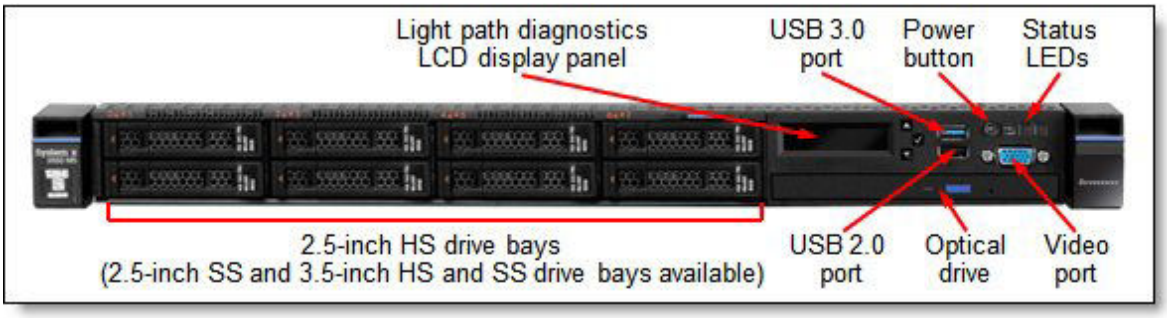

Figure 2. Front view of the System x3550 M5

The following figure shows the rear of the x3550 M5 server with three PCIe low profile slots.

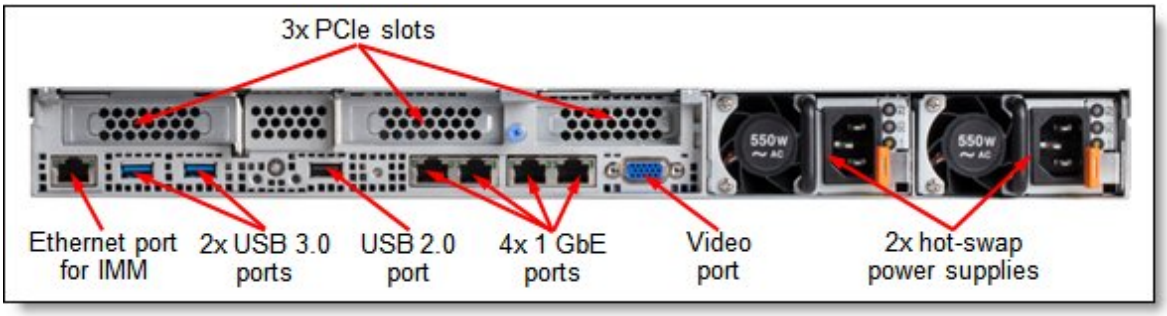

Figure 3. Rear view of the System x3550 M5

The following figure shows the locations of key components inside the server.

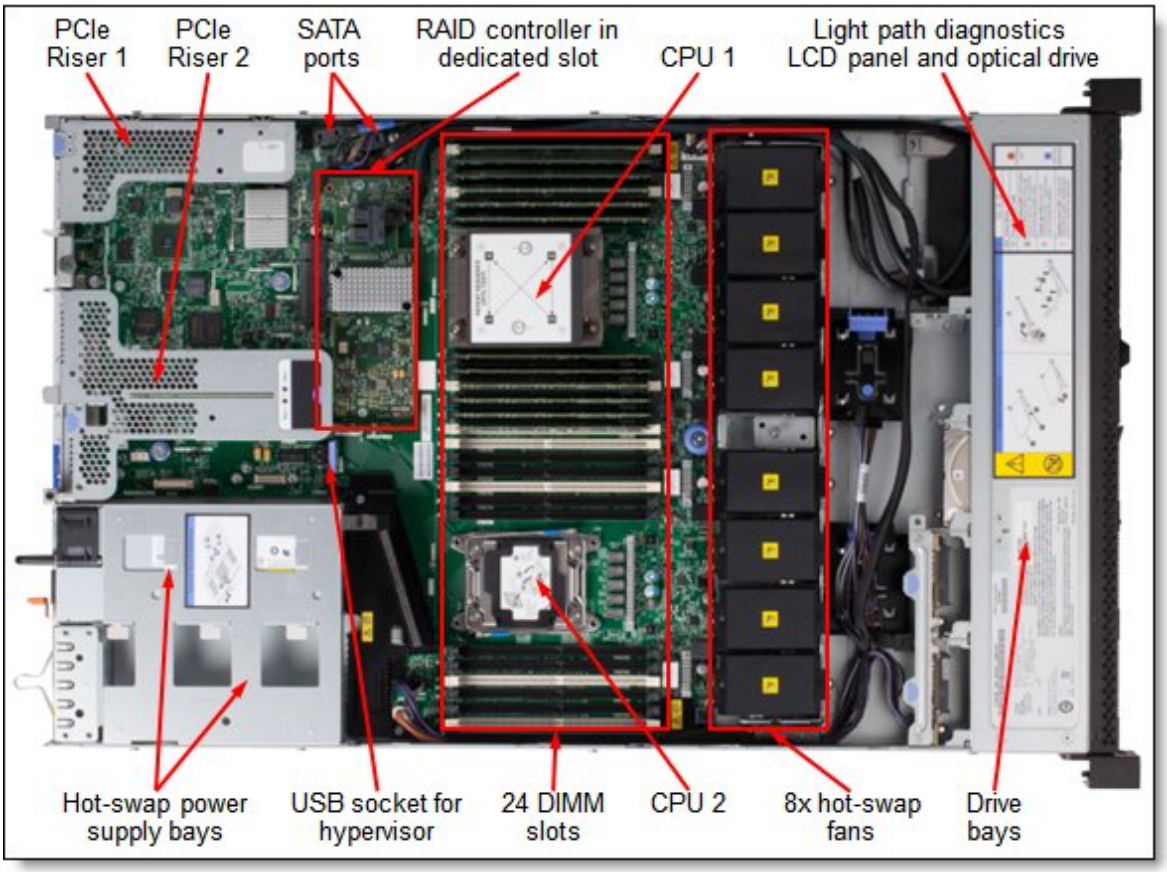

Figure 4. Inside view of the System x3550 M5

System specifications

The following table lists the system specifications.

Table 1. System specifications

Components	Specification
Machine type	5463
Form factor	1U rack-mount
Processor	Up to two Intel Xeon processor E5-2600 v3 product family CPUs with 18 or 16 cores (2.3 GHz core speeds); or 14, 12, or 10 cores (up to 2.6 GHz core speeds); or 8 cores (up to 3.2 GHz core speeds); or 6 cores (up to 3.4 GHz core speeds); or 4 cores (up to 3.5 GHz core speeds). Two QPI links up to 9.6 GT/s each. Up to 2133 MHz memory speed. Up to 45 MB L3 cache.
Chipset	Intel C612.
Memory	Up to 24 DIMM sockets (12 DIMMs per processor). RDIMMs and LRDIMMs (Load Reduced DIMMs) are supported. Memory types cannot be intermixed. Memory speed up to 2133 MHz.
Memory maximums	• With RDIMMs: Up to 768 GB with 24x 32 GB RDIMMs and two processors • With LRDIMMs: Up to 1.5 TB with 24x 64 GB LRDIMMs and two processors
Memory protection	Error correction code (ECC), Chipkill (for x4-based memory DIMMs).

Components	Specification
Drive bays	• Up to 12x 2.5" SAS/SATA hot-swap drive bays: 10x 2.5" (front) + 2x 2.5" (rear) • Up to 8x 2.5" SAS/SATA hot-swap drive bays: 4x 2.5" (front) + 4x 2.5" (front) • Up to 8x 2.5" SATA Simple Swap drive bays: 4x 2.5" (front) + 4x 2.5" (front) • 4x 3.5" SAS/SATA hot-swap drive bays • 4x 3.5" SATA Simple Swap drive bays
Storage capacity	• Up to 46 TB with 3.84 TB 2.5" SAS SSDs • Up to 40 TB with 10 TB 3.5" NL SAS or NL SATA HDDs • Up to 24 TB with 2 TB 2.5" NL SATA HDDs • Up to 21.6 TB with 1.8 TB 2.5" SAS HDDs Intermix of SAS and SATA drives is supported.
Storage controller	• Onboard 6 Gb SATA: no 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 with memory cache upgrades. Optional SSD Caching and Performance Accelerator upgrades are available. • 12 Gb SAS/SATA non-RAID: N2215 HBA
Optical drive bays	One, optional, for models with 4 or 8 drive bays (models with 10 drive bays do not support an internal optical drive). Support for DVD-ROM or Multiburner.
Tape drive bays	None.
Network interfaces	• 4x Integrated RJ-45 Gigabit Ethernet 1000BASE-T ports (BCM5719). • 1x Optional Mezzanine LOM (ML2) slot for dual-port 10 GbE cards with SFP+ or RJ-45 connectors or quad-port GbE cards with RJ-45 connectors. • 1x RJ-45 10/100/1000 Mb Ethernet systems management port.
PCI Expansion slots	Up to four slots, depending on the riser cards installed. The slots are as follows: • Slot 1: PCIe 3.0 x16 or ML2; low profile, half-length (not present if the HDD Rear Kit is installed) • Slot 2: PCIe 3.0 x16 or PCIe 3.0 x8; low profile or full-height, half-length (PCIe 3.0 x16 slot requires the second processor to be installed) (not present if the HDD Rear Kit is installed) • Slot 3: PCIe 3.0 x16 or PCIe 3.0 x8; low profile, half-length • Slot 4: PCIe 3.0 x8 (dedicated for an internal RAID controller)
Ports	• Front: 1x USB 2.0 (8x 2.5" drive bay models) or 2x USB 2.0 l (4x 3.5" and 10x 2.5" drive bay models), 1x USB 3.0, and 1x VGA. • Rear: 2x USB 3.0, 1x USB 2.0, and 1x VGA. Optional 1x DB-9 serial port. • Internal: 1x USB 3.0 port (for embedded hypervisor). • Internal: 1x SD Media Adapter slot (for embedded hypervisor)
Cooling	Calibrated Vectored Cooling with up to eight redundant hot-swap fans (six standard, additional two with the second processor or with the x3550 M5 Thermal Solution Kit); dual fan zones with N+1 fan redundancy; each fan has two motors.
Power supply	Up to two redundant hot-swap 550 W, 750 W, or 900 W (100-240V), or 1500 W (200-240V) High Efficiency Platinum AC power supplies, or 750 W High Efficiency Titanium AC power supplies, or 900 W High Efficiency -48 V DC power supplies.
Hot-swap parts	Hard drives, power supplies, and fans.

Components	Specification
Systems management	Unified Extensible Firmware Interface (UEFI), Integrated Management Module II (IMM2.1) based on Renesas SH7758, Predictive Failure Analysis, light path diagnostics, Automatic Server Restart, ToolsCenter, XClarity Administrator, and Intel Node Manager. Optional Advanced Management Module Advanced Upgrade for remote presence (graphics, keyboard and mouse, virtual media).
Security features	Power-on password, administrator's password, Trusted Platform Module (TPM) 2.0-ready. Optional lockable front bezel.
Video	Matrox G200eR2 with 16 MB memory integrated into the IMM2. Maximum resolution is 1600x1200 at 75 Hz with 16 M colors.
Operating systems	Microsoft Windows Server 2008 R2, 2012, 2012 R2, and 2016; Red Hat Enterprise Linux 6 and 7; SUSE Linux Enterprise Server 11 and 12; VMware vSphere (ESXi) 5.1, 5.5, 6.0, and 6.5.
Limited warranty	Three-year customer-replaceable unit and onsite limited warranty with 9x5/Next Business Day (NBD).
Service and support	Optional service upgrades are available through the Lenovo Services: 4-hour or 2-hour response time, 8 hours fix time, one-year or two-year warranty extension, remote technical support for System x hardware and selected System x and third-party (Microsoft, Linux, VMware) software.
Dimensions	Height: 43 mm (1.7 in), width: 429 mm (16.9 in), depth: 734 mm (28.9 in)
Weight	Minimum configuration: 13.8 kg (30.5 lb), maximum: 19.3 kg (42.7 lb)

Standard models

Product availability: The Lenovo System x3550 M5 (Machine Type 5463) server models are withdrawn and no longer available for ordering. For currently available 1U dual-socket rack-mount servers, refer to the following product guides:

- Lenovo ThinkSystem SR530 Server Product Guide
  http://lenovopress.com/lp0639
- Lenovo ThinkSystem SR570 Server Product Guide
  http://lenovopress.com/lp0641
- Lenovo ThinkSystem SR630 Server Product Guide
  http://lenovopress.com/lp0643

Express and TopSeller models

Product availability: The Lenovo System x3550 M5 (Machine Type 5463) server models are withdrawn and no longer available for ordering. For currently available 1U dual-socket rack-mount servers, refer to the following product guides:

- Lenovo ThinkSystem SR530 Server Product Guide
  http://lenovopress.com/lp0639
- Lenovo ThinkSystem SR570 Server Product Guide
  http://lenovopress.com/lp0641
- Lenovo ThinkSystem SR630 Server Product Guide
  http://lenovopress.com/lp0643

Processors

The x3550 M5 supports the processor options listed in the following table. The server supports up to two processors. This table shows which server models have each processor standard. If there is no corresponding *where used* model for a particular processor, this processor is only available through Configure-to-order (CTO). The processor part numbers include a CPU, a heatsink, and two system fans.

Table 4. Processor options

Description	Part number	Feature codes*
Intel Xeon Processor E5-2603 v3 6C 1.6GHz 15MB 1600MHz 85W	00KA070	A5BF / A5BV
Intel Xeon Processor E5-2608L v3 6C 2.0GHz 15MB 1866MHz 52W	00MU566	ASL6 / ASLF
Intel Xeon Processor E5-2609 v3 6C 1.9GHz 15MB 1600MHz 85W	00KA071	A5BG / A5BW
Intel Xeon Processor E5-2618L v3 8C 2.3GHz 20MB 1866MHz 75W	00MU567	ASL7 / ASLG
Intel Xeon Processor E5-2620 v3 6C 2.4GHz 15MB 1866MHz 85W	00KA067	A5BC / A5BS
Intel Xeon Processor E5-2623 v3 4C 3.0GHz 10MB 1866MHz 105W	00MU407	ASCT / ASD4
Intel Xeon Processor E5-2628L v3 10C 2.0GHz 25MB 1866MHz 75W	00MU568	ASL8 / ASLH
Intel Xeon Processor E5-2630 v3 8C 2.4GHz 20MB 1866MHz 85W	00KA068	A5BD / A5BT
Intel Xeon Processor E5-2630L v3 8C 1.8GHz 20MB 1866MHz 55W	00KA077	A5BN / A5C2
Intel Xeon Processor E5-2637 v3 4C 3.5GHz 15MB 2133MHz 135W	00MU408	ASCU / ASD5
Intel Xeon Processor E5-2640 v3 8C 2.6GHz 20MB 1866MHz 90W	00KA069	A5BE / A5BU
Intel Xeon Processor E5-2643 v3 6C 3.4GHz 20MB 2133MHz 135W	00MU409	ASCV / ASD6
Intel Xeon Processor E5-2648L v3 12C 1.8GHz 30MB 2133MHz 75W	00MU569	ASL9 / ASLJ
Intel Xeon Processor E5-2650 v3 10C 2.3GHz 25MB 2133MHz 105W	00KA072	A5BH / A5BX
Intel Xeon Processor E5-2650L v3 12C 1.8GHz 30MB 2133MHz 65W	00MU406	ASCS / ASD3
Intel Xeon Processor E5-2658 v3 12C 2.2GHz 30MB 2133MHz 105W	00MU570	ASLA / ASLK
Intel Xeon Processor E5-2660 v3 10C 2.6GHz 25MB 2133MHz 105W	00MU400	ASCL / ASCX
Intel Xeon Processor E5-2667 v3 8C 3.2GHz 20MB 2133MHz 135W	00MU410	ASCW / ASD7
Intel Xeon Processor E5-2670 v3 12C 2.3GHz 30MB 2133MHz 120W	00KA074	A5BK / A5BZ
Intel Xeon Processor E5-2680 v3 12C 2.5GHz 30MB 2133MHz 120W	00KA075	A5BL / A5C0
Intel Xeon Processor E5-2683 v3 14C 2.0GHz 35MB 2133MHz 120W	00MU401	ASCM / ASCY
Intel Xeon Processor E5-2685 v3 12C 2.6GHz 30MB 2133MHz 120W	00MU402	ASCN / ASCZ
Intel Xeon Processor E5-2690 v3 12C 2.6GHz 30MB 2133MHz 135W	00KA076	A5BM / A5C1
Intel Xeon Processor E5-2695 v3 14C 2.3GHz 35MB 2133MHz 120W	00MU403	ASCP / ASD0
Intel Xeon Processor E5-2697 v3 14C 2.6GHz 35MB 2133MHz 145W	00MU404	ASCQ / ASD1
Intel Xeon Processor E5-2698 v3 16C 2.3GHz 40MB 2133MHz 135W	00MU405	ASCR / ASD2
Intel Xeon Processor E5-2699 v3 18C 2.3GHz 45MB 2133MHz 145W	00KF584	ARZ8 / ARZ9

* The first feature code is for the first processor; the second feature code is for the second processor.

Memory

System x3550 M5 supports TruDDR4 Memory. TruDDR Memory uses the highest-quality components sourced from Tier 1 DRAM suppliers and only memory that meets our strict requirements is selected. It is compatibility tested and tuned on every System x server to maximize performance and reliability.

TruDDR4 Memory will have a unique signature programmed into the DIMM, which will enable System x servers to verify whether the memory installed is qualified/supported. Because TruDDR4 Memory is authenticated, certain extended memory performance features can be enabled to extend performance over industry standards. From a service and support standpoint, System x memory automatically assumes the system's warranty, and service and support provided worldwide.

The server supports up to 12 DIMMs when one processor is installed and up to 24 DIMMs when two processors are installed. Each processor has four memory channels, and there are three DIMMs per channel.

The following rules apply when selecting the memory configuration:

- The server supports RDIMMs and LRDIMMs.
- Mixing different types of memory (RDIMMs and LRDIMMs) is not supported.
- The maximum quantity of DIMMs that can be installed in the server depends on the number of processors.
- All DIMMs in the server operate at the same speed, which is determined as the lowest value of the following speeds:
    - Memory speed that is supported by the specific processor.
    - Lowest of maximum operating speeds for selected memory configuration that depends on quantity of DIMMs per channel, as shown under "Maximum operating speed" in Table 5.

The following memory protection technologies are supported:

- ECC
- Chipkill (for x4-based memory DIMMs)

Chipkill works only in independent channel mode (the default operational mode) and supports only x4-based memory DIMMs.

The following table shows the characteristics of the supported DIMMs. Table cells highlighted with a gray background indicate when the number of DIMMs per channel still allows the DIMMs to operate at a rated speed.

Table 5. Maximum memory speeds and capacities

DIMM specification	**RDIMM**			**LRDIMM**
Rank	Single rank	Dual rank		Quad rank
Part numbers	46W0784 (4 GB) 46W0788 (8 GB)	46W0792 (8 GB)	46W0796 (16 GB) 95Y4808 (32 GB)	46W0800 (32 GB) 95Y4812 (64 GB)
Rated speed	2133 MHz	2133 MHz	2133 MHz	2133 MHz
Rated voltage	1.2 V	1.2 V	1.2 V	1.2 V
Maximum quantity supported**	24	24	24	24
Maximum DIMM capacity	8 GB	8 GB	32 GB	64 GB
Maximum memory capacity	192 GB	192 GB	768 GB	1.5 TB
Maximum memory at rated speed	128 GB	128 GB	512 GB	1 TB
Maximum operating speed				
1 DIMM per channel	2133 MHz	2133 MHz	2133 MHz	2133 MHz
2 DIMMs per channel	2133 MHz	2133 MHz	2133 MHz	2133 MHz
3 DIMMs per channel	1600 MHz	1600 MHz	1866 MHz	1866 MHz

** The maximum quantity that is supported is shown for two processors installed.

The following table lists memory options available for the x3550 M5 server.

Table 6. Memory options

Description	Part number	Feature code	Maximum supported*
RDIMMs - 2133 MHz			
4GB TruDDR4 Memory (1Rx8, 1.2V) PC4-17000 CL15 2133MHz LP RDIMM	46W0784	A5B6	12 / 24
8GB TruDDR4 Memory (1Rx4, 1.2V) PC4-17000 CL15 2133MHz LP RDIMM	46W0788	A5B5	12 / 24
8GB TruDDR4 Memory (2Rx8, 1.2V) PC4-17000 CL15 2133MHz LP RDIMM	46W0792	A5B8	12 / 24
16GB TruDDR4 Memory (2Rx4, 1.2V) PC4-17000 CL15 2133MHz LP RDIMM	46W0796	A5B7	12 / 24
32GB TruDDR4 Memory (2Rx4, 1.2V) PC4-17000 CL15 2133MHz LP RDIMM	95Y4808	A5UJ	12 / 24
LRDIMMs - 2133 MHz			
32GB TruDDR4 Memory (4Rx4, 1.2V) PC417000 CL15 2133MHz LP LRDIMM	46W0800	A5B9	12 / 24
64GB TruDDR4 Memory (4Rx4,1.2V) PC4-17000 CL15 2133MHz LP LRDIMM	95Y4812	A5UK	12 / 24

* The maximum quantity shown is for one processor / two processors.

Internal storage

The System x3550 M5 server supports the following internal drive bay configurations:

1. 4x 2.5-inch SAS/SATA hot-swap drive bay server models that can be upgraded to 8x 2.5-inch SAS/SATA hot-swap drive bays
2. 10x 2.5-inch SAS/SATA hot-swap drive bay server models that can be upgraded to 12x 2.5-inch SAS/SATA hot-swap drive bays (10x front drive bays and 2x rear drive bays)
3. 4x 2.5-inch SATA Simple Swap drive bay server models that can be upgraded to 8x 2.5-inch SATA Simple Swap drive bays
4. 4x 3.5-inch SAS/SATA hot-swap drive bay server models
5. 4x 3.5-inch SATA Simple Swap drive bay server models

The following figure shows some of these configurations.

Figure 5. Internal drive configurations

Note: Four- and eight-drive bay models of the x3550 M5 support an optional internal optical drive.

The following table shows the internal storage options available for the x3550 M5 server.

Table 7. Internal storage options

Description	Part number	Feature code	Maximum supported
Base drive kits			
System x3550 M5 4x 2.5" HS HDD Kit	None*	A59W	1
System x3550 M5 4x 3.5" HS HDD Kit	None*	A5A4	1
System x3550 M5 10x 2.5" HS HDD Kit	None*	A5A0	1
System x3550 M5 4x 2.5" SS HDD Kit, Non-Raid	None*	A59Y	1
System x3550 M5 4x 3.5" SS HDD Kit, Non-Raid	None*	A5A5	1
System x3550 M5 4x 2.5" SS HDD Kit, HW RAID	None*	A5A6	1
System x3550 M5 4x 3.5" SS HDD Kit, HW RAID	None*	A5A8	1
Upgrade drive kits (require the base drive kit)			
System x3550 M5 2x 2.5" HS HDD Rear Kit	00KA058	A5A2	1
System x3550 M5 4x 2.5" HS HDD Kit PLUS	00KA055	A59X	1
System x3550 M5 4x 2.5" SS HDD Kit PLUS, Non-Raid	00KA056	A59Z	1
System x3550 M5 4x 2.5" SS HDD Kit PLUS, HW RAID	00KA060	A5A7	1

* Available in standard or CTO models, or both.

Base drive kits are always factory installed in either standard or custom (CTO) models. Upgrade drive kits can be factory installed or can be installed as a field upgrade for supported standard or custom models.

The following table lists possible internal storage configurations.

Table 8. Internal storage configurations (FC=Feature Code, PN=Part Number)

Drive bay configuration	Storage controller*	Drive kits required
4x 2.5-inch SAS/SATA hot-swap (front)	1x RAID or HBA	Factory installed: • 1x System x3550 M5 4x 2.5" HS HDD Kit (FC A59W)
8x 2.5-inch SAS/SATA hot-swap (front)	1x RAID or HBA	Factory installed: • 1x System x3550 M5 4x 2.5" HS HDD Kit (FC A59W); and • 1x System x3550 M5 4x 2.5" HS HDD Kit PLUS (FC A59X) Field upgrade for the 4-drive bay model: • 1x System x3550 M5 4x 2.5" HS HDD Kit PLUS (PN 00KA055)
10x 2.5-inch SAS/SATA hot-swap (front)	1x RAID or HBA	Factory installed: • 1x System x3550 M5 10x 2.5" HS HDD Kit (FC A5A0)
10x 2.5-inch (front) + 2x 2.5-inch (rear) SAS/SATA hot-swap	1x RAID or HBA	Factory installed: • 1x System x3550 M5 10x 2.5" HS HDD Kit (FC A5A0); and • 1x System x3550 M5 2x 2.5" HS HDD Rear Kit (FC A5A2) Field upgrade for the 10-drive bay model: • 1x System x3550 M5 2x 2.5" HS HDD Rear Kit (PN 00KA058)
4x 2.5-inch SATA Simple Swap (front)	Integrated 8-port 6 Gbps SATA (no RAID support)	Factory installed: • 1x x3550 M5 4x 2.5" SS HDD Kit, Non-Raid (FC A59Y)
	1x RAID or HBA	Factory installed: • 1x x3550 M5 4x 2.5" SS HDD Kit, HW RAID (FC A5A6)

Drive bay configuration	Storage controller*	Drive kits required
8x 2.5-inch SATA Simple Swap (front)	Integrated 8-port 6 Gbps SATA (no RAID support)	Factory installed: • 1x x3550 M5 4x 2.5" SS HDD Kit, Non-Raid (FC A59Y); and • 1x x3550 M5 4x 2.5" SS HDD Kit PLUS, Non-Raid (FC A59Z) Field upgrade for the 4-drive bay model: • 1x x3550 M5 4x 2.5" SS HDD Kit PLUS, Non-Raid (PN 00KA056)
	1x RAID or HBA	Factory installed: • 1x x3550 M5 4x 2.5" SS HDD Kit, HW RAID (FC A5A6); and • 1x x3550 M5 4x 2.5" SS HDD Kit PLUS, HW RAID (FC A5A7) Field upgrade for the 4-drive bay model: • 1x x3550 M5 4x 2.5" SS HDD Kit PLUS, HW RAID (PN 00KA060)
4x 3.5-inch SAS/SATA hot-swap (front)	1x RAID or HBA	Factory installed: • 1x System x3550 M5 4x 3.5" HS HDD Kit (FC A5A4)
4x 3.5-inch SATA Simple Swap (front)	Integrated 8-port 6 Gbps SATA (no RAID support)	Factory installed: • 1x System x3550 M5 4x 3.5" SS HDD Kit, Non-Raid (FC A5A5)
	1x RAID or HBA	Factory installed: • 1x System x3550 M5 4x 3.5" SS HDD Kit, HW RAID (FC A5A8)

* In the Storage controller column, RAID or HBA means any supported controller for internal storage: M1215, M5210, or N2215.
** Requires the selection of the second processor and a PCIe x16 riser card 2 (feature code A5AF or A5AD); if 145 W processors (E5-2697 v3 and E5-2699 v3) are selected, the ambient temperature cannot exceed 35 °C (95 °F).

Configuration notes:

- The HDD Rear Kit (00KA058) is installed in place of the PCIe slots 1 and 2 (see the "I/O expansion options" section), and it includes a special riser that provides PCIe 3.0 x16 slot 3. No other riser cards can be used when the HDD Rear Kit is installed.
- 145 W and 135 W processors cannot be used when the HDD Rear Kit is installed.
- The HDD Rear Kit is connected to the SAS expander on the 10-drive backplane.

Controllers for internal storage

The following table lists the RAID controllers and the additional options used for the internal storage of the x3550 M5 server. The internal storage controllers are installed into a dedicated PCIe slot 4.

Table 9. RAID controllers and HBAs for internal storage

Description	Part number	Feature code	Maximum supported	I/O slots supported
12 Gb SAS/SATA controllers				
ServeRAID M5210 SAS/SATA Controller	46C9110	A3YZ	1	4
ServeRAID M1215 SAS/SATA Controller	46C9114	A45W	1	4
N2215 SAS/SATA HBA	47C8675	A3YY	1	4
Hardware upgrades for the M5210 (per one controller)				
ServeRAID M5200 Series 1GB Cache/RAID 5 Upgrade	47C8656	A3Z0	1	-
ServeRAID M5200 Series 1GB Flash/RAID 5 Upgrade	47C8660	A3Z1	1	-
ServeRAID M5200 Series 2GB Flash/RAID 5 Upgrade	47C8664	A3Z2	1	-
ServeRAID M5200 Series 4GB Flash/RAID 5 Upgrade	47C8668	A3Z3	1	-
Features on Demand upgrades for the M5210 (per one server)**				
ServeRAID M5200 Series Zero Cache/RAID 5 Upgrade	47C8708	A3Z6	1	-
ServeRAID M5200 Series RAID 6 Upgrade	47C8706	A3Z5	1*	-
ServeRAID M5200 Series Performance Accelerator	47C8710	A3Z7	1*	-
ServeRAID M5200 Series SSD Caching Enabler	47C8712	A3Z8	1*	-
Features on Demand upgrades for the M1215 (per one server)**				
ServeRAID M1200 Zero Cache/RAID 5 Upgrade	00AE930	A5H5	1	-

* Requires cache memory upgrade (47C8656, 47C8660, 47C8664, or 47C8668).
** ServeRAID Feature on Demand upgrades are system-wide. One FoD upgrade part number will enable the feature on all ServeRAID M5200 Series adapters (M5210, M5210e, M5225) installed in the server.

The following table summarizes features of supported drive controllers.

Table 10. Drive controller features and specifications summary

Feature	**Integrated 6 Gb SATA non-RAID)**	**M1215**	**M5210**	**N2215**
Part number	None	46C9114	46C9110	47C8675
Form factor	Onboard	PCIe low profile	PCIe low profile	PCIe low profile
Controller chip	Not applicable	LSI SAS3008	LSI SAS3108	LSI SAS3008
Host interface	Not applicable	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8
Port interface	6 Gbps SATA	12 Gbps SAS	12 Gbps SAS	12 Gbps SAS
Number of ports	8	8	8	8
Port connectors	2x SATA x4	2x Mini-SAS HD x4 (SFF-8643)	2x Mini-SAS HD x4 (SFF-8643)	2x Mini-SAS HD x4 (SFF-8643)
Drive interface	SATA	SAS, SATA	SAS, SATA	SAS, SATA
Drive type	HDD	HDD, SSD, SED	HDD, SSD, SED	HDD, SSD
Drive form factor	SFF, LFF	SFF, LFF	SFF, LFF	SFF, LFF
Hot-swap drives	No	Yes	Yes	Yes
Max devices	8	32 (RAID); 64 (JBOD)	240	1024
RAID levels	None	0/1/10; Optional 5/50 (00AE930)	0/1/10; Optional 5/50 (RAID 5 FoD, 47C8708, or cache upgrades); Optional 6/60 (47C8706)	None
JBOD mode	Yes	Yes	Yes (without cache)	Yes
Cache	None	None	1 GB no backup (47C8656) 1 GB flash backup (47C8660) 2 GB flash backup (47C8664) 4 GB flash backup (47C8668)	None
SafeStore	No	Yes (with RAID 5 FoD upgrade)	Yes (with RAID 5 FoD or any cache upgrade)	No
Performance Accelerator (FastPath)	No	No	Optional (47C8710)	No
SSD Caching (CacheCade Pro 2.0)	No	No	Optional (47C8712)	No

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

The following table lists drive types and internal bays supported by the drive controllers.

Table 11. Storage controllers, drive types, and internal drive bays

Drive bays	Storage Controller	Drive type					
		SAS HDD	NL SAS HDD	NL SATA HDD	SAS SED	SAS SSD	SATA SSD
Front drive bays							
4/8/10x 2.5-inch SAS/SATA hot-swap (front)	M1215	Yes	Yes	Yes	Yes*	Yes	Yes
	M5210	Yes	Yes	Yes	Yes**	Yes	Yes
	N2215	Yes	Yes	Yes	No	Yes	Yes
4x 3.5-inch SAS/SATA hot-swap (front)	M1215	Yes	Yes	Yes	No	No	Yes
	M5210	Yes	Yes	Yes	No	No	Yes
	N2215	Yes	Yes	Yes	No	No	Yes
4/8x 2.5-inch SATA Simple Swap (front)	Integrated SATA	No	No	Yes	No	No	No
	M1215	No	No	Yes	No	No	No
	M5210	No	No	Yes	No	No	No
	N2215	No	No	Yes	No	No	No
4x 3.5-inch SATA Simple Swap (front)	Integrated SATA	No	No	Yes	No	No	No
	M1215	No	No	Yes	No	No	No
	M5210	No	No	Yes	No	No	No
	N2215	No	No	Yes	No	No	No
Rear drive bays							
2x 2.5-inch SAS/SATA hot-swap (rear)#	M1215	Yes	Yes	Yes	Yes*	Yes	Yes
	M5210	Yes	Yes	Yes	Yes**	Yes	Yes
	N2215	Yes	Yes	Yes	No	Yes	Yes

Rear drives are supported only for 10x 2.5" drive bay models and connected to the SAS expander on the 10-drive backplane.
* SEDs are supported with the RAID 5 FoD upgrade (00AE930).
** SEDs are supported with the RAID 5 FoD upgrade (47C8708) or any cache upgrade (47C8656, 47C8660, 47C8664, 47C8668).

Drives for internal storage

The following tables list currently available drive options for internal storage of the x3550 M5 server.

Table 12. Internal drive options: 2.5-inch hot-swap drives

Description	Part number	Feature code	Maximum supported
2.5-inch hot-swap HDDs - 12 Gbps SAS			
300GB 10K 12Gbps SAS 2.5" G3HS HDD	00WG685	AT89	12
300GB 15K 12Gbps SAS 2.5" G3HS HDD	00WG660	AT84	12
600GB 10K 12Gbps SAS 2.5" G3HS HDD	00WG690	AT8A	12
600GB 15K 12Gbps SAS 2.5" G3HS HDD	00WG665	AT85	12
900GB 10K 12Gbps SAS 2.5" G3HS HDD	00WG695	AT8B	12
1.2TB 10K 12Gbps SAS 2.5" G3HS HDD	00WG700	AT8C	12
1.8TB 10K 12Gbps SAS 2.5" G3HS 512e HDD	00NA271	ASBM	12
2.5-inch hot-swap HDDs - 12 Gbps NL SAS			
1TB 7.2K 12Gbps NL SAS 2.5" G3HS HDD	00NA491	AT7Z	12
2TB 7.2K 12Gbps NL SAS 2.5" G3HS HDD	00NA496	AT80	12
2.5-inch hot-swap HDDs - 6 Gbps NL SATA			
1TB 7.2K 6Gbps NL SATA 2.5" G3HS HDD	00AJ141	A4TX	12
2TB 7.2K 6Gbps NL SATA 2.5" G3HS 512e HDD	00NA526	AT81	12
2.5-inch hot-swap SEDs - 12 Gbps SAS			
300GB 10K 12Gbps SAS 2.5" G3HS SED	00WG705	AT8D	12
600GB 10K 12Gbps SAS 2.5" G3HS SED	00WG710	AT8E	12
900GB 10K 12Gbps SAS 2.5" G3HS SED	00WG715	AT8F	12
1.2TB 10K 12Gbps SAS 2.5" G3HS SED	00WG720	AT8G	12

Table 13. Internal drive options: 2.5-inch simple-swap drives

Description	Part number	Feature code	Maximum supported
2.5-inch simple-swap HDDs - 6 Gbps NL SATA			
1TB 7.2K 6Gbps NL SATA 2.5" G3SS HDD	00NA622	ASLD	8

Table 14. Internal drive options: 3.5-inch hot-swap drives

Description	Part number	Feature code	Maximum supported
3.5-inch hot-swap HDDs - 12Gbps SAS			
300GB 15K 12Gbps SAS 3.5" G2HS HDD	00WG675	AT87	4
600GB 15K 12Gbps SAS 3.5" G2HS HDD	00WG680	AT88	4
3.5-inch hot-swap HDDs - 12 Gbps NL SAS			
1TB 7.2K 12Gbps NL SAS 3.5" G2HS HDD	00YL702	ATYM	4
2TB 7.2K 12Gbps NL SAS 3.5" G2HS HDD	00YK000	ATYL	4
2TB 7.2K 12Gbps NL SAS 3.5" G2HS 512e HDD	00FN188	A5VP	4
4TB 7.2K 12Gbps NL SAS 3.5" G2HS HDD	00YK005	ATYN	4
6TB 7.2K 12Gbps NL SAS 3.5" G2HS 512e HDD	00FN228	A5VR	4
8TB 7.2K 12Gbps NL SAS 3.5" G2HS 512e HDD	00WH121	ATRS	4
10TB 7.2K 12Gbps NL SAS 3.5" G2HS 512e HDD	00YK336	AU7R	4
3.5-inch hot-swap HDDs - 6 Gbps NL SATA			
1TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	81Y9790	A22P	4
2TB 7.2K 6Gbps NL SATA 3.5" G2HS HDD	81Y9794	A22T	4
6TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	00FN173	A5VM	4
8TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	00WH126	ATRT	4
10TB 7.2K 6Gbps NL SATA 3.5" G2HS 512e HDD	00YK341	AU7S	4

Table 15. Internal drive options: 3.5-inch simple-swap drives

Description	Part number	Feature code	Maximum supported
3.5-inch simple-swap HDDs - 6 Gbps NL SATA			
1TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	81Y9806	A22X	4
2TB 7.2K 6Gbps NL SATA 3.5" G2SS HDD	81Y9810	A22W	4

Optical drives

The x3550 M5 server supports the optical drive options listed in the following table. Server models with ten 2.5-inch drive bays on the front do not support an internal optical drive; a supported external optical drive can be used instead.

Table 16. Optical drives

Description	Part number	Feature code	Maximum supported
Ultraslim 9.5mm SATA DVD-ROM	00AM066	A5KG	1
Ultraslim 9.5mm SATA Multi Burner	00AM067	A5KH	1

Ultraslim 9.5mm SATA DVD-ROM (part number 00AM066) supports the following media and speeds for reading:

- CD-ROM 24X
- CD-DA (DAE) 24X
- CD-R 24X
- CD-RW 24X
- DVD-ROM 8X
- DVD-R 8X
- DVD+R 8X
- DVD-R DL 6X
- DVD+R DL 8X
- DVD-RW 8X
- DVD+RW 8X

Ultraslim 9.5mm SATA Multi Burner (part number 00AM067) supports the same media and speeds for reading as DVD-ROM (part number 00AM066). This drive also supports the following media and speeds for writing:

- CD-R 24X
- CD-RW 4X
- High-Speed CD-RW 10X
- Ultra Speed CD-RW 24X
- DVD-R 8X
- DVD+R 8X
- DVD-R DL 6X
- DVD+R DL 6X
- DVD-RW 6X
- DVD+RW 8X

I/O expansion

The x3550 M5 server supports up to four PCIe slots: one on the system planar that is dedicated for an internal RAID controller and up to three with different riser cards installed into two riser sockets on the system planar (one riser socket supports the installation of one riser card). The slot form factors are listed:

- Slot 1: PCIe 3.0 x16 or ML2; low profile, half-length (not present if the HDD Rear Kit is installed)
- Slot 2: PCIe 3.0 x16 or PCIe 3.0 x8; low profile or full-height, half-length (PCIe 3.0 x16 slot requires the second processor to be installed) (not present if the HDD Rear Kit is installed)
- Slot 3: PCIe 3.0 x16 or PCIe 3.0 x8; low profile, half-length
- Slot 4: PCIe 3.0 x8 (dedicated for an internal RAID controller)

The locations of the PCIe slots are shown in the following figure.

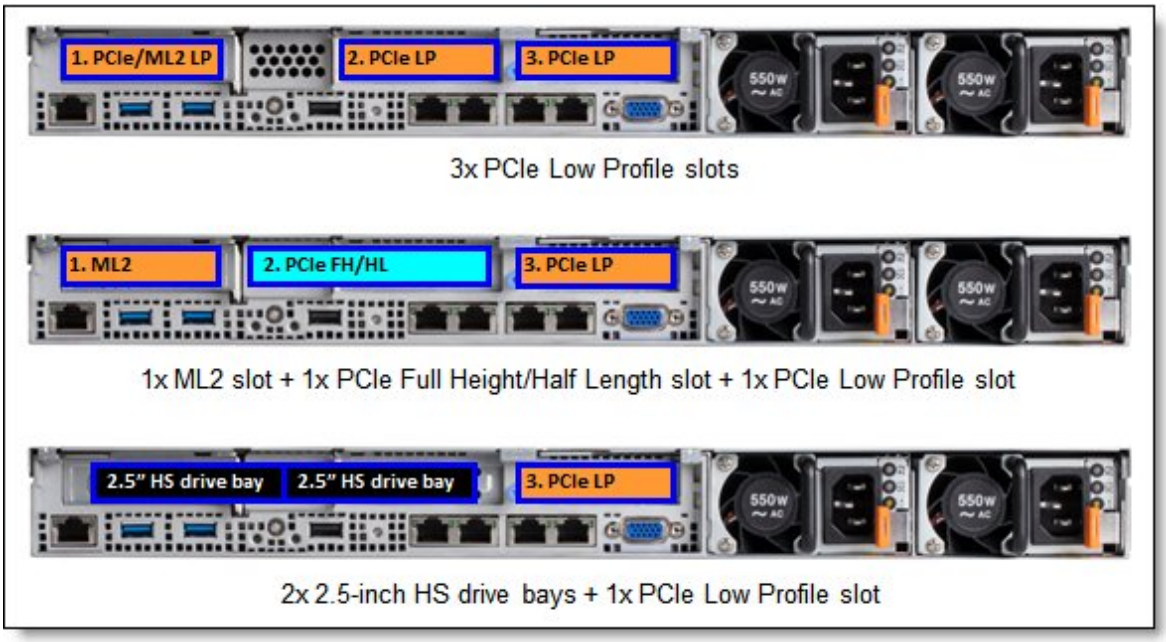

Figure 6. PCIe slot locations

Riser 1 supplies slot 1, and Riser 2 supplies slots 2 and 3. The slots that are available for use depend on the number of riser cards that are installed and whether the second processor is installed:

- One or two processors and no riser cards: Slot 4 is available for use
- One or two processors and one riser card in riser slot 1: Slots 1 and 4 are available for use
- One processor and one PCIe x16 riser card in riser slot 2: Slots 3 and 4 are available for use
- One processor and one PCIe x8 riser card in riser slot 2: Slots 2, 3 and 4 are available for use
- Two processors and one riser card in riser slot 2: Slots 2, 3 and 4 are available for use
- Two processors and two riser cards: All slots (1, 2, 3, and 4) are available for use

All standard models have one riser card (Riser 1) installed, which provides one low profile PCIe x16 Gen 3 slot (riser option part number 00KA061). You can replace the first riser card or add a second riser card with the riser card options that are listed in the following table (or configure these riser cards to be factory-integrated using special bid or CTO).

Table 17. PCI riser card options

Description	Part number	Feature code	Maximum supported
Riser 1 (supplies slots 1)			
System x3550 M5 PCIe Riser 1 (1x LP x16 CPU0)	00KA061	A5AG	1
System x3550 M5 PCIe Riser 1 (1x ML2 x16 CPU0)	00KA063	A5AH	1
Riser 2 (supplies slots 2 and 3)			
System x3550 M5 PCIe Riser 2, 1 CPU (2xLP, LP x8 CPU0 + LP x8 CPU0)	00KA062	A5AC	1
System x3550 M5 PCIe Riser 2, 1-2 CPU (FHHL x16 CPU1 + LP x16 CPU0)	None*	A5AD	1
System x3550 M5 PCIe Riser 2, 1 CPU (FHHL x8 CPU0 +LP x8 CPU0)	None*	A5AE	1
System x3550 M5 PCIe Riser 2, 1-2 CPU (LP x16 CPU1 + LP x16 CPU0)	00KA066	A5AF	1

* Only available via CTO or special bid.

Configuration notes:

- The 1 CPU Riser 2 options (feature codes A5AC and A5AE) are supported only in configurations with one processor. If two processors are selected, these options cannot be used.
- If the FHHL x16 Riser 2 option (feature code A5AD) is selected, the x16 Riser 1 option (feature code A5AG) cannot be used.
- If both ML2 Riser 1 (feature code A5AH) and FHHL x16 Riser 2 option (feature code A5AD) are selected, only one of the following ML2 network adapters can be selected:
  - Broadcom NetXtreme II ML2 Dual Port 10GbaseT (part number 00D2026)
  - Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+ (part number 00D2028)
  - Emulex VFA5 ML2 Dual Port 10GbE SFP+ Adapter (part number 00D1996)
  - Intel X540 ML2 Dual Port 10GbaseT Adapter (part number 00D1994)
  - Intel I350-T4 ML2 Quad Port GbE Adapter (part number 00D1998)
- The HDD Rear Kit (00KA058; see the "Internal storage" section) is installed in place of the PCIe slots 1 and 2, and it includes a special riser that provides PCIe 3.0 x16 slot 3. No other riser cards can be used when the HDD Rear Kit is installed.

Miscellaneous options for I/O expansion

The x3550 M5 Thermal Kit, part number 00KA059, contains two fans. It provides the seventh and eighth system fans needed for the following options when only one processor is installed:

- Intel X540 ML2 Dual Port 10GbaseT Adapter
- QLogic 8200 Dual Port 10GbE SFP+ VFA
- io3 Enterprise Flash Adapters
- io3 Enterprise Value Flash Adapters
- io3 Enterprise Mainstream Flash Adapters
- P3700 NVMe Enterprise Performance Flash Adapters

The x3550 M5 Thermal Kit is not needed if two processors are installed, because the second processor includes these fans.

The COM Port Bracket, part number 00KA161, is used for mounting the external serial port on the rear of the x3550 M5. This option includes the bracket and the cable. The COM Port option is mounted in place of the PCIe slot 3, and only PCIe slots 1 and 2 remain available.

The following table lists the x3550 M5 Thermal Kit and COM Port Bracket part numbers.

Table 18. Miscellaneous options

Description	Part number	Feature code	Maximum supported
System x3550 M5 Thermal Kit	00KA059	A5AJ	1
COM Port Bracket	00KA161	A5AN	1

Network adapters

The x3550 M5 supports four integrated Gigabit Ethernet ports.

The integrated network interface controller (NIC) has the following features:

- A Broadcom BCM5719 chip
- Four Gigabit Ethernet ports
- NIC Teaming (load balancing and failover)
- Ethernet features:
  - Compliant with 1 Gb Ethernet IEEE 802.3, 802.3u, and 802.3ab PHY specifications
  - Integrated PHY for 10/100/1000 Mbps for multispeed, full, and half-duplex auto-negotiation
  - Automatic MDI crossover
  - IEEE 802.3x-compliant flow control support
  - IEEE 1588 protocol and 802.1AS time synchronization implementation
  - IEEE802.3az - Energy Efficient Ethernet (EEE)
- I/O Virtualization features:
  - I/O Virtualization support for VMware NetQueue and Microsoft virtual machine queue (VMQ)
  - Function Level Reset (FLR)
  - IEEE 802.1q Virtual Local Area Network (VLAN) tagging support
- Stateless offload and performance features:
  - TCP, IP, and User Datagram Protocol (UDP) checksum offload
  - TCP segmentation offload (TCO)
  - Large Send Offload (LSO)
  - Receive Side Scaling (RSS) and Transmit Side Scaling (TSS)
  - Message Signal Interrupt (MSI) and Message Signal Interrupt Extension (MSI-X) support
  - Support for jumbo frames up to 9600 bytes

Optionally, the x3550 M5 server supports ML2 adapters that are installed in the custom ML2 slot provided by the PCIe ML2 riser card (part number 00KA063). This slot supports adapters with either two 10 Gb ports or four Gigabit ports and supports direct connectivity to the IMM2.1 service processor for out-of-band systems management.

The following table lists additional supported network adapters.

Table 19. Network adapters

Description	Part number	Feature code	Maximum supported	I/O slots supported
100 Gb Ethernet - PCIe				
Mellanox ConnectX-4 2x100GbE/EDR IB QSFP28 VPI Adapter	00MM960	ATRP	3^	1, 2, 3†
40 Gb Ethernet - ML2				
Mellanox ConnectX-3 Pro ML2 2x40GbE/FDR VPI Adapter	00FP650	A5RK	1*	1
40 Gb Ethernet - PCIe				
Mellanox ConnectX-4 Lx 1x40GbE QSFP+ Adapter	00MM950	ATRN	3*	1, 2, 3
Mellanox ConnectX-3 2x40GbE / FDR IB VPI Adapter	00D9550	A3PN	3*	1, 2, 3
25 Gb Ethernet - ML2				
Mellanox ConnectX-4 Lx ML2 1x25GbE SFP28 Adapter	00MN990	ATZR	1#	1
10 Gb Ethernet - ML2				
Broadcom NetXtreme II ML2 Dual Port 10GbaseT	00D2026	A40S	1	1
Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+	00D2028	A40T	1*	1
Emulex VFA5 ML2 FCoE/iSCSI License (FoD) (Upgrade for 00D1996 - one per adapter)	00D8544	A4NZ	1	-
Intel X540 ML2 Dual Port 10GbaseT Adapter	00D1994	A40P	1	1
Intel X710-DA2 ML2 2x10GbE SFP+ Adapter	00JY940	ATRH	1*	1
25 Gb Ethernet - PCIe				
Mellanox ConnectX-4 Lx 2x25GbE SFP28 Adapter	01GR250	AUAJ	3#	1, 2, 3
10 Gb Ethernet - PCIe				
Broadcom NetXtreme 2x10GbE BaseT Adapter	44T1370	A5GZ	3	1, 2, 3
Broadcom NetXtreme Dual Port 10GbE SFP+ Adapter	94Y5180	A4Z6	3*	1, 2, 3
Emulex VFA5 2x10 GbE SFP+ PCIe Adapter	00JY820	A5UT	3*	1, 2, 3
Emulex VFA5.2 2x10 GbE SFP+ PCIe Adapter	00AG570	AT7S	3*	1, 2, 3
Emulex VFA5 FCoE/iSCSI SW for PCIe Adapter (FoD) (Upgrade for 00JY820 and 00AG570 - one per adapter)	00JY824	A5UV	3	-
Emulex VFA5.2 2x10 GbE SFP+ Adapter and FCoE/iSCSI SW	00AG580	AT7T	3*	1, 2, 3
Intel X520 Dual Port 10GbE SFP+ Adapter	49Y7960	A2EC	3*	1, 2, 3
Intel X540-T2 Dual Port 10GBaseT Adapter	49Y7970	A2ED	3	1, 2, 3
Intel X550-T2 Dual Port 10GBase-T Adapter	00MM860	ATPX	3	1, 2, 3
Intel X710-DA2 2x10GbE SFP+ Adapter	01DA900	AU2Y	3*	1, 2, 3
Mellanox ConnectX-3 2x10GbE Adapter	00D9690	A3PM	3*	1, 2, 3
1 Gb Ethernet - ML2				
Intel I350-T4 ML2 Quad Port GbE Adapter	00D1998	A40R	1	1
1 Gb Ethernet - PCIe				
Broadcom NetXtreme I Dual Port GbE Adapter	90Y9370	A2V4	3	1, 2, 3
Broadcom NetXtreme I Quad Port GbE Adapter	90Y9352	A2V3	3	1, 2, 3

Description	Part number	Feature code	Maximum supported	I/O slots supported
Intel I350-F1 1xGbE Fiber Adapter	00AG500	A56K	3	1, 2, 3
Intel I350-T2 2xGbE BaseT Adapter	00AG510	A56L	3	1, 2, 3
Intel I350-T4 4xGbE BaseT Adapter	00AG520	A56M	3	1, 2, 3
40 GbE QSFP+ transceivers and DAC cables for 40 GbE QSFP+ adapters				
Lenovo 40GBASE-SR4 QSFP+ Transceiver	49Y7884	A1DR	Port qty**	-
Lenovo 1m Passive QSFP+ DAC Cable	49Y7890	A1DP	Port qty**	-
Lenovo 3m Passive QSFP+ DAC Cable	49Y7891	A1DQ	Port qty**	-
10 GbE SFP+ transceivers and DAC cables for 10 GbE SFP+ adapters				
Lenovo 10GBASE-SR SFP+ Transceiver	46C3447	5053	Port qty**	-
Brocade 10Gb SFP+ SR Optical Transceiver	49Y4216	0069	Port qty**	-
QLogic 10Gb SFP+ SR Optical Transceiver	49Y4218	0064	Port qty**	-
Lenovo 0.5m Passive SFP+ DAC Cable	00D6288	A3RG	Port qty**	-
Lenovo 1m Passive SFP+ DAC Cable	90Y9427	A1PH	Port qty**	-
Lenovo 1.5m Passive SFP+ DAC Cable	00AY764	A51N	Port qty**	-
Lenovo 2m Passive SFP+ DAC Cable	00AY765	A51P	Port qty**	-
Lenovo 3m Passive SFP+ DAC Cable	90Y9430	A1PJ	Port qty**	-
Lenovo 5m Passive SFP+ DAC Cable	90Y9433	A1PK	Port qty**	-
Lenovo 7m Passive SFP+ DAC Cable	00D6151	A3RH	Port qty**	-

^ Transceivers and DAC cables are available only from Mellanox or as a part of a Lenovo Intelligent Cluster solution.
† Supported only in the PCIe 3.0 x16 slots (PCIe x16 riser cards 00KA061, 00KA066, and feature A5AD).
* SFP+ and QSFP+ based adapters require supported transceivers or DAC cables that must be purchased for the adapter (See "40 Gb QSFP+ transceivers and DAC cables" and "10 Gb SFP+ transceivers and DAC cables" in the table above).
# Transceivers and DAC cables are available only from Mellanox.
** The maximum number of transceivers or cables that are supported per adapter equals the quantity of the adapter ports. All adapter ports must have the same type of transceiver or DAC cable selected.

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

SAS adapters for external storage

The following table lists SAS RAID controllers and HBAs for external storage attachments that are supported by the x3550 M5 server.

Table 20. SAS RAID adapters and HBAs for external storage

Description	Part number	Feature code	Maximum supported	I/O slots supported
12 Gbps SAS RAID adapters - PCIe				
ServeRAID M5225-2GB SAS/SATA Controller	00AE938	A5ND	3	1, 2, 3
Feature on Demand (FoD) upgrades for the M5225 (one per server)*				
ServeRAID M5200 Series RAID 6 Upgrade	47C8706	A3Z5	1*	-
ServeRAID M5200 Series Performance Accelerator	47C8710	A3Z7	1*	-
ServeRAID M5200 Series SSD Caching Enabler	47C8712	A3Z8	1*	-
12 Gbps SAS HBAs - PCIe				
N2225 SAS/SATA HBA	00AE912	A5M0	3	1, 2, 3
N2226 SAS/SATA HBA	00AE916	A5M1	1**	2

* One FoD upgrade for the M5225 activates the feature on all M5200 series controllers installed in a server.
** Requires the second processor and the FHHL x16 Riser Card 2 (feature code A5AD).

The following table summarizes features of supported RAID controllers and HBAs.

Table 21. SAS RAID controller and HBA features and specifications summary (PN = Part number)

Feature	M5225-2GB	N2226	N2225
Part number	00AE938	00AE916	00AE912
Form factor	Low profile	Low profile	Low profile
Controller chip	LSI SAS3108	LSI SAS3008	LSI SAS3008
Host interface	PCIe 3.0 x8	PCIe 3.0 x8	PCIe 3.0 x8
Port interface	12 Gbps SAS	12 Gbps SAS	12 Gbps SAS
Number of external ports	8	16	8
External port connectors	2x Mini-SAS HD (SFF-8644)	4x Mini-SAS HD (SFF-8644)	2x Mini-SAS HD (SFF-8644)
Drive interface	SAS, SATA	SAS, SATA	SAS, SATA
Drive type	HDD, SED, SSD	HDD, SSD	HDD, SSD
Maximum number of devices	240	1024	1024
RAID levels	0/1/10/5/50; Optional 6/60 (PN 47C8706)	None	None
JBOD mode	No	Yes	Yes
Cache	2 GB (included)	None	None
Cache protection	Flash (included)	None	None
Performance Accelerator (FastPath)	Optional (PN 47C8710)	None	None
SSD Caching (CacheCade Pro 2.0)	Optional (PN 47C8712)	None	None

For more information, see the following Lenovo Press Product Guides:

- ServeRAID M5225-2GB: http://lenovopress.com/tips1258
- N2225 and N2226 SAS/SATA HBAs: http://lenovopress.com/tips1175

Fibre Channel host bus adapters

The following table lists Fibre Channel HBAs supported by the x3550 M5 server.

Table 22. Fibre Channel HBAs

Description	Part number	Feature code	Maximum supported	I/O slots supported
16 Gb Fibre Channel - PCIe				
Emulex 16Gb Gen6 FC Single-port HBA	01CV830	ATZU	3	1, 2, 3
Emulex 16Gb Gen6 FC Dual-port HBA	01CV840	ATZV	3	1, 2, 3
Emulex 16Gb FC Single-port HBA	81Y1655	A2W5	2	2, 3
Emulex 16Gb FC Dual-port HBA	81Y1662	A2W6	2	2, 3
QLogic 16Gb Enhanced Gen5 FC Single-port HBA	01CV750	ATZB	3	1, 2, 3
QLogic 16Gb Enhanced Gen5 FC Dual-port HBA	01CV760	ATZC	3	1, 2, 3
QLogic 16Gb FC Single-port HBA	00Y3337	A3KW	3	1, 2, 3
QLogic 16Gb FC Dual-port HBA	00Y3341	A3KX	3	1, 2, 3
8 Gb Fibre Channel - PCIe				
Emulex 8Gb FC Single-port HBA	42D0485	3580	3	1, 2, 3
Emulex 8Gb FC Dual-port HBA	42D0494	3581	3	1, 2, 3
QLogic 8Gb FC Single-port HBA	42D0501	3578	3	1, 2, 3
QLogic 8Gb FC Dual-port HBA	42D0510	3579	3	1, 2, 3

For more information, see the list of Product Guides in the Host bus adapters category:
https://lenovopress.com/servers/options/hba

Flash storage adapters

Product availability: The Flash storage adapters that are supported by the System x3550 M5 server are withdrawn and no longer available for ordering.

GPU adapters

The x3550 M5 server supports graphics processing units (GPUs) listed in the following table.

Table 24. GPU adapters (available only through Special Bid or CTO)

Description	Part number	Feature code	Maximum supported	I/O slots supported
NVIDIA Quadro K420	00YL370	ASPN	1	2
NVIDIA Quadro K620	00YL371	ASPP	1	2

* Available only through CTO or special bid.

Configuration notes:

- The NVIDIA Quadro adapters are full-high adapters that are supported only in the PCIe slot 2.
- The PCIe Riser 2, 1-2 CPU (FHHL x16 CPU1 + LP x16 CPU0) (feature code A5AD) is required.
- The second processor is required.
- The maximum memory that can be installed is 1 TB.
- Further restrictions may apply depending on the power supplies installed (see "Power supplies").

Power supplies and cables

The x3550 M5 server supports up to two redundant power supplies, and is capable of N+N redundancy depending on the configuration. Standard models come with one power supply. The following table lists the power supplies.

Table 25. Power supplies

Description	Part number	Feature code	Maximum supported
System x 550W High Efficiency Platinum AC Power Supply	00KA094	A5AX	2
System x 750W High Efficiency Platinum AC Power Supply	00KA096	A5AY	2
System x 750W High Efficiency Titanium AC Power Supply (200-240V)	00KA097	A5AZ	2
System x 900W High Efficiency Platinum AC Power Supply	00KA098	A5B0	2
System x 900W High Efficiency -48 V DC Power Supply	00MV212	ASPR	2
System x 1500W High Efficiency Platinum AC Power Supply (200-240V)	00MV211	ASPQ	2

General power supply rules are as follows:

- Minimum of one and maximum of two power supplies per system
- If two are installed, power supplies must be identical

Important: The Standalone Solution Configuration Tool (SSCT) and Lenovo Data Center Advisor and Configurator Tool (DCACT) power supply selection rules allow a subset of possible configurations due to power restrictions. Configurations that cannot be built in SSCT or DCACT due to power restrictions may still be supported. To verify support and ensure that the right power supply is chosen for optimal performance, you should always validate your server configuration using the latest version of the System x Power Configurator: https://support.lenovo.com/documents/LNVO-PWRCONF

A hot-swap power supply option ships standard with one 2.8m, 10A/100-250V, IEC 320-C13 to IEC 320-C14 rack power cable. Other country-specific and rack cables can be ordered if needed (see the following table).

Table 26. Power cables

Description	Part number	Feature code
Rack power cables		
1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7937	6201
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	39Y7938	6204
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7932	6263
Line cords		
Argentina 10A/250V C13 to IRAM 2073 2.8m line cord	39Y7930	6222
Australia/NZ 10A/250V C13 to AS/NZ 3112 2.8m line cord	39Y7924	6211
Brazil 10A/125V C13 to NBR 6147 2.8m line cord	39Y7929	6223
China 10A/250V C13 to GB 2099.1 2.8m line cord	39Y7928	6210
Denmark 10A/250V C13 to DK2-5a 2.8m line cord	39Y7918	6213
European 10A/230V C13 to CEE7-VII 2.8m line cord	39Y7917	6212
India 10A/250V C13 to IS 6538 2.8m line cord	39Y7927	6269
Israel 10A/250V C13 to SI 32 2.8m line cord	39Y7920	6218
Italy 10A/250V C13 to CEI 23-16 2.8m line cord	39Y7921	6217
Japan 12A/125V C13 to JIS C-8303 2.8m line cord	46M2593	A1RE

Description	Part number	Feature code
Korea 12A/250V C13 to KETI 2.8m line cord	39Y7925	6219
South Africa 10A/250V C13 to SABS 164 2.8m line cord	39Y7922	6214
Switzerland 10A/250V C13 to SEV 1011-S24507 2.8m line cord	39Y7919	6216
Taiwan 10A/250V C13 to CNS 10917-3 2.8m line cord	00CG265	A53E
Taiwan 15A/125V C13 to CNS 10917-3 2.8m line cord	00CG267	A53F
United Kingdom 10A/250V C13 to BS 1363/A 2.8m line cord	39Y7923	6215
United States 10A/125V C13 to NEMA 5-15P 4.3m line cord	39Y7931	6207
United States 10A/250V C13 to NEMA 6-15P 2.8m line cord	46M2592	A1RF

Integrated virtualization

The server supports VMware ESXi installed on a USB memory key or one or two SD cards in the SD Media Adapter for System x. The USB memory key is installed in a USB socket inside the server. The SD Media Adapter is installed in a dedicated slot inside the server.

When only one SD card is installed in the SD Media Adapter, you can create up to 16 volumes, each of which is presented to UEFI as a bootable device. When two SD Media cards are inserted, volumes can be mirrored (RAID 1) across both cards, up to a total of eight mirrored volumes. The use of mirrored volumes improves system availability because the server remains operational, even if one SD card fails. The RAID functionality is handled internally by the SD Media Adapter.

The following table lists virtualization options.

Table 27. Virtualization options

Description	Part number	Feature code	Maximum supported
USB memory key			
USB Memory Key for VMware ESXi 5.1 Update 2	00ML233	ASN6	1
USB Memory Key for VMware ESXi 5.5 Update 2	00ML235	ASN7	1
USB Memory Key for VMware ESXi 5.5 Update 3B	00WH150	ATZG	1
USB Memory Key 4G for VMware ESXi 6.0 Update 1A	00WH138	ATRL	1
USB Memory Key for VMware ESXi 6.0 Update 2	00WH151	ATZH	1
Blank USB Memory Key 4G SLC for VMware ESXi Downloads	00WH140	ATRM	1
Blank USB Memory Key for VMware ESXi Downloads	41Y8298	A2G0	1
SD Media Adapter and SD cards			
SD Media Adapter (Option 00ML706 includes 2 blank 32GB SD cards)	00ML706*	A5TJ	1
Blank SD Media	00ML700	AS2V	2
RAID Adapter for SD Media w/ VMware ESXi 5.1 U2 (1 SD Media)	None**	ASCG	1
RAID Adapter for SD Media w/ VMware ESXi 5.1 U2 (2 SD Media, RAIDed)	None**	AS4B	1
RAID Adapter for SD Media w/ VMware ESXi 5.5 U2 (1 SD Media)	None**	ASCH	1
RAID Adapter for SD Media w/ VMware ESXi 5.5 U2 (2 SD Media, RAIDed)	None**	AS4C	1
RAID Adapter for SD Media w/ VMware ESXi 5.5 U3B (1 SD Media)	None**	ATZK	1
RAID Adapter for SD Media w/ VMware ESXi 5.5 U3B (2 SD Media, RAIDed)	None**	ATZJ	1
RAID Adapter for SD Media w/VMware ESXi 6.0 U1A (1 SD Media)	None**	ATSA	1
RAID Adapter for SD Media w/VMware ESXi 6.0 U1A (2 SD Media, RAIDed)	None**	ATS9	1
RAID Adapter for SD Media w/ VMware ESXi 6.0 U2 (1 SD Media)	None**	ATZM	1

RAID Adapter for SD Media w/ VMware ESXi 6.0 U2 (2 SD Media, RAIDed)	None**	ATZL	1

* Option 00ML706 includes two 32GB SD cards; however, for CTO orders, feature code A5TJ does not include SD media and the 32 GB cards and VMware vSphere preload must be selected separately.
** CTO only.

Systems management

The System x3550 M5 supports the following systems management tools:

- Integrated Management Module 2.1
- Light path diagnostics
- Lenovo ToolsCenter
- Lenovo XClarity Administrator
- Lenovo XClarity Energy Manager

Integrated Management Module 2.1

The server contains Integrated Management Module II (IMM2.1), which provides advanced service-processor control, monitoring, and an alerting function. If an environmental condition exceeds a threshold or if a system component fails, the IMM lights LEDs to help you diagnose the problem, records the error in the event log, and alerts you to the problem. Optionally, the IMM also provides a virtual presence capability for remote server management capabilities.

The IMM provides remote server management through industry-standard interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Simple Network Management Protocol (SNMP) Version 3
- Common Information Model (CIM)
- Web browser

The optional Integrated Management Module Advanced Upgrade is required to enable the remote presence and blue-screen capture features. The remote presence feature provides the following functions:

- Remotely viewing video with graphics resolutions up to 1600x1200 at 75 Hz with up to 23 bits per pixel, regardless of the system state
- Remotely accessing the server using the keyboard and mouse from a remote client
- Mapping the CD or DVD drive, diskette drive, and USB flash drive on a remote client, and mapping ISO and diskette image files as virtual drives that are available for use by the server
- Uploading a diskette image to the IMM memory and mapping it to the server as a virtual drive

The blue-screen capture feature captures the video display contents before the IMM restarts the server when the IMM detects an operating system hang condition. A system administrator can use the blue-screen capture to assist in determining the cause of the hang condition. The following table lists the remote management option.

Table 28. Remote management option

Description	Part number	Feature code	Maximum supported
Integrated Management Module Advanced Upgrade	90Y3901	A1ML	1

Light path diagnostics

All models come standard with basic light path diagnostics, which include the system LEDs on the front of the server (See Figure 2) and the LEDs near the monitored components (for example, the DIMM error LED on the system board).

Models with 4x or 8x 2.5-inch drive bays support a next-gen light path LCD display panel. The LCD display enables you to have quick access to system status, firmware, network, and health information. Models with 4x 3.5-inch or 10x 2.5-inch front drive bays do not support an LCD display panel.

The following table shows the LCD display panel ordering information.

Table 29. Light path diagnostics options

Description	Part number	Feature code	Maximum supported
System x Advanced LCD Light path Kit	00KA054	A5AB	1

Lenovo ToolsCenter

Lenovo offers the following ToolsCenter software tools that can help you set up, use, and maintain the server at no additional cost:

- Lenovo ToolsCenter Suite
  The ToolsCenter Suite tool is a consolidation of server management tools that helps simplify the management of System x servers. It provides functions to collect full system health information (including health status), configure system setting, update system firmware and drivers, and FoD mass activation key management for multiple endpoints.
- Lenovo ServerGuide
  The ServerGuide tool simplifies the process of configuring RAID and installing supported Microsoft Windows Server operating systems and device drivers on a System x server.
- Lenovo UpdateXpress System Packs
  The UpdateXpress System Packs (UXSPs) are integration-tested bundles that enable you to maintain your server firmware and device drivers up-to-date and help you avoid unnecessary server outages.
- Lenovo Dynamic System Analysis
  The Dynamic System Analysis (DSA) pre-boot or standalone diagnostics software speeds up troubleshooting tasks to reduce service time.

For more information and downloads, visit the ToolsCenter web page:
http://support.lenovo.com/us/en/documents/LNVO-center

Lenovo XClarity Administrator

Lenovo XClarity is a centralized systems management solution that helps administrators deliver infrastructure faster. This solution integrates easily with Lenovo x86 servers, Flex System, and RackSwitch switches, providing automated agent-less discovery, monitoring, firmware updates, configuration management, and bare metal deployment of operating systems and hypervisors across multiple systems.

Lenovo XClarity Administrator is an optional software component for the System x3550 M5 which can be downloaded and used at no charge to discover and monitor the x3550 M5 and manage firmware upgrades for them.

If software support is required for Lenovo XClarity Administrator, or Lenovo XClarity Administrator premium features (such as configuration management and operating system deployment) are required, or both, Lenovo XClarity Pro software subscription should be ordered. Lenovo XClarity Pro is licensed on a per managed system basis, that is, each managed Lenovo system requires a license.

The following table lists the geo-specific Lenovo XClarity software license options.

Table 30. Lenovo XClarity software options

Description	Part number (NA, AP, Japan)*	Part number (EMEA, LA)**	Quantity
Lenovo XClarity Pro, per Mngd Server w/1 Yr SW S&S	00MT201	00MT207	1

Description	Part number (NA, AP, Japan)*	Part number (EMEA, LA)**	Quantity
Lenovo XClarity Pro, per Mngd Server w/3 Yr SW S&S	00MT202	00MT208	1
Lenovo XClarity Pro, per Mngd Server w/5 Yr SW S&S	00MT203	00MT209	1

* NA = North America; AP = Asia Pacific
** EMEA = Europe, Middle East, Africa; LA = Latin America

Lenovo XClarity Administrator offers the following standard features that are available at no charge:

- Auto-discovery and monitoring of Lenovo x86 servers, RackSwitch switches, and Flex System chassis
- Firmware updates and compliance enforcement
- External alerts and notifications via SNMP traps, syslog remote logging, and e-mail
- Secure connections to managed endpoints
- NIST 800-131A or FIPS 140-2 compliant cryptographic standards between the management solution and managed endpoints
- Integration into existing higher level management systems such as cloud automation and orchestration tools through REST APIs, providing extensive external visibility and control over hardware resources
- An intuitive, easy-to-use GUI
- Scripting with Windows PowerShell, providing command-line visibility and control over hardware resources

Lenovo XClarity Administrator offers the following premium features that require an optional Pro license:

- Pattern-based configuration management that allows to define configurations once and apply repeatedly without errors when deploying new servers or redeploying existing servers without disrupting the fabric
- Bare-metal deployment of operating systems and hypervisors to streamline infrastructure provisioning

In addition, Lenovo XClarity Administrator offers two software plug-in modules (Lenovo XClarity Integrators) at no charge (if software support is required, a Lenovo XClarity Pro software subscription license should be ordered):

- Lenovo XClarity Integrator for Microsoft System Center
- Lenovo XClarity Integrator for VMware vCenter

Lenovo XClarity Integrators allow administrators to manage physical infrastructure from leading external virtualization management software tools from Microsoft and VMware. Lenovo XClarity Integrators offer the following additional features:

- Ability to discover, manage, and monitor Lenovo server hardware from VMware vCenter or Microsoft System Center
- Deployment of firmware updates and configuration patterns to System x M5, M6, and X6 rack servers and Flex System from the virtualization management tool
- Non-disruptive server maintenance in clustered environments that reduces workload downtime by dynamically migrating workloads from affected hosts during rolling server updates or reboots
- Greater service level uptime and assurance in clustered environments during unplanned hardware events by dynamically triggering workload migration from impacted hosts when impending hardware failures are predicted

For more information, refer to the Lenovo XClarity Administrator Product Guide:
http://lenovopress.com/tips1200

Lenovo XClarity Energy Manager

Lenovo XClarity Energy Manager provides a stand-alone, web-based agent-less power management console that provides real time data and enables you to observe, plan and manage power and cooling for Lenovo System x and ThinkServer x86 servers. Using built-in intelligence, it identifies server power consumption trends and ideal power settings and performs cooling analysis so that you can define and optimize power-saving policies.

Lenovo XClarity Energy Manager offers the following capabilities:

- Reports vital server information, such as power, temperature and resource utilization
- Monitors inlet temperature to locate hot spots, reducing the risk of data or device damage
- Provides finely-grained controls to limit platform power in compliance with IT policy
- Generates alerts when a user-defined threshold is reached

Lenovo XClarity Energy Manager is an optional software component for the System x3550 M5 that is licensed on a per managed node basis, that is, each managed server requires a license.

The following table lists the geo-specific Lenovo XClarity Energy Manager software license options.

Table 31. Lenovo XClarity Energy Manager software options

Description	Part number (NA, AP, Japan)*	Part number (EMEA, LA)**	Quantity
Lenovo XClarity Energy Manager, 1 Node w/ 1 Yr S&S	01DA225	01DA228	1
Lenovo XClarity Energy Manager, 5 Nodes w/ 1 Yr S&S	01DA226	01DA229	1
Lenovo XClarity Energy Manager, 50 Nodes w/ 1 Yr S&S	01DA227	01DA230	1

* NA = North America; AP = Asia Pacific
** EMEA = Europe, Middle East, Africa; LA = Latin America

Rack installation

The following table lists the rack installation options that are available for the x3550 M5 server.

Table 32. Rack installation options

Description	Part number	Feature code	Maximum supported
System x3550 M5 Slide Kit G4	00KA606	A5AK	1
System x Enterprise 1U Cable Management Arm (CMA)	00KA607	A5AL	1
System x Gen-II Universal Slides Kit	00KA500	A5FW	1
Lockable Front Bezel	00KA162	A5AP	1

Note: The System x3550 M5 Slide Kit G4, part number 00KA606, is included with the standard models that are listed in Table 2 and Express and TopSeller models that are listed in Table 3.

The following table summarizes the rail kit features and specifications.

Table 33. Rail kit features and specifications summary

Feature	System x3550 M5 Slide Kit G4	System x Gen-II Universal Slides Kit
Part number	00KA606	00KA500
Rail type	Full-out slide (ball bearing)	Full-out slide (ball bearing)
Tool-less installation	Yes	No

Feature	System x3550 M5 Slide Kit G4	System x Gen-II Universal Slides Kit
CMA support	Yes	Yes
In-rack server maintenance	Yes	Yes
1U PDU support	Yes	Yes
0U PDU support	Limited*	Limited*
Rack type	IBM and Lenovo 4-post, IEC standard-compliant	Any 4-post, IEC standard-compliant
Mounting holes	Square or round	Square, round, or threaded
Mounting flange thickness	2 mm (0.08 in.) – 3.3 mm (0.13 in.)	2 mm (0.08 in.) – 4.65 mm (0.18 in.)
Distance between front and rear mounting flanges	617 mm (24.29 in.) – 812 mm (31.97 in.)	617 mm (24.29 in.) – 812 mm (31.97 in.)
Rail length***	833.5 mm (32.81 in.)	836.8 mm (32.94 in.)

* The rack must be at least 1100 mm (43.31 in.) deep if no CMA is used, or at least 1200 mm (47.24 in.) deep if a CMA is used.
** The rack must be at least 1000 mm (39.37 in.) deep.
*** Measured when mounted on the rack, from the front surface of the front mounting flange to the rear most point of the rail.

Operating systems

The x3550 M5 server supports the following operating systems:

- Microsoft:
  - Microsoft Windows Server, version 1709
  - Microsoft Windows Server 2016
  - Microsoft Windows Server 2012 R2
  - Microsoft Windows Server 2012
  - Microsoft Windows Server 2008 R2 SP1
- Red Hat:
  - Red Hat Enterprise Linux 7.6
  - Red Hat Enterprise Linux 7.5
  - Red Hat Enterprise Linux 7.4
  - Red Hat Enterprise Linux 7.3
  - Red Hat Enterprise Linux 7.2
  - Red Hat Enterprise Linux 7.1
  - Red Hat Enterprise Linux 7
  - Red Hat Enterprise Linux 6.10 Server x64 Edition
  - Red Hat Enterprise Linux 6.8 Server x64 Edition
  - Red Hat Enterprise Linux 6.7 Server x64 Edition
  - Red Hat Enterprise Linux 6.6 Server x64 Edition
  - Red Hat Enterprise Linux 6.5 Server x64 Edition

- SUSE:
  - SUSE Linux Enterprise Server 12 SP4
  - SUSE Linux Enterprise Server with Xen 12 SP4
  - SUSE Linux Enterprise Server 12 SP3
  - SUSE Linux Enterprise Server with Xen 12 SP3
  - SUSE Linux Enterprise Server 12 SP2
  - SUSE Linux Enterprise Server with Xen 12 SP2
  - SUSE Linux Enterprise Server 12 SP1
  - SUSE Linux Enterprise Server with Xen 12 SP1
  - SUSE Linux Enterprise Server 12
  - SUSE Linux Enterprise Server with Xen 12
  - SUSE Linux Enterprise Server 11 for AMD64/EM64T SP4
  - SUSE Linux Enterprise Server 11 with Xen for AMD64/EM64T SP4
  - SUSE Linux Enterprise Server 11 for AMD64/EM64T SP3
  - SUSE Linux Enterprise Server 11 with Xen for AMD64/EM64T SP3
- VMware:
  - VMware vSphere 6.5 (ESXi) Update 2
  - VMware vSphere 6.5 (ESXi) Update 1
  - VMware vSphere 6.5 (ESXi)
  - VMware vSphere 6.0 (ESXi) Update 3
  - VMware vSphere 6.0 (ESXi) Update 2
  - VMware vSphere 6.0 (ESXi) Update 1
  - VMware vSphere 6.0 (ESXi)
  - VMware vSphere 5.5 (ESXi) Update 3
  - VMware vSphere 5.5 (ESXi) Update 2
  - VMware vSphere 5.1 (ESXi) Update 3
  - VMware vSphere 5.1 (ESXi) Update 2
  - VMware vSphere 5.1 (ESXi) Update 1

For the latest information about the specific versions and service levels that are supported and any other prerequisites, see the Operating System Interoperability Guide: http://lenovopress.com/redposig.

Physical specifications

The x3550 M5 server has the following dimensions and weight (approximate):

- Height: 43 mm (1.7 in)
- Width: 429 mm (16.9 in)
- Depth: 734 mm (28.9 in)
- Weight:
  - Minimum configuration: 13.8 kg (30.5 lb)
  - Maximum configuration: 19.3 kg (42.7 lb)

Operating environment

The x3550 M5 server is supported in the following environment:

- Air temperature:
  - Server on: 5 °C to 40 °C (41 °F to 104 °F); altitude: 0 to 950 m (3,117 ft); decrease the maximum system temperature by 1 °C for every 175-m increase in altitude above 950 m.
  - Server off: 5 °C to 45 °C (41 °F to 113 °F)
  - Maximum altitude: 3,050 m (10,000 ft), 5 °C to 28 °C (41 °F to 82 °F)
  - Shipment: -40 °C to +60 °C (-40 °F to 140 °F) at up to 10,700 m (35,105 ft)
- Humidity:
  - Server on: 8% to 85% (non-condensing), max dew point 24 °C, max rate of change 5 °C/hr
  - Server off: 8% to 85% (non-condensing), max dew point 27 °C

- Design to ASHRAE Class A3, ambient of 40 °C (104 °F), with relaxed support:
  - Supports cloud-like workload with no performance degradation acceptable (Turbo-Off).
  - Under no circumstance can any combination of worst case workload and configuration result in system shutdown or design exposure at 40 °C.

- Electrical:
  - Models with 1500 W AC Platinum power supplies:
    - 200 - 240 (nominal) V ac; 50 Hz or 60 Hz; 8.35 A
    - Input kilovolt-amperes (kVA) (approximately):
      - Minimum configuration: 0.14 kVA
      - Maximum configuration: 1.967 kVA
  - Models with 900 W AC Platinum power supplies:
    - 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; 10.3 A
    - 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 5.0 A
    - Input kilovolt-amperes (kVA) (approximately):
      - Minimum configuration: 0.14 kVA
      - Maximum configuration: 1.194 kVA
  - Models with 750 W Platinum AC power supplies:
    - 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; 8.6 A
    - 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 4.2 A
    - Input kilovolt-amperes (kVA) (approximately):
      - Minimum configuration: 0.14 kVA
      - Maximum configuration: 1.015 kVA
  - Models with 750 W Titanium AC power supplies:
    - 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 4.2 A
    - Input kilovolt-amperes (kVA) (approximately):
      - Minimum configuration: 0.14 kVA
      - Maximum configuration: 0.965 kVA
  - Models with 550 W AC power supplies:
    - 100 to 127 (nominal) V ac; 50 Hz or 60 Hz; 6.5 A
    - 200 to 240 (nominal) V ac; 50 Hz or 60 Hz; 3.3 A
    - Input kilovolt-amperes (kVA) (approximately):
      - Minimum configuration: 0.14 kVA
      - Maximum configuration: 0.732 kVA
  - Models with -48Vdc 900 W power supplies:
    - -48 - -60 (nominal) V dc; 25.8 A
    - Input kilovolt-amperes (kVA) (approximately):
      - Minimum configuration: 0.14 kVA
      - Maximum configuration: 1.237 kVA

- BTU output:
  - Minimum configuration: 461 Btu/hr (135 watts)
  - Maximum configuration: 6667 Btu/hr (1954 watts)

- Noise level:
  - 6.6 bels (operating)
  - 6.4 bels (idle)

Warranty services and upgrades

The System x3550 M5 has a three-year customer-replaceable unit (CRU) and onsite (for field-replaceable units [FRUs] only) limited warranty with standard call center support during normal business hours and 9x5 Next Business Day Parts Delivered.

Some countries might have different warranty terms and conditions than the standard warranty. This is due to local business practices or laws in the specific country. Local service teams can assist in explaining country-specific terms when needed. Examples of country-specific warranty terms are second or longer business day parts delivery or parts-only base warranty.

If warranty terms and conditions include onsite labor for repair or replacement of parts, Lenovo will dispatch a service technician to the customer site to perform the replacement. Onsite labor under base warranty is limited to labor for replacement of parts that have been determined to be field-replaceable units (FRUs). Parts that are determined to be customer-replaceable units (CRUs) do not include onsite labor under base warranty.

If warranty terms include parts-only base warranty, Lenovo is responsible for delivering only replacement parts that are under base warranty (including FRUs) that will be sent to a requested location for self-service. Parts-only service does not include a service technician being dispatched onsite. Parts must be changed at customer's own cost and labor and defective parts must be returned following the instructions supplied with the spares parts.

Also available are Lenovo Services warranty maintenance upgrades and post-warranty maintenance agreements, with a well-defined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

Lenovo warranty service upgrade offerings are country-specific. Not all warranty service upgrades are available in every country. For information about Lenovo warranty service upgrade offerings that are available in your country or area, refer to the following resources:

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

In general, the following Lenovo warranty service upgrades are available:

- Warranty and maintenance service upgrades:
  - 3, 4, or 5 years of warranty service coverage
  - 1-year or 2-year post-warranty extensions
  - Foundation Service: 9x5 service coverage with next business day onsite response
  - Essential Service: 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select countries)
  - Advanced Service: 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select countries)
- Premier Support
  Premier Support service offers direct access to Lenovo's most advanced technicians for faster troubleshooting with single point of contact for end-to-end problem resolution and collaborative third-party software support.
- YourDrive YourData
  Lenovo's YourDrive YourData service is a multi-drive retention offering that ensures your data is always under your control, regardless of the number of drives that are installed in your Lenovo server. In the unlikely event of a drive failure, you retain possession of your drive while Lenovo replaces the failed drive part. Your data stays safely on your premises, in your hands. The YourDrive YourData service can be purchased in convenient bundles with Foundation, Essential, or Advanced Service upgrades and extensions.
- Enterprise Server Software Support
  Lenovo Enterprise Server Software Support can help you troubleshoot your entire server software stack. Choose support for server operating systems from Microsoft, Red Hat, SUSE, and VMware; Microsoft server applications; or both operating systems and applications. Support staff can help answer troubleshooting and diagnostic questions, address product compatibility and interoperability issues, isolate causes of problems, report defects to software vendors, and more.

- Basic Hardware Installation Services
  Lenovo experts can seamlessly manage the physical installation of your server, storage, or networking hardware. Working at a time convenient for you (business hours or off shift), the technician will unpack and inspect the systems on your site, install options, mount in a rack cabinet, connect to power and network, check and update firmware to the latest levels, verify operation, and dispose of the packaging, allowing your team to focus on other priorities.
- Microcode Support
  Keeping microcode current helps prevent hardware failures and security exposure. There are two levels of service: analysis of the installed base and analysis and update where required. Offerings vary by country and can be bundled with other warranty upgrades and extensions.

For service definitions, country-specific details, and service limitations, please refer to the following documents:

- Lenovo Statement of Limited Warranty for Data Center Group (DCG) Servers and System Storage
  http://pcsupport.lenovo.com/us/en/solutions/ht503310
- Lenovo Data Center Services Agreement
  http://support.lenovo.com/us/en/solutions/ht116628

Regulatory compliance

The server conforms to the following regulations:

- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 5, Class A
- UL/IEC 60950-1
- CSA C22.2 No. 60950-1
- NOM-019
- Argentina IEC60950-1
- Japan VCCI, Class A
- Australia/New Zealand AS/NZS CISPR 22, Class A; AS/NZS 60950.1
- China CCC GB4943.1, GB9254 Class A, GB17625.1
- Taiwan BSMI CNS13438, Class A; CNS14336-1
- Korea KN22, Class A; KN24
- Russia, Belorussia and Kazakhstan, TR CU 020/2011 (for EMC) and TR CU 004/2011 (for safety)
- IEC 60950-1 (CB Certificate and CB Test Report)
- CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, EN61000-3-3)
- CISPR 22, Class A
- TUV-GS (EN60950-1/IEC60950-1,EK1-ITB2000)
- RoHS Directive
- Energy Star 2.0

External drive enclosures

The following tables list the SAS external drive enclosures that are offered by Lenovo that can be used with the System x3550 M5 for storage expansion.

Note: Information provided in this section is for ordering reference purposes only. For the operating system and adapter support details, refer to the interoperability matrix for a particular storage enclosure that can be found on the Lenovo Data Center Support web site:
http://datacentersupport.lenovo.com

Table 34. 6 Gbps SAS external drive enclosures

Description	Part number
Lenovo Storage E1012 LFF Disk Expansion Single SAS IO Module, Rail Kit, 9x5 NBD	64111B1
Lenovo Storage E1012 LFF Disk Expansion Dual SAS IO Module, Rail Kit, 9x5 NBD	64111B2
Lenovo Storage E1024 SFF Disk Expansion Single SAS IO Module, Rail Kit, 9x5 NBD	64111B3
Lenovo Storage E1024 SFF Disk Expansion Dual SAS IO Module, Rail Kit, 9x5 NBD	64111B4

Table 35. External drive enclosures

Description	Part number		
	Worldwide	Japan	PRC
Lenovo Storage D1212 LFF Disk Expansion with Dual SAS IO Modules	4587A11	4587A1J	4587A1C
Lenovo Storage D1224 SFF Disk Expansion with Dual SAS IO Modules	4587A31	4587A3J	4587A3C
Lenovo Storage D3284 4TB x 84 HD Expansion Enclosure	641311F		
Lenovo Storage D3284 6TB x 84 HD Expansion Enclosure	641312F		
Lenovo Storage D3284 8TB x 84 HD Expansion Enclosure	641313F		
Lenovo Storage D3284 10TB x 84 HD Expansion Enclosure	641314F		

For details about supported drives, adapters, and cables, see the following Lenovo Press Product Guides:

- Lenovo Storage E1012 and E1024
  http://lenovopress.com/lp0043
- Lenovo Storage D1212 and D1224
  http://lenovopress.com/lp0512
- Lenovo Storage D3284
  http://lenovopress.com/lp0513

External storage systems

The following table lists the external storage systems that are currently offered by Lenovo that can be used with the System x3550 M5 in IT solutions.

Note: Information provided in this section is for ordering reference purposes only. End-to-end storage configuration support *must* be verified through the interoperability matrix for a particular storage system that can be found on the Lenovo Data Center Support web site:
http://datacentersupport.lenovo.com

Table 36. External storage systems: DE Series

Description	Part number	
	Worldwide	Japan
Lenovo ThinkSystem DE Series Storage (SAS connectivity)		
Lenovo ThinkSystem DE2000H SAS Hybrid Flash Array LFF	7Y70A000WW	7Y701003JP
Lenovo ThinkSystem DE2000H SAS Hybrid Flash Array SFF	7Y71A000WW	7Y711003JP
Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array 4U60	7Y77A002WW	7Y771000JP
Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array LFF	7Y74A000WW	7Y74A000JP
Lenovo ThinkSystem DE4000H SAS Hybrid Flash Array SFF	7Y75A000WW	7Y75A000JP
Lenovo ThinkSystem DE4000F SAS All Flash Array SFF	7Y76A000WW	7Y76A000JP
Lenovo ThinkSystem DE6000H SAS Hybrid Flash Array 4U60	7Y80A000WW	7Y801002JP
Lenovo ThinkSystem DE6000H SAS Hybrid Flash Array SFF	7Y78A000WW	7Y781002JP
Lenovo ThinkSystem DE6000F SAS All Flash Array SFF	7Y79A000WW	7Y79A000JP
Lenovo ThinkSystem DE Series Storage (iSCSI connectivity)		
Lenovo ThinkSystem DE2000H 10GBASE-T Hybrid Flash Array LFF	7Y70A003WW	7Y701001JP
Lenovo ThinkSystem DE2000H 10GBASE-T Hybrid Flash Array SFF	7Y71A002WW	7Y711005JP
Lenovo ThinkSystem DE2000H iSCSI Hybrid Flash Array LFF	7Y70A004WW	7Y701000JP
Lenovo ThinkSystem DE2000H iSCSI Hybrid Flash Array SFF	7Y71A003WW	7Y711006JP
Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array 4U60	7Y77A000WW	7Y771002JP
Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array LFF	7Y74A002WW	7Y74A002JP
Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array SFF	7Y75A001WW	7Y75A001JP
Lenovo ThinkSystem DE4000F iSCSI All Flash Array SFF	7Y76A002WW	7Y76A002JP
Lenovo ThinkSystem DE6000H iSCSI Hybrid Flash Array 4U60	7Y80A002WW	7Y801000JP
Lenovo ThinkSystem DE6000H iSCSI Hybrid Flash Array SFF	7Y78A002WW	7Y781000JP
Lenovo ThinkSystem DE6000F iSCSI All Flash Array SFF	7Y79A002WW	7Y79A002JP
Lenovo ThinkSystem DE Series Storage (FC connectivity)		
Lenovo ThinkSystem DE2000H FC Hybrid Flash Array LFF	7Y70A002WW	7Y701002JP
Lenovo ThinkSystem DE2000H FC Hybrid Flash Array SFF	7Y71A001WW	7Y711004JP
Lenovo ThinkSystem DE4000H FC Hybrid Flash Array 4U60	7Y77A001WW	7Y771001JP
Lenovo ThinkSystem DE4000H FC Hybrid Flash Array LFF	7Y74A001WW	7Y74A001JP
Lenovo ThinkSystem DE4000H FC Hybrid Flash Array SFF	7Y75A002WW	7Y75A002JP
Lenovo ThinkSystem DE4000F FC All Flash Array SFF	7Y76A001WW	7Y76A001JP
Lenovo ThinkSystem DE6000H FC Hybrid Flash Array 4U60	7Y80A001WW	7Y801001JP
Lenovo ThinkSystem DE6000H FC Hybrid Flash Array SFF	7Y78A001WW	7Y781001JP
Lenovo ThinkSystem DE6000F FC All Flash Array SFF	7Y79A001WW	7Y79A001JP

Table 37. External storage systems: DM Series

Description	Part number
Lenovo ThinkSystem DM Series Storage (iSCSI or FC connectivity)	
Lenovo ThinkSystem DM3000H Hybrid Storage Array (2U12 LFF, CTO only)	7Y42CTO1WW
Lenovo ThinkSystem DM3000H 48TB (12x 4TB HDDs) (Universal SFP+)	7Y420001EA*
Lenovo ThinkSystem DM3000H 48TB (12x 4TB HDDs) (10GBASE-T)	7Y420002EA*
Lenovo ThinkSystem DM5000H Hybrid Storage Array (2U24 SFF, CTO only)	7Y57CTO1WW
Lenovo ThinkSystem DM5000H 11.5TB (12x 960GB SSDs) (Universal SFP+)	7Y570001EA*
Lenovo ThinkSystem DM5000H 11.5TB (12x 960GB SSDs) (10GBASE-T)	7Y570002EA*
Lenovo ThinkSystem DM5000H 29TB (24x 1.2TB 10K HDDs) (Universal SFP+)	7Y570003EA*
Lenovo ThinkSystem DM5000H 29TB (24x 1.2TB 10K HDDs) (10GBASE-T)	7Y570004EA*
Lenovo ThinkSystem DM5000F Flash Storage Array (2U24 SFF, CTO only)	7Y41CTO1WW
Lenovo ThinkSystem DM7000H Hybrid Storage Array (3U, CTO only)	7Y56CTO1WW
Lenovo ThinkSystem DM7000F Flash Storage Array (3U, CTO only)	7Y40CTO1WW

* Available only in EMEA.

Table 38. External storage systems: DS Series

	Part number		
Description	Worldwide	Japan	PRC
Lenovo ThinkSystem DS Series Storage (SAS connectivity)			
Lenovo ThinkSystem DS2200 LFF SAS Dual Controller Unit	4599A41	4599A4J	4599A4C
Lenovo ThinkSystem DS2200 SFF SAS Dual Controller Unit	4599A21	4599A2J	4599A2C
Lenovo ThinkSystem DS4200 LFF SAS Dual Controller Unit	4617A41	4617A4J	4617A4C
Lenovo ThinkSystem DS4200 SFF SAS Dual Controller Unit	4617A21	4617A2J	4617A2C
Lenovo ThinkSystem DS6200 SFF SAS Dual Controller Unit	4619A21	4619A2J	4619A2C
Lenovo ThinkSystem DS Series Storage (iSCSI or FC connectivity)			
Lenovo ThinkSystem DS2200 LFF FC/iSCSI Dual Controller Unit	4599A31	4599A3J	4599A3C
Lenovo ThinkSystem DS2200 SFF FC/iSCSI Dual Controller Unit	4599A11	4599A1J	4599A1C
Lenovo ThinkSystem DS4200 LFF FC/iSCSI Dual Controller Unit	4617A31	4617A3J	4617A3C
Lenovo ThinkSystem DS4200 SFF FC/iSCSI Dual Controller Unit	4617A11	4617A1J	4617A1C
Lenovo ThinkSystem DS6200 SFF FC/iSCSI Dual Controller Unit	4619A11	4619A1J	4619A1C
DS6200F 12x 400GB 10DWD SSDs, 1x 8Gb FC SFP, 512 Snapshots, Replication	4619A1F	4619J1F	4619C1F
DS6200F 12x 800GB 3DWD SSDs, 1x 8Gb FC SFP, 512 Snapshots, Replication	4619A2F	4619J2F	4619C2F
DS6200F 12x 1.6TB 3DWD SSDs, 1x 8Gb FC SFP, 512 Snapshots, Replication	4619A3F	4619J3F	4619C3F
DS6200F 12x 3.84TB 1DWD SSDs, 1x 8Gb FC SFP, 512 Snapshots, Replication	4619A4F	4619J4F	4619C4F

Table 39. External storage systems: V Series and Storwize for Lenovo

Description	Part number
Lenovo Storage V Series (SAS [except V7000/V7000F], iSCSI, or FC connectivity)	
Lenovo Storage V3700 V2 LFF Control Enclosure	6535C1D
Lenovo Storage V3700 V2 SFF Control Enclosure	6535C2D
Lenovo Storage V3700 V2 XP LFF Control Enclosure	6535C3D
Lenovo Storage V3700 V2 XP SFF Control Enclosure	6535C4D
Lenovo Storage V5030 LFF Control Enclosure 3Yr S&S	6536C12
Lenovo Storage V5030 LFF Control Enclosure 5Yr S&S	6536C32
Lenovo Storage V5030 SFF Control Enclosure 3Yr S&S	6536C22
Lenovo Storage V5030 SFF Control Enclosure 5Yr S&S	6536C42
Lenovo Storage V5030F SFF Control Enclosure 3Yr S&S	6536B1F
Lenovo Storage V5030F SFF Control Enclosure 5Yr S&S	6536B2F
Lenovo Storage V7000 SFF Control Enclosure 3Yr S&S PRC	6538R11^
Lenovo Storage V7000 SFF Control Enclosure 5Yr S&S PRC	6538R21^
Lenovo Storage V7000F SFF Control Enclosure 3Yr S&S PRC	6538R1G^
Lenovo Storage V7000F SFF Control Enclosure 5Yr S&S PRC	6538R2G^
IBM Storwize for Lenovo (iSCSI or FC connectivity)	
IBM Storwize V7000 SFF Control Enclosure, 3YR SWMA	6195C32†
IBM Storwize V7000 SFF Control Enclosure, 3YR SWMA, LA	6195C3L‡
IBM Storwize V7000 SFF Control Enclosure, 5YR SWMA	6195C52†
IBM Storwize V7000 SFF Control Enclosure, 5YR SWMA, LA	6195C5L‡

^ Available only in PRC.
† Available worldwide except Latin America.
‡ Available only in Latin America.

For more information, see the list of Product Guides in the following categories:

- Lenovo DE Series, DM Series, DS Series, and V Series storage:
  http://lenovopress.com/storage/san/lenovo#rt=product-guide
- IBM Storwize for Lenovo storage:
  http://lenovopress.com/storage/san/ibm#rt=product-guide

External backup units

The following table lists the external backup options that are offered by Lenovo that can be used with the System x3550 M5 in backup solutions.

Note: Information provided in this section is for ordering reference purposes only. End-to-end LTO Ultrium configuration support for a particular tape backup unit *must* be verified through the System Storage Interoperation Center (SSIC):
http://www.ibm.com/systems/support/storage/ssic

Table 40. External backup options

Description	Part number
External RDX USB drives	
RDX External USB 3.0 Dock with 500GB Cartridge	00YD052
RDX External USB 3.0 Dock with 1TB Cartridge	00YD053
External SAS tape backup drives	
IBM TS2260 Tape Drive Model H6S	6160S6E
IBM TS2270 Tape Drive Model H7S	6160S7E
IBM TS2280 Tape Drive Model H8S	6160S8E
External SAS tape backup autoloaders	
IBM TS2900 Tape Autoloader w/LTO5 HH SAS	6171S5R
IBM TS2900 Tape Autoloader w/LTO6 HH SAS	6171S6R
IBM TS2900 Tape Autoloader w/LTO7 HH SAS	6171S7R
IBM TS2900 Tape Autoloader w/LTO8 HH SAS	6171S8R
External tape backup libraries	
IBM TS4300 3U Tape Library-Base Unit	6741A1F
SAS backup drives for TS4300 Tape Library	
LTO 6 HH SAS Drive	01KP934
LTO 7 HH SAS Drive	01KP937
LTO 8 HH SAS Drive	01KP953
Fibre Channel backup drives for TS4300 Tape Library	
LTO 6 FH Fibre Channel Drive	01KP935
LTO 6 HH Fibre Channel Drive	01KP933
LTO 7 FH Fibre Channel Drive	01KP938
LTO 7 HH Fibre Channel Drive	01KP936
LTO 8 FH Fibre Channel Drive	01KP954
LTO 8 HH Fibre Channel Drive	01KP952

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

Ethernet LAN switches

The following table lists the Ethernet LAN switches that are offered by Lenovo that can be used with the System x3550 M5 server in IT solutions.

Table 41. Ethernet LAN switches

Description	Part number
1 Gb Ethernet switches	
Juniper EX2300-C PoE Switch	7165H1X
Juniper EX2300-24p PoE Switch	7165H2X
Lenovo ThinkSystem NE0152T RackSwitch (Rear to Front)	7Y810011WW
Lenovo ThinkSystem NE0152TO RackSwitch (Rear to Front, ONIE)	7Z320O11WW
Lenovo RackSwitch G7028 (Rear to Front)	7159BAX
Lenovo RackSwitch G7052 (Rear to Front)	7159CAX
Lenovo RackSwitch G8052 (Rear to Front)	7159G52
10 Gb Ethernet switches	
Lenovo ThinkSystem NE1032 RackSwitch (Rear to Front)	7159A1X
Lenovo ThinkSystem NE1032T RackSwitch (Rear to Front)	7159B1X
Lenovo ThinkSystem NE1072T RackSwitch (Rear to Front)	7159C1X
Lenovo RackSwitch G8124E (Rear to Front)	7159BR6
Lenovo RackSwitch G8272 (Rear to Front)	7159CRW
Lenovo RackSwitch G8296 (Rear to Front)	7159GR6
25 Gb Ethernet switches	
Lenovo ThinkSystem NE2572 RackSwitch (Rear to Front)	7159E1X
Lenovo ThinkSystem NE2572O RackSwitch (Rear to Front, ONIE)	7Z210O21WW
100 Gb Ethernet switches	
Lenovo ThinkSystem NE10032 RackSwitch (Rear to Front)	7159D1X
Lenovo ThinkSystem NE10032O RackSwitch (Rear to Front, ONIE)	7Z210O11WW

For more information, see the list of Product Guides in the Top-of-rack Switches category:
http://lenovopress.com/servers/options/switches#rt=product-guide

Fibre Channel SAN switches

The following table lists currently available Fibre Channel SAN switches that are offered by Lenovo that can be used with the System x3550 M5 in IT solutions.

Table 42. Fibre Channel SAN switches

Description	Part number
8 Gb FC	
Lenovo B300, 8 ports licensed, 8x 8Gb SWL SFPs, 1 PS, Rail Kit, 3Yr FW	3873AR3
Lenovo B300, E_Port License, 8 ports licensed, 8x 8Gb SWL SFPs, 1 PS, Rail Kit, 1Yr FW	3873AR6
16 Gb FC	
Lenovo ThinkSystem DB610S, 8 ports licensed, 8x 16Gb SWL SFPs, 1 PS, Rail Kit, 1Yr FW	6559F2A
Lenovo ThinkSystem DB610S, ENT Bundle, 24 ports licensed, 24x 16Gb SWL SFPs, 1 PS, Rail Kit, 1Yr FW	6559F1A
Lenovo ThinkSystem DB610S, ENT Bundle, 24 ports licensed, 24x 16Gb SWL SFPs, 1 PS, Rail Kit, 3Yr FW	6559D1Y
Lenovo B6505, 12 ports licensed, 12x 16Gb SWL SFPs, 1 PS, Rail Kit, 1Yr FW	3873ER1
Lenovo B6510, 24 ports licensed, 24x 16Gb SWL SFPs, 2 PS, Rail Kit, 1Yr FW	3873IR1
Lenovo B6510, 24 ports licensed, 24x 16Gb SWL SFPs, 2 PS, Rail Kit, 3Yr FW	3873BR3
32 Gb FC	
Lenovo ThinkSystem DB610S, 8 ports licensed, No SFPs, 1 PS, Rail Kit, 1Yr FW	6559F3A
Lenovo ThinkSystem DB610S, 8 ports licensed, No SFPs, 1 PS, Rail Kit, 3Yr FW	6559D3Y
Lenovo ThinkSystem DB620S, 24 ports licensed, No SFPs, 2 PS, Rail Kit, 1Yr FW	6415G3A
Lenovo ThinkSystem DB620S, 24 ports licensed, 24x 32Gb SWL SFPs, 2 PS, Rail Kit, 1Yr FW	6415H11
Lenovo ThinkSystem DB620S, 24 ports licensed, 24x 32Gb SWL SFPs, 2 PS, Rail Kit, 3Yr FW	6415G11
Lenovo ThinkSystem DB620S, ENT Bundle, 48 ports licensed, 48x 32Gb SWL SFPs, 2 PS, Rail Kit, 1Yr FW	6415H2A
Lenovo ThinkSystem DB400D 32Gb FC Director, ENT. Feature set, 4 Blade slots, 8U, 1Yr FW	6684D2A
Lenovo ThinkSystem DB400D 32Gb FC Director, ENT. Feature set, 4 Blade slots, 8U, 3Yr FW	6684B2A
Lenovo ThinkSystem DB800D 32Gb FC Director, ENT. Feature set, 8 Blade slots, 14U, 1Yr FW	6682D1A

For more information, see the list of Product Guides in the Rack SAN Switches category:
http://lenovopress.com/storage/switches/rack#rt=product-guide

Rack cabinets

The following table lists the rack cabinets that are offered by Lenovo that can be used in System x3550 M5 solutions.

Table 43. Rack cabinets

Description	Part number
25U S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072RX
25U Static S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072PX
42U S2 Standard Rack (1000 mm deep; 6 sidewall compartments)	93074RX
42U 1100mm Enterprise V2 Dynamic Rack (6 sidewall compartments)	93634PX
42U 1100mm Enterprise V2 Dynamic Expansion Rack (6 sidewall compartments)	93634EX
42U 1200mm Deep Dynamic Rack (6 sidewall compartments)	93604PX
42U 1200mm Deep Static Rack (6 sidewall compartments)	93614PX
42U Enterprise Rack (1105 mm deep; 4 sidewall compartments)	93084PX
42U Enterprise Expansion Rack (1105 mm deep; 4 sidewall compartments)	93084EX

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

KVM switches and consoles

The following table lists the KVM switches and consoles that are offered by Lenovo that can be used in System x3550 M5 solutions.

Table 44. KVM switch and console options

Description	Part number
Consoles	
1U 18.5" Standard Console (without keyboard)	17238BX
Console keyboards	
Lenovo UltraNav Keyboard USB - US Eng	00MW310
Keyboard w/ Int. Pointing Device USB - Arabic 253 RoHS v2	46W6713
Keyboard w/ Int. Pointing Device USB - Belg/UK 120 RoHS v2	46W6714
Keyboard w/ Int. Pointing Device USB - Chinese/US 467 RoHS v2	46W6715
Keyboard w/ Int. Pointing Device USB - Czech 489 RoHS v2	46W6716
Keyboard w/ Int. Pointing Device USB - Danish 159 RoHS v2	46W6717
Keyboard w/ Int. Pointing Device USB - Dutch 143 RoHS v2	46W6718
Keyboard w/ Int. Pointing Device USB - French 189 RoHS v2	46W6719
Keyboard w/ Int. Pointing Device USB - Fr/Canada 445 RoHS v2	46W6720
Keyboard w/ Int. Pointing Device USB - German 129 RoHS v2	46W6721
Keyboard w/ Int. Pointing Device USB - Greek 219 RoHS v2	46W6722
Keyboard w/ Int. Pointing Device USB - Hebrew 212 RoHS v2	46W6723
Keyboard w/ Int. Pointing Device USB - Hungarian 208 RoHS v2	46W6724
Keyboard w/ Int. Pointing Device USB - Italian 141 RoHS v2	46W6725
Keyboard w/ Int. Pointing Device USB - Japanese 194 RoHS v2	46W6726
Keyboard w/ Int. Pointing Device USB - Korean 413 RoHS v2	46W6727

Description	Part number
Keyboard w/ Int. Pointing Device USB - LA Span 171 RoHS v2	46W6728
Keyboard w/ Int. Pointing Device USB - Norwegian 155 RoHS v2	46W6729
Keyboard w/ Int. Pointing Device USB - Polish 214 RoHS v2	46W6730
Keyboard w/ Int. Pointing Device USB - Portugese 163 RoHS v2	46W6731
Keyboard w/ Int. Pointing Device USB - Russian 441 RoHS v2	46W6732
Keyboard w/ Int. Pointing Device USB - Slovak 245 RoHS v2	46W6733
Keyboard w/ Int. Pointing Device USB - Spanish 172 RoHS v2	46W6734
Keyboard w/ Int. Pointing Device USB - Swed/Finn 153 RoHS v2	46W6735
Keyboard w/ Int. Pointing Device USB - Swiss F/G 150 RoHS v2	46W6736
Keyboard w/ Int. Pointing Device USB - Thai 191 RoHS v2	46W6737
Keyboard w/ Int. Pointing Device USB - Turkish 179 RoHS v2	46W6738
Keyboard w/ Int. Pointing Device USB - UK Eng 166 RoHS v2	46W6739
Keyboard w/ Int. Pointing Device USB - US Euro 103P RoHS v2	46W6740
Keyboard w/ Int. Pointing Device USB - Slovenian 234 RoHS v2	46W6741
Console switches and cables - ThinkSystem Digital KVM	
ThinkSystem Digital 2x1x16 KVM Switch (DVI video output port)	1754D1T
ThinkSystem VGA to DVI Conversion Cable	4X97A11108
ThinkSystem Single-USB Conversion Cable for Digital KVM	4X97A11109
ThinkSystem Dual-USB Conversion Cable for Digital KVM	4X97A11107
Console switches and cables - ThinkSystem Analog KVM	
ThinkSystem Analog 1x8 KVM Switch (DVI video output port)	1754A1T
ThinkSystem VGA to DVI Conversion Cable	4X97A11108
ThinkSystem USB Conversion Cable for Analog KVM	4X97A11106
Console switches and cables - Global Console Managers	
Global 2x2x16 Console Manager (GCM16) (VGA video output port)	1754D1X
Global 4x2x32 Console Manager (GCM32) (VGA video output port)	1754D2X
Virtual Media Conversion Option Gen2 (VCO2)	46M5383
Serial Conversion Option (SCO)	46M5382
Console switches and cables - Local Console Managers	
Local 1x8 Console Manager (LCM8) (VGA video output port)	1754A1X
Local 2x16 Console Manager (LCM16) (VGA video output port)	1754A2X
Virtual Media Conversion Option Gen2 (VCO2)	46M5383

For more information, see the list of Product Guides in the KVM Switches and Consoles category:
http://lenovopress.com/servers/options/kvm

Power distribution units

The following table lists the power distribution units (PDUs) that are offered by Lenovo that can be used in System x3550 M5 solutions.

Table 45. Power distribution units

Description	Part number
0U Basic PDUs	
0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord	00YJ776
0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord	00YJ777
0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 line cord	00YJ778
0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord	00YJ779
Switched and Monitored PDUs	
0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P line cord	00YJ781
0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 line cord	00YJ780
0U 18 C13/6 C19 Switched / Monitored 32A/200-240V/346-415V/3Ph PDU w/ IEC60309 532P6 cord	00YJ782
0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 line cord	00YJ783
1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)	46M4002
1U 9 C19/3 C13 Switched and Monitored 60A 3Ph PDU with IEC 309 3P+Gnd cord	46M4003
1U 12 C13 Switched and Monitored DPI PDU (without line cord)	46M4004
1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord	46M4005
Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)	
Ultra Density Enterprise C19/C13 PDU Module (without line cord)	71762NX
Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord	71763NU
C13 Enterprise PDUs (12x IEC 320 C13 outlets)	
DPI C13 Enterprise PDU+ (without line cord)	39M2816
DPI Single Phase C13 Enterprise PDU (without line cord)	39Y8941
C19 Enterprise PDUs (6x IEC 320 C19 outlets)	
DPI Single Phase C19 Enterprise PDU (without line cord)	39Y8948
DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord	39Y8923
Front-end PDUs (3x IEC 320 C19 outlets)	
DPI 30amp/125V Front-end PDU with NEMA L5-30P line cord	39Y8938
DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord	39Y8939
DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8934
DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8940
DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8935
Universal PDUs (7x IEC 320 C13 outlets)	
DPI Universal 7 C13 PDU (with 2 m IEC 320-C19 to C20 rack power cord)	00YE443
NEMA PDUs (6x NEMA 5-15R outlets)	
DPI 100-127V PDU with fixed NEMA L5-15P line cord	39Y8905
Line cords for PDUs that ship without a line cord	
DPI 30a Line Cord (NEMA L6-30P)	40K9614
DPI 32a Line Cord (IEC 309 P+N+G)	40K9612
DPI 32a Line Cord (IEC 309 3P+N+G)	40K9611

Description	Part number
DPI 60a Cord (IEC 309 2P+G)	40K9615
DPI 63a Cord (IEC 309 P+N+G)	40K9613
DPI Australian/NZ 3112 Line Cord (32A)	40K9617
DPI Korean 8305 Line Cord (30A)	40K9618

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

Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are offered by Lenovo that can be used in System x3550 M5 solutions.

Table 46. Uninterruptible power supply units

Description	Part number
Worldwide models	
RT1.5kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA 5-15R 12A outlets)	55941AX
RT1.5kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A outlets)	55941KX
RT2.2kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA 5-20R 16A outlets)	55942AX
RT2.2kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x IEC 320 C19 16A outlets)	55942KX
RT3kVA 2U Rack or Tower UPS (100-125VAC) (6x NEMA 5-20R 16A, 1x NEMA L5-30R 24A outlets)	55943AX
RT3kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x IEC 320 C19 16A outlets)	55943KX
RT5kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x IEC 320 C19 16A outlets)	55945KX
RT6kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x IEC 320 C19 16A outlets)	55946KX
RT8kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets)	55948KX
RT11kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets)	55949KX
RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets)	55948PX
RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets)	55949PX
ASEAN, HTK, INDIA, and PRC models	
ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)	55943KT
ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)	55943LT
ThinkSystem RT6kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)	55946KT
ThinkSystem RT10kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)	5594XKT

For more information, see the list of Product Guides in the Uninterruptible Power Supply Units category:
http://lenovopress.com/servers/options/ups#rt=product-guide

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http://www.lenovofs.com

Related publications and links

For more information, see these resources:

- Lenovo servers product page
  http://www.lenovo.com/systems/servers
- System x3550 M5 Type 5463 documentation
  http://systemx.lenovofiles.com/help/topic/com.lenovo.sysx.5463.doc/c_product_page.html
- ServerProven hardware compatibility page for the x3550 M5
  http://www.lenovo.com/us/en/serverproven/xseries/5463.shtml
- xREF - System x Reference Sheets
  http://lenovopress.com/xref
- Lenovo Support - System x3550 M5
  https://datacentersupport.lenovo.com/us/en/products/servers/system-x/system-x3550-m5/5463

Related product families

Product families related to this document are the following:

- 2-Socket Rack Servers

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