

## Lenovo ThinkSystem SE350 Edge Server Product Guide

The ThinkSystem SE350 is a purpose-built server that is half the width and significantly shorter than a traditional server, making it ideal for deployment in tight spaces. It can be mounted on a wall, stacked on a shelf or mounted in a rack. The ThinkSystem SE350 puts increased processing power, storage and network closer to where data is generated, allowing actions resulting from the analysis of that data to take place more quickly.

Suggested uses: edge computing (IoT, AI, machine learning), retail, video security, inventory management, building control, telecommunications, manufacturing, distribution



Figure 1. Lenovo ThinkSystem SE350

### Did you know?

Customers looking for computing solutions at the edge of their networks often have to compromise -- to use either datacenter-class equipment which is too large and power hungry, or PC based equipment which can't run their enterprise level applications. The ThinkSystem SE350 fits the space between those two extremes. Its compact design, low power usage, and high performance are just the right combination for edge locations. The SE350 can be wall mounted, stacked on a shelf or installed in a rack. It is also designed to operate in rugged environments, up to 55°C.

## Key features

The ThinkSystem SE350 is a purpose-built server that is half the width and significantly shorter than a traditional server, making it ideal for deployment in tight spaces. It can be mounted on a wall, stacked on a shelf or mounted in a rack.

The ThinkSystem SE350 puts increased processing power, storage and network closer to where data is generated, allowing actions resulting from the analysis of that data to take place more quickly. The server has wired connections up to 10GbE and optionally supports both Wi-Fi and LTE wireless connectivity.

Since these edge servers are typically deployed outside of secure data centers, they include technology that encrypts the data stored on the device if it is tampered with, only enabling authorized users to access it.

## Scalability and performance

The SE350 offers numerous features to boost performance, improve scalability and reduce costs:

- Support a single processor from the Intel Xeon D Processor family. Supports processors up to 16 cores, core speeds of up to 2.2 GHz, and TDP ratings of up to 100W.
- Intelligent and adaptive system performance with Intel Turbo Boost Technology 2.0 allows processor cores to run at maximum speeds during peak workloads by temporarily going beyond processor 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 use the hardware for virtualization workloads.
- Support for up to 4 TruDDR4 memory DIMMs an up to 256 GB of memory using 64 GB DIMMs.
- Up to 8 M.2 data drives -- SATA or NVMe -- provide efficient and rugged storage for edge workloads.
- Supports 1 or 2 additional M.2 SATA drives for OS boot and applications, allowing the convenience of separating application code from data.
- The use of NVMe drives increased performance over SATA drives, in terms of throughput, bandwidth, and latency.
- Two 10 GbE SFP+ or 10GBASE-T ports standard for high-speed networking to back-end servers.
- One PCIe 3.0 x16 slot for a GPU or other adapter types provides I/O flexibility as needed.
- Support for the NVIDIA T4 GPU for enhanced workloads at the edge of your network.

## Availability and serviceability

The SE350 provides many features to simplify serviceability and increase system uptime:

- Supports remote management, including remote control functions down to the UEFI level (most models) makes managing the edge servers easy even without onsite IT personnel.
- ECC memory and memory RAS features including Single Device Data Correction (SDDC, also known as Chipkill)
- RAID redundancy on SATA drives for greater system uptime.
- Two redundant AC Adapter power supplies and three N+1 redundant fans to provide improved availability.
- LTE wireless connectivity (using the Wireless Network Module) can be used as a backup network in the event that wired connections are offline
- Redundant management ports (using a Wired Network Module) allow you to have redundant wired connections to the server.

- Remote management can be performed by using wireless connectivity
- Built-in XClarity Controller continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failures to minimize downtime.
- Built-in diagnostics in UEFI, using Lenovo XClarity Provisioning Manager, speed up troubleshooting tasks to reduce service time.
- Lenovo XClarity Provisioning Manager collects and saves service data to USB key drive or remote CIFS share folder, for troubleshooting and to reduce service time.
- Auto restart in the event of a loss of AC power
- Support for the XClarity Administrator Mobile app running on a supported smartphone and connected to the server through the service-enabled USB port, enables additional local systems management functions.
- Three-year or one-year customer-replaceable unit and onsite limited warranty, 9 x 5 next business day. Optional service upgrades are available.

### **Manageability and security**

Systems management features simplify local and remote management of the SE350:

- Lenovo XClarity Controller (XCC) monitors server availability and performs remote management. XCC Advanced (standard on most models), which enables remote KVM. Optional XCC Enterprise enables the mounting of remote media files (ISO and IMG image files), boot capture, and power capping.
- Lenovo XClarity Administrator offers comprehensive hardware management tools that help to increase uptime, reduce costs and improve productivity through advanced server management capabilities.
- New UEFI-based Lenovo XClarity Provisioning Manager, accessible from F1 during boot, provides system inventory information, graphical UEFI Setup, platform update function, RAID Setup wizard, operating system installation function, and diagnostic functions.
- Support for Lenovo XClarity Energy Manager, which captures real-time power and temperature data from the server and provides automated controls to lower energy costs.
- Integrated Trusted Platform Module (TPM) 2.0 support enables advanced cryptographic methods, such as digital signatures and remote attestation.
- Supports Secure Boot to ensure only a digitally signed operating system can be used.
- Industry-standard Advanced Encryption Standard (AES) NI support for faster, stronger encryption.
- Intel Execute Disable Bit functionality can prevent certain classes of malicious buffer overflow attacks when combined with a supported 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.

## Components and connectors

The ports on the front of the SE350 server depend on which network module is installed.

The following figure shows server with the 10Gb SFP+ network module installed. With this network module, the server has a variety of wired connectivity capabilities has two 10Gb SFP+ Ethernet ports, 2 Gigabit Ethernet ports, and 2 ports for management that support either redundancy or daisy-chaining multiple SE350 servers together to reduce cabling requirements on the management LAN.

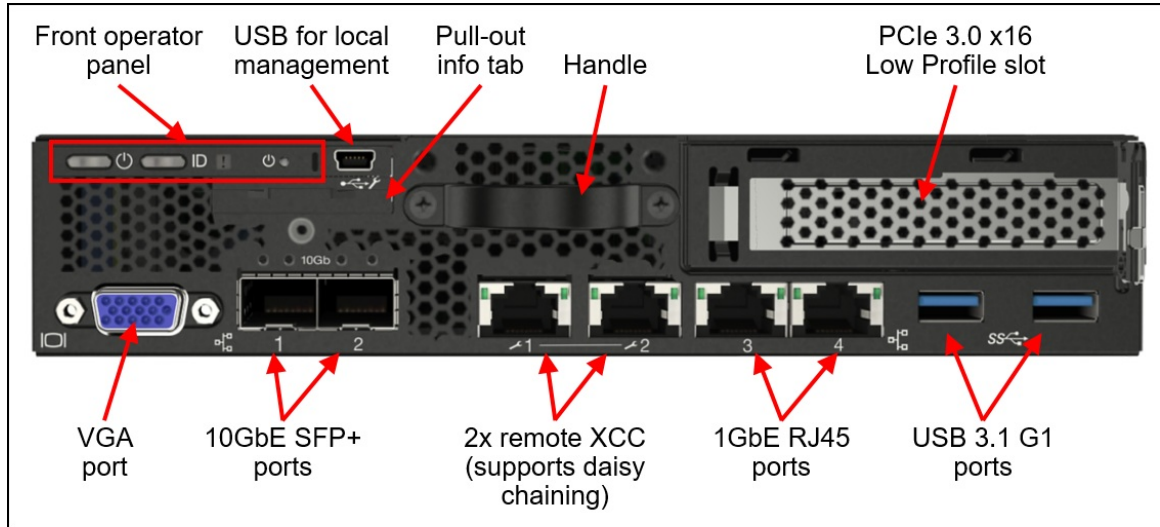


Figure 2. Front view of the Lenovo ThinkSystem SE350 with 10G SFP+ network module

The following figure shows server with the 10GBASE-T network module installed. The connectors are the same as with the 10G SFP+ network module except the two 10G SFP+ ports are replaced with 10GBASE-T ports.

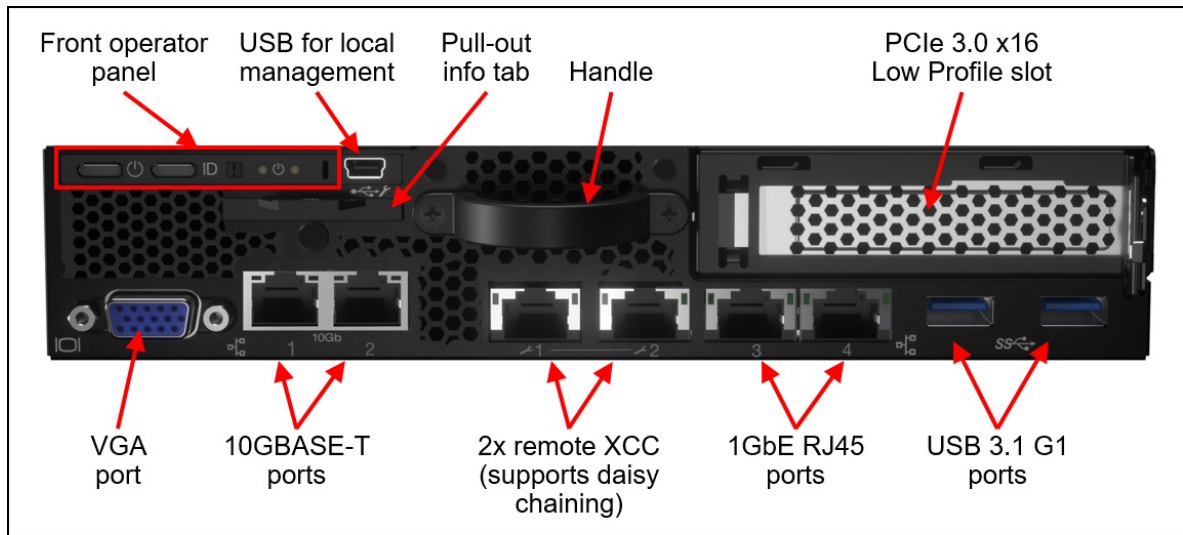


Figure 3. Front view of the Lenovo ThinkSystem SE350 with 10GBASE-T network module

The following figure shows server with the Wireless network module installed. With this network module, the server has a variety of wired and wireless connectivity capabilities including LTE/Wi-Fi wireless connectivity.

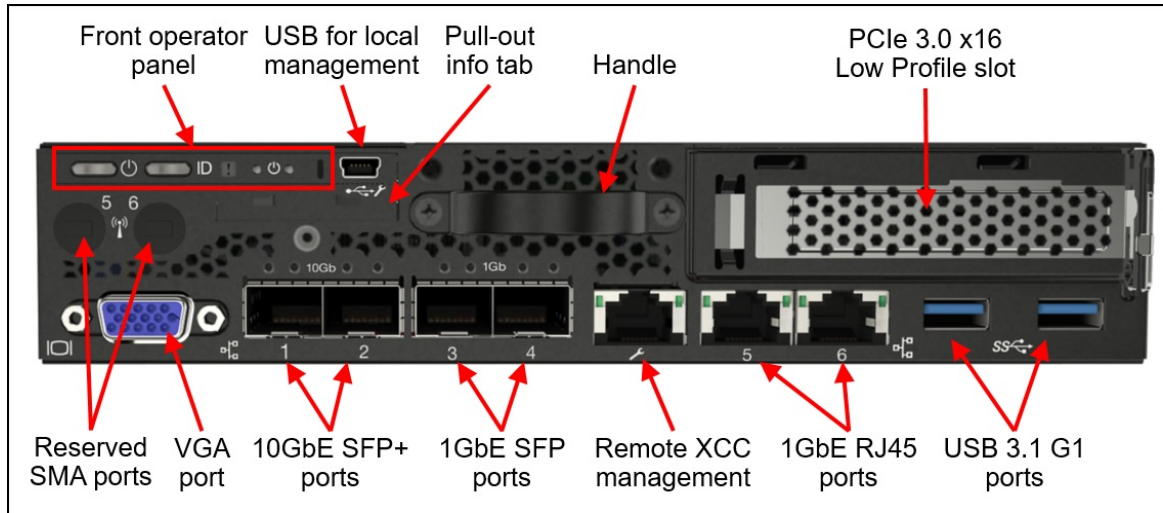


Figure 4. Front view of the Lenovo ThinkSystem SE350 with Wireless network module

The following figure shows the rear of the SE350 server when the Wireless-enabled network module is installed. The servers with wired network modules are the same except that the antennas have been removed.

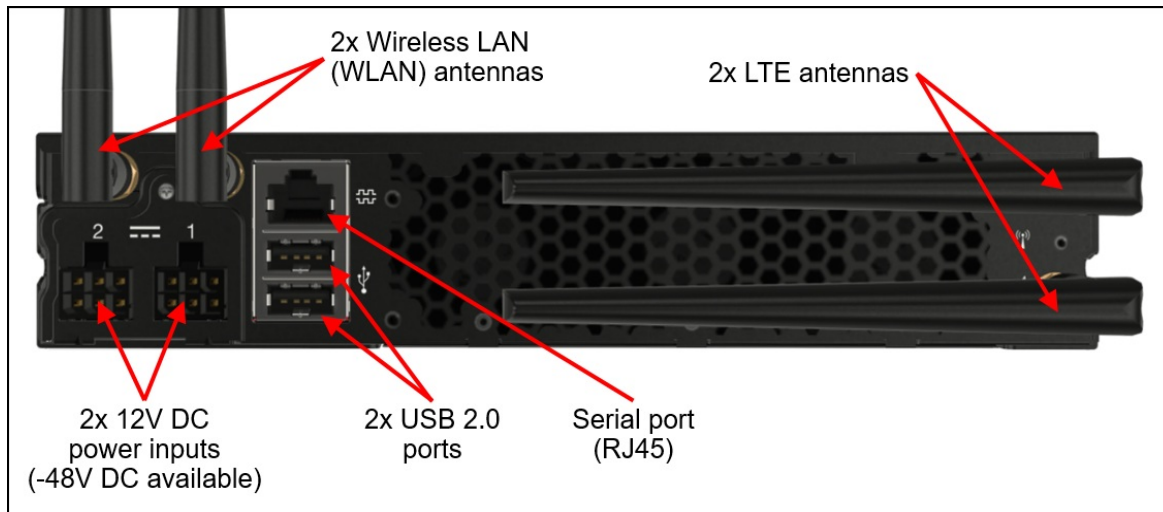


Figure 5. Rear view of the Lenovo ThinkSystem SE350

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

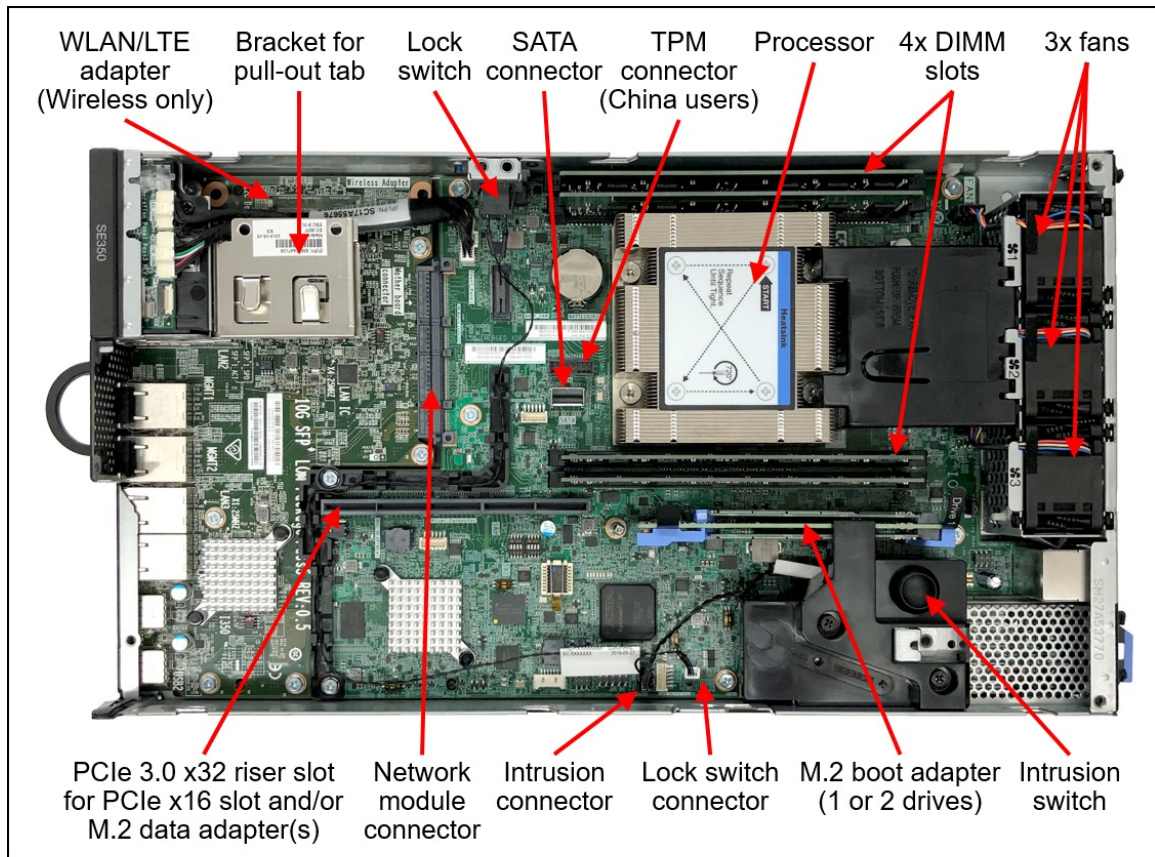


Figure 6. Internal view of the Lenovo ThinkSystem SE350

## System architecture

The following figure shows the architectural block diagram of the SE350 system, showing the major components and connections.

**Tip:** The wrench icons show where the local and remote management functions are enabled



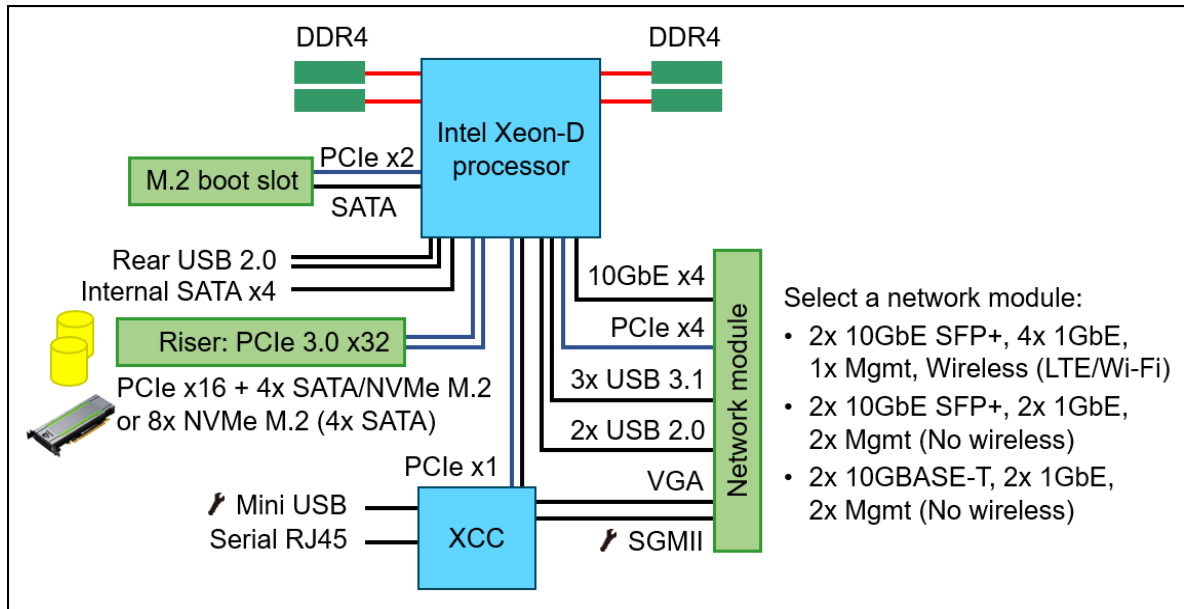


Figure 7. SE350 system board - architectural block diagram

The system board connects to a network module which provides all wired and wireless network connections. Three network modules are offered, one with wireless and two without wireless. The block diagrams are shown in the following figures. All wired connections are at the front of the server.

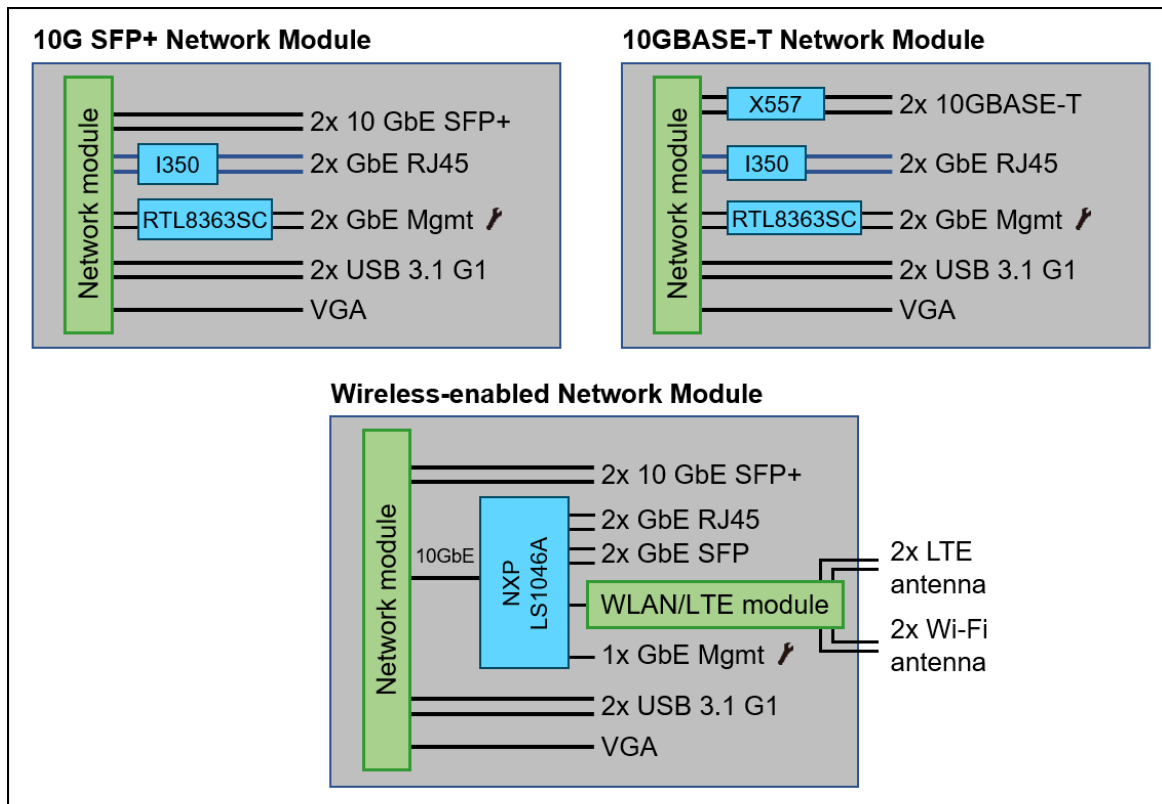


Figure 8. SE350 network modules - architectural block diagrams

## Standard specifications

The following table lists the standard specifications.

Table 1. Standard specifications

Components	Specification
Machine types	7Z46 - SE350 - 1 year warranty 7D1X - SE350 - 3 year warranty 7D27 - SE350 - 3 year warranty (India) 7D1R - ThinkSystem E1 and E2 Enclosures - 3 year warranty
Form factor	Edge server, 40mm x 215mm, 1U high.
Processor	One Intel Xeon D-2100 Series processor (formerly codenamed "Skylake D"). Supports processors up to 16 cores, core speeds of up to 2.2 GHz, and TDP ratings of up to 100W. Processor is soldered onto system board.
Memory	4 DIMM slots. The processor has 4 memory channels, with 1 DIMM per channel. Lenovo TruDDR4 DIMMs operating at 2666 MHz. RDIMMs and LRDIMMs are supported
Memory maximum	Up to 256GB with 4x 64GB LRDIMMs
Memory protection	ECC, SDDC (for x4-based memory DIMMs)
Drive bays	Internal storage is implemented using M.2 drives (no 2.5-inch drive bays). Up to 3x M.2 adapters (1x boot adapter, 2x data adapters) can be installed with a total of 10x M.2 drives. <ul style="list-style-type: none"> <li>• 1x Single M.2 Adapter (1 drive) or 1x Dual M.2 Adapter (2 drives) installed in dedicated slot, for boot</li> <li>• 1x 4-bay PCIe x16 adapter in dedicated bay, for 4x M.2 drives, NVMe or SATA, for data</li> <li>• 1x 4-bay PCIe x16 adapter in PCIe riser slot, for 4x M.2 adapters, NVMe only, for data</li> </ul>
Maximum data storage	NVMe drives: 16 TB using 8x 2TB NVMe drives SATA & NVMe drives: 15.68 TB using 4x 1.92 TB SATA drives + 4x 2TB NVMe drives
Storage controller	<ul style="list-style-type: none"> <li>• Boot drives: <ul style="list-style-type: none"> <li>◦ Single-drive adapter: SATA controller of the processor (no RAID)</li> <li>◦ Dual-drive adapter: Marvell 88SE9230 6 Gbps SATA controller - RAID-0 or RAID-1</li> </ul> </li> <li>• Data drives: <ul style="list-style-type: none"> <li>◦ SATA/NVMe Adapter: Onboard SATA controller supporting RAID 0, 1, 5, 10 (Intel RSTe)</li> <li>◦ SATA RAID Adapter: Two Marvell 88SE9230 controllers each connected to two drives; RAID-0 or RAID-1</li> </ul> </li> </ul>



Components	Specification
Network interfaces	<p>Networking depends the network module selected:</p> <ul style="list-style-type: none"> <li>• Wireless network module (Wireless enabled LOM package): 802.11ac Wi-Fi and LTE, 2x 10GbE SFP+, 2x 1GbE SFP, 2x 1GbE RJ45 (support 10/100 Mbps), dedicated port for remote management. Port 1 of the 10GbE ports can be shared with the XCC management processor for Wake-on-LAN and NC-SI support.</li> <li>• Wired SFP+ network module (10G SFP+ LOM package): 2x 10GbE SFP+, 2x 1GbE RJ45 (support 10/100 Mbps), 2x dedicated ports for remote management (redundant connections or daisy-chain capable). Port 1 of the 10GbE ports can be shared with the XCC management processor for Wake-on-LAN and NC-SI support.</li> <li>• Wired BASE-T network module (10GBASE-T LOM package): 2x 10GBASE-T RJ45, 2x 1GbE RJ45 (support 10/100 Mbps), 2x dedicated ports for remote management (redundant connections or daisy-chain capable). Port 1 of the 10GbE ports can be shared with the XCC management processor for Wake-on-LAN and NC-SI support.</li> </ul> <p>The PCIe 3.0 x16 slot can also be used for an additional network card if desired.</p>
PCI Expansion slots	One PCIe 3.0 x16 slot
Ports	<p>Front: Two USB 3.1 G1 (5 Gb/s) ports, VGA port, One or two dedicated RJ-45 1GbE systems management port (depends on network module selected), dedicated mini-USB port for local systems management including initial activation.</p> <p>Rear: Two USB 2.0 ports, one RJ-45 serial port</p>
Cooling	Three non-hot-swap 40 mm fans (all 3 standard), N+1 redundant in most configurations.
Power supply	<p>Two choices for power input:</p> <ul style="list-style-type: none"> <li>• 12V DC using one or two external AC power adapters with plugged inputs. Two adapters form a redundant pair in most configurations. Power source is 100-127 V AC (3.2A) or 200-240V AC (1.6A) for each adapter.</li> <li>• -48V DC using a hardwired Telco connection.</li> </ul>
Video	G200 graphics with 16 MB memory with 2D hardware accelerator, integrated into XClarity Controller. Maximum resolution is 1920x1200 32bpp at 60Hz.
Systems management	Operator panel with status LEDs. Dedicated ports for local management (mini USB for use with mobile app) and remote management (RJ45 Ethernet ports). Remote management can also be performed from a wireless connection (disabled by default). XClarity Controller embedded management, XClarity Administrator centralized infrastructure delivery, XClarity Integrator plugins, and XClarity Energy Manager centralized server power management. Optional XClarity Controller Advanced to enable remote control functions. ThinkShield Edge Mobile Management mobile app and XClarity Mobile app for local onsite SE350 server management.
Security features	ThinkShield Key Vault Portal web site for security management. Trusted Platform Module, supporting TPM 2.0. In China only, optional Nationz TPM 2.0. Front locking bezel, Kensington cable slot with intelligent lock position switch, G-sensor trigger for motion detection, intrusion detection, self-encrypting drive (SED) support, power-on password, administrator's password.
Operating systems supported	Microsoft Windows Server, Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi. Ubuntu Server certification. See the <a href="#">Operating system support</a> section for specifics.

<b>Components</b>	<b>Specification</b>
Mounting options	Horizontal or vertical orientation. Bookshelf mount (3 servers), DIN rail wall mount, ceiling mount, 1U rack mount (2 servers), 2U short-depth rack mount (2 servers). Available locking bezel with dust filter.
Limited warranty	Three-year or one-year (model dependent) customer-replaceable unit and onsite limited warranty with 9x5 next business day (NBD).
Service and support	Optional service upgrades are available through Lenovo Services: 4-hour or 2-hour response time, 6-hour fix time, 1-year or 2-year warranty extension, software support for Lenovo hardware and some third-party applications.
Dimensions	Height: 43 mm (1.7 in.), width: 209 mm (8.2 in.), depth: 376 mm (14.8 in.)
Weight	Maximum: 3.75 kg (8.3 lb)

## Models

The following tables list the available models, grouped by region.

- [Models for Australia and New Zealand](#)
- [Models for South East Asian countries \(ASEAN\)](#)
- [Models for Brazil](#)
- [Models for EMEA countries](#)
- [Models for Hong Kong, Taiwan, Korea \(HTK\)](#)
- [Models for India](#)
- [Models for Japan](#)
- [Models for Latin American countries \(except Brazil\)](#)
- [Models for USA and Canada](#)

Refer to the Specifications section for information about standard features of the server.

The Tamper column refers to the inclusion of the Tamper Detection Kit with Security Lock. See the [Security](#) section for information. For the Mount column, "Desk" is short for Desktop Mounting (includes Rubber Feet) and "Stack" is short for Stacking Mounting (includes Node Sleeve, Locking Bezel and Dust Filters). See the [Mounting options](#) section for details.

Common to all models:

- Power cords, 1 for each power supply

### Models for Australia and New Zealand

Table 2. Models for Australia and New Zealand

Model	Network module	Intel Xeon-D	Memory	M.2 Data slots (std/max)	M.2 Boot slots	PCIe slots	M.2 drives	Pwr supp	XCC	Tamper	Mount
TopSeller models with a 3-year warranty (machine type 7D1X)											
7D1XA00ZAU	Wired SFP+	D-2123IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA00VAU	Wired SFP+	D-2143IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA012AU	Wired SFP+	D-2183IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	2 / 2	Adv	No	Desk
7D1XA00LAU	Wireless	D-2123IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA00NAU	Wireless	D-2143IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA00RAU	Wireless	D-2183IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	2 / 2	Adv	No	Desk

## Models for South East Asian countries (ASEAN)

Table 3. Models for South East Asian countries (ASEAN)

Model	Network module	Intel Xeon-D	Memory	M.2 Data slots (std/max)	M.2 Boot slots	PCIe slots	M.2 drives	Pwr supp	XCC	Tamper	Mount
TopSeller models with a 3-year warranty (machine type 7D1X)											
7D1XA010SG	Wired SFP+	D-2123IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA00USG	Wired SFP+	D-2143IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA00PSG	Wired SFP+	D-2183IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	2 / 2	Adv	No	Desk

## Models for Brazil

Table 4. Models for Brazil

Model	Network module	Intel Xeon-D	Memory	M.2 Data slots (std/max)	M.2 Boot slots	PCIe slots	M.2 drives	Pwr supp	XCC	Tamper	Mount
Standard models with a 3-year warranty (machine type 7D1X)											
7D1X1003BR	Wired SFP+	D-2123IT	1x 16GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk
7D1X1007BR	Wired SFP+	D-2143IT	1x 32GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk
7D1X100BBR	Wired SFP+	D-2183IT	1x 64GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk

## Models for EMEA countries

Table 5. Models for EMEA countries

Model	Network module	Intel Xeon-D	Memory	M.2 Data slots (std/max)	M.2 Boot slots	PCIe slots	M.2 drives	Pwr supp	XCC	Tamper	Mount
Standard models with a 3-year warranty (machine type 7D1X)											
7D1XA016EA	Wired SFP+	D-2123IT	1x 16GB	4 / 4	Opt	1	1x 480GB A600i SATA SED	2 / 2	Ent	Yes	Desk
7D1XA019EA	Wired SFP+	D-2123IT	1x 16GB	4 / 4	Opt	1	1x 480GB A600i SATA SED	2 / 2	Ent	Yes	Stack
7D1XA01BEA	Wired SFP+	D-2143IT	1x 32GB	4 / 4	Opt	1	1x 480GB A600i SATA SED	2 / 2	Ent	Yes	Desk
7D1XA01DEA	Wired SFP+	D-2143IT	1x 32GB	4 / 4	Opt	1	1x 480GB A600i SATA SED	2 / 2	Ent	Yes	Stack
7D1XA017EA	Wired SFP+	D-2183IT	2x 32GB	4 / 4	Opt	1	1x 480GB A600i SATA SED	2 / 2	Ent	Yes	Desk
7D1XA01AEA	Wired SFP+	D-2183IT	2x 32GB	4 / 4	Opt	1	1x 480GB A600i SATA SED	2 / 2	Ent	Yes	Stack
7D1XA01CEA	Wireless	D-2143IT	2x 32GB	4 / 8	2	0	1x 650GB P4511 NVMe SED 2x 480GB A600i SATA SED	2 / 2	Ent	Yes	Desk

## Models for Hong Kong, Taiwan, Korea (HTK)

Table 6. Models for Hong Kong, Taiwan, Korea (HTK)

Model	Network module	Intel Xeon-D	Memory	M.2 Data slots (std/max)	M.2 Boot slots	PCIe slots	M.2 drives	Pwr supp	XCC	Tamper	Mount
TopSeller models with a 3-year warranty (machine type 7D1X)											
7D1XA00YCN	Wired SFP+	D-2123IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA00SCN	Wired SFP+	D-2143IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA00MCN	Wired SFP+	D-2183IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	2 / 2	Adv	No	Desk
7D1XA011CN	Wireless	D-2123IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA00BCN	Wireless	D-2143IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA007CN	Wireless	D-2183IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	2 / 2	Adv	No	Desk

## Models for India

Table 7. Models for India

Model	Network module	Intel Xeon-D	Memory	M.2 Data slots (std/max)	M.2 Boot slots	PCIe slots	M.2 drives	Pwr supp	XCC	Tamper	Mount
TopSeller models with a 3-year warranty (machine type 7D1X)											
7D1XA006SG	Wired SFP+	D-2123IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA00KSG	Wired SFP+	D-2143IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	1 / 2	Adv	No	Desk
7D1XA00TSG	Wired SFP+	D-2183IT	1x 32GB	4 / 4	Opt	1	2x 480GB A600i SATA	2 / 2	Adv	No	Desk

## Models for Japan

Table 8. Models for Japan

Model	Network module	Intel Xeon-D	Memory	M.2 Data slots (std/max)	M.2 Boot slots	PCIe slots	M.2 drives	Pwr supp	XCC	Tamper	Mount
TopSeller models with a 3-year warranty (machine type 7D1X)											
7D1XA00AJP	Wired SFP+	D-2123IT	1x 8GB	4 / 4	Opt	1	1x 480GB A600i SATA	2 / 2	Adv	No	Desk
7D1XA00EJP	Wired SFP+	D-2143IT	1x 8GB	4 / 4	Opt	1	1x 480GB A600i SATA	2 / 2	Adv	No	Desk
7D1XA00QJP	Wired SFP+	D-2183IT	1x 16GB	4 / 4	Opt	1	1x 480GB A600i SATA	2 / 2	Adv	No	Desk
7D1XA008JP	Wireless	D-2123IT	1x 8GB	4 / 4	Opt	1	1x 480GB A600i SATA	2 / 2	Adv	No	Desk
7D1XA00CJP	Wireless	D-2143IT	1x 8GB	4 / 4	Opt	1	1x 480GB A600i SATA	2 / 2	Adv	No	Desk
7D1XA00WJP	Wireless	D-2183IT	1x 16GB	4 / 4	Opt	1	1x 480GB A600i SATA	2 / 2	Adv	No	Desk

## Models for Latin American countries (except Brazil)

Table 9. Models for Latin American countries (except Brazil)

Model	Network module	Intel Xeon-D	Memory	M.2 Data slots (std/max)	M.2 Boot slots	PCIe slots	M.2 drives	Pwr supp	XCC	Tamper	Mount
Standard models with a 3-year warranty (machine type 7D1X)											
7D1X1000LA	Wired SFP+	D-2123IT	1x 16GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk
7D1X1001LA	Wired SFP+	D-2123IT	1x 16GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk
7D1X1002LA	Wired SFP+	D-2123IT	1x 16GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk
7D1X1004LA	Wired SFP+	D-2143IT	1x 32GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk
7D1X1005LA	Wired SFP+	D-2143IT	1x 32GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk
7D1X1006LA	Wired SFP+	D-2143IT	1x 32GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk
7D1X1008LA	Wired SFP+	D-2183IT	1x 64GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk
7D1X1009LA	Wired SFP+	D-2183IT	1x 64GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk
7D1X100ALA	Wired SFP+	D-2183IT	1x 64GB	4 / 4	2	1	1x 480GB 5100 SATA 2x 128GB M.2	2 / 2	Std	No	Desk

## Models for USA and Canada

Table 10. Models for USA and Canada

Model	Network module	Intel Xeon-D	Memory	M.2 Data slots (std/max)	M.2 Boot slots	PCIe slots	M.2 drives	Pwr supp	XCC	Tamper	Mount
TopSeller models with a 1-year warranty (machine type 7Z46)											
7Z46A002NA	Wired SFP+	D-2123IT	1x 16GB	4 / 4	Opt	1	1x 480GB 5100 SATA	1 / 2	Ent	No	Desk
7Z46A008NA	Wired SFP+	D-2123IT	1x 16GB	Option	Opt	Opt	Open	1 / 2	Std	No	Desk
7Z46A001NA	Wireless	D-2123IT	1x 16GB	4 / 4	Opt	1	1x 480GB 5100 SATA	1 / 2	Ent	No	Desk
7Z46A009NA	Wireless	D-2123IT	1x 16GB	Option	Opt	Opt	Open	1 / 2	Std	No	Desk



## Processors

The SE350 supports processors in the Intel Xeon D-2100 family of processors (formerly codenamed "Skylake D"). The server supports one processor and the processor is soldered on the system board.

The table below lists the supported processors.

All supported processors have the following characteristics:

- Intel Turbo Boost 2.0
- Intel Hyper-Threading Technology
- Intel Virtualization Technology (VT-x, VT-d)
- Intel TSX-NI
- Intel AES New Instructions
- Secure Key
- Intel Memory Protection Extensions (Intel MPX)
- Intel Trusted Execution Technology
- Execute Disable Bit
- Intel OS Guard
- Intel Boot Guard

**Part numbers:** There are no part numbers for processors because there are no field upgrades supported.

Table 11. Processor options for the SE350

Feature code*	Description
B6ER / B939	ThinkSystem SE350 Edge Server Intel Xeon D-2123IT 4C 60W 2.20 GHz
B6ES / B93A	ThinkSystem SE350 Edge Server Intel Xeon D-2143IT 8C 65W 2.20 GHz
B6EU / B93C	ThinkSystem SE350 Edge Server Intel Xeon D-2163IT 12C 75W 2.10 GHz
B6EV / B93D	ThinkSystem SE350 Edge Server Intel Xeon D-2166NT 12C 85W 2.00 GHz
B6ET / B93B	ThinkSystem SE350 Edge Server Intel Xeon D-2183IT 16C 100W 2.20 GHz

\* The second feature code is for CTO orders from NA and LA geographies, and for Brazil

The following table lists the features of the supported processors.

Table 12. Processor specifications

Intel model	Cores / Threads	HT	TB	Base Frequency	Max Boost Frequency	L3 Cache	Memory channels	Memory bus	TDP
D-2123IT	4 / 8	Y	Y	2.20 GHz	3.00 GHz	8 MB	4	2400 MHz	60 W
D-2143IT	8 / 16	Y	Y	2.20 GHz	3.00 GHz	11 MB	4	2133 MHz	65 W
D-2163IT	12 / 24	Y	Y	2.10 GHz	3.00 GHz	17 MB	4	2133 MHz	75 W
D-2166NT	12 / 24	Y	Y	2.00 GHz	3.00 GHz	17 MB	4	2133 MHz	85 W
D-2183IT	16 / 32	Y	Y	2.20 GHz	3.00 GHz	22 MB	4	2400 MHz	100 W

## Memory options

The server uses processors with 4 memory channels and supports 1 DIMM per channel, for a total of 4 DIMMs. The server supports up to 256GB of memory using 4x 64 GB LRDIMMs.

The following table lists the memory options that are available for the server.

Lenovo TruDDR4 memory uses the highest quality components that are sourced from Tier 1 DRAM suppliers and only memory that meets the strict requirements of Lenovo is selected. It is compatibility tested and tuned to maximize performance and reliability. From a service and support standpoint, Lenovo TruDDR4 memory automatically assumes the system warranty, and Lenovo provides service and support worldwide.

Table 13. Supported memory options

Part number	Feature code	Description	Minimum supported	Maximum supported
<b>RDIMMs</b>				
7X77A01301	AUU1	ThinkSystem 8GB TruDDR4 2666 MHz (1Rx8 1.2V) RDIMM	1 or 2*	4
7X77A01303	AUNC	ThinkSystem 16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	1	4
7X77A01304	AUND	ThinkSystem 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	1	4
<b>LRDIMMs</b>				
7X77A01305	AUNE	ThinkSystem 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LRDIMM	1	4

\* When the Xeon D-2183IT processor is selected, a minimum of 16 GB (2x 8GB or 1x 16GB) must be installed

The following rules apply when selecting the memory configuration:

- The server supports RDIMMs and LRDIMMs.
- RDIMMs and LRDIMMs can be mixed.
- Supported DIMMs are rated up to 2666 MHz, however the processors used by the server run at a lower speed (2133 MHz or 2400 MHz). As a result, the memory bus operates at the lower speed set by the processor.
- Memory mirroring and memory rank sparing are not supported.
- Recommended installation sequence: 1, 4, 2, 3

The following memory protection technologies are supported:

- ECC detection/correction
- SDDC (for x4-based memory DIMMs; look for "x4" in the DIMM description)

## I/O expansion

The SE350 has one PCIe x32 riser slot that accepts a riser that supplies both M.2 data drive adapter and a PCIe slot, depending on the riser selected. The following figure shows the location of the riser cage.

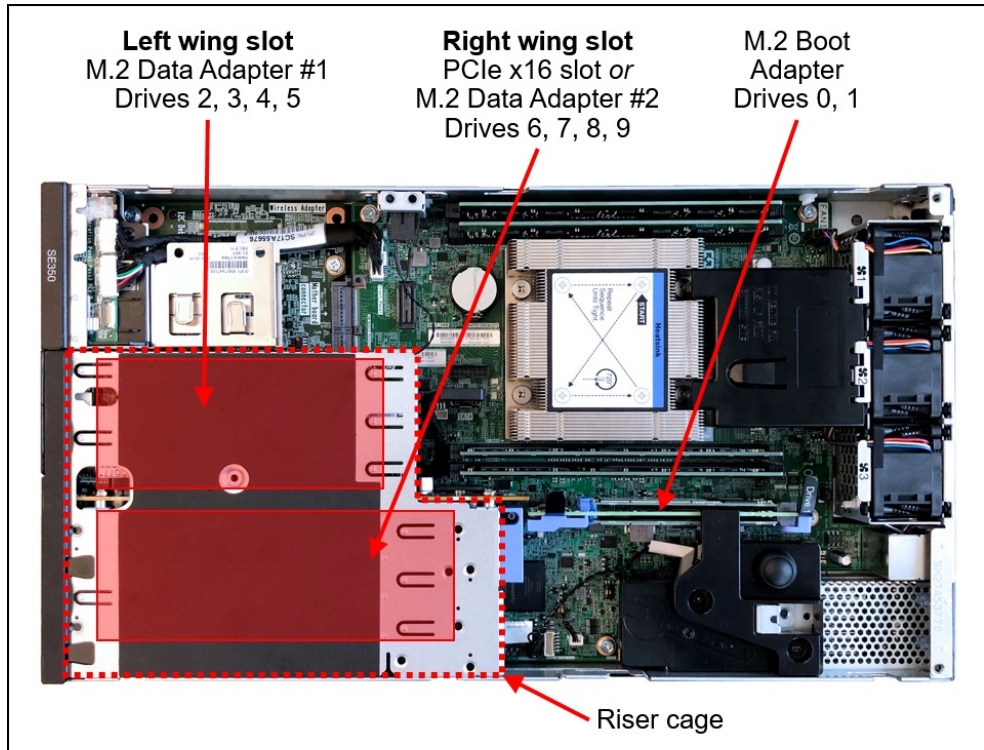


Figure 9. Location of riser cage

The two halves of the riser, referred to as "wings", support an M.2 or PCIe adapter depending on the riser. The left wing is on the left side as viewed from the front of the server. The following table lists the available riser cards. You can also elect to not have a riser card in the server.

**Field upgrades:** If you order a server without a riser card (using feature code B91F), you can add the riser card later as a field upgrade using the option part numbers listed in the table.

Table 14. SE350 riser card selections

Part number	Feature code	Description
4M17A60521	B6FD	ThinkSystem SE350 PCIe Riser Cage <ul style="list-style-type: none"> <li>• Left wing: M.2 4-bay adapter</li> <li>• Right wing: PCIe 3.0 x16 LP slot</li> </ul>
4M17A60522	B6FE	ThinkSystem SE350 M.2 Riser Cage ASM <ul style="list-style-type: none"> <li>• Left wing: M.2 4-bay adapter</li> <li>• Right wing: M.2 4-bay adapter</li> </ul>
CTO only	B91F	No Riser Cage ASM <ul style="list-style-type: none"> <li>• Derives the ThinkSystem SE350 Riser Cage Filler, B6FJ</li> <li>• No riser card and no M.2 data adapters</li> <li>• M.2 boot adapter is still selectable</li> </ul>

The PCIe Riser Cage, when viewed from the underside, is shown in the following figure. The figure shows an M.2 SATA/NVMe adapter installed in the left wing and an NVIDIA T4 GPU installed in the right wing. The left wing supports SATA or NVMe M.2 drives and the right wing offers a PCIe 3.0 x16 Low Profile slot for supported adapters.

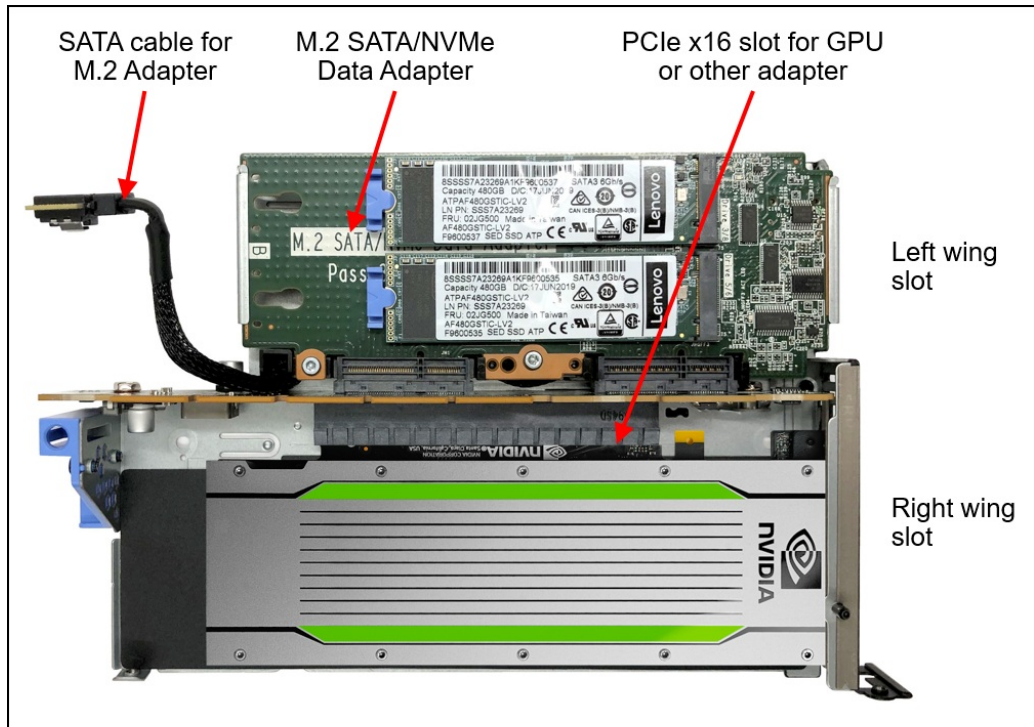


Figure 10. ThinkSystem SE350 PCIe Riser Cage (feature B6FD)

The M.2 Riser Cage, when viewed from the underside, is shown in the following figure. The figure shows an M.2 SATA/NVMe adapter installed in both the left wing (top) and right wing (bottom).

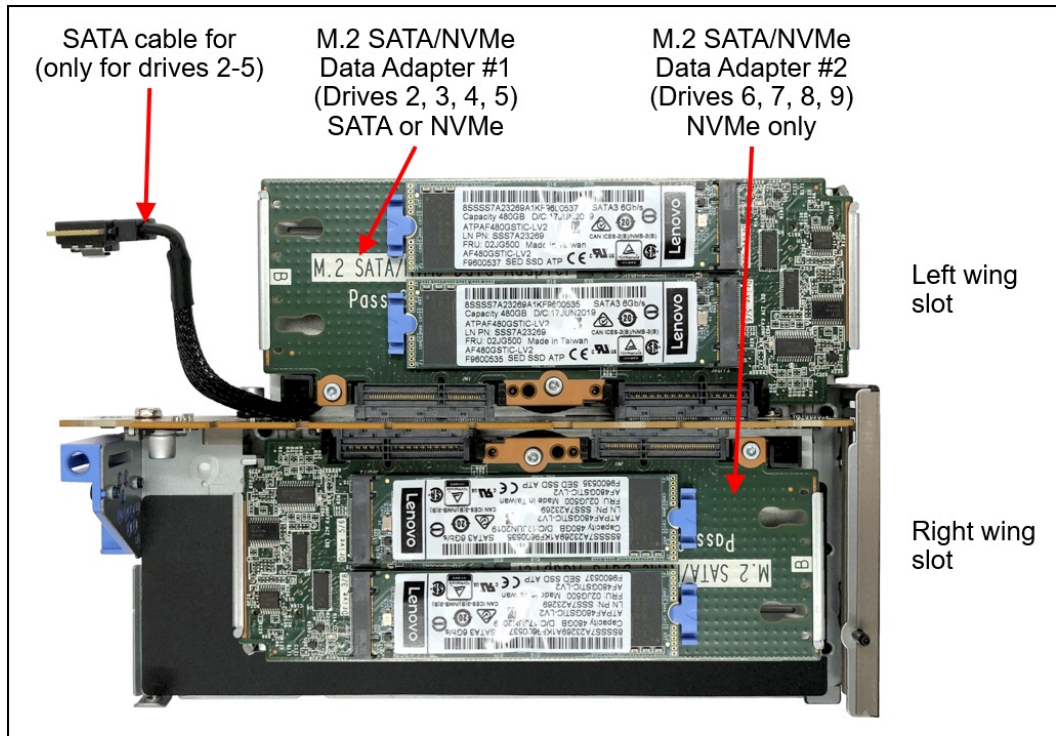


Figure 11. ThinkSystem SE350 M.2 Riser Cage (feature B6FE)

## Internal storage

The internal storage of the SE350 server is implemented as M.2 drives. The drives are defined as either boot drives or data drives, based on their intended use in the server.

Internal drives are as follows:

- Data drives are installed in a four-port data drive adapter mounted in the riser card that is installed in a riser slot, as described in the [I/O expansion](#) section. One or two four-drive adapters are supported in the SE350 for a total of up to eight data drives.
- Boot drives are installed on an M.2 boot adapter, which in turn is installed in a dedicated slot on the system board (see the figure in the [I/O expansion](#) section). Either one or two M.2 drives are supported, depending on the boot adapter selected. SATA drives, either SED or non-SED drives are supported.

## Controllers for internal storage

The SE350 has the following storage controllers:

- ThinkSystem M.2 Enablement Kit, 7Y37A01092, for boot drives
  - SATA drive: SATA controller of the processor (single drive, no RAID)
  - NVMe drives: No support
- ThinkSystem SE350 M.2 Mirroring Enablement Kit, 4M17A60519, for boot drives
  - SATA drives: Marvell 88SE9230 6 Gbps SATA controller on the M.2 adapter (RAID-0, 1; Hardware RAID)
  - NVMe drives: No support
- ThinkSystem SE350 M.2 SATA/NVMe 4-bay Data Drive Enablement Kit, 4M17A37281, for data drives
  - SATA drives: Intel RSTe SATA controller embedded in the processor (RAID-0, 1, 5, 10;

- Software RAID)
    - o NVMe drives: Direct connection to the processor (no RAID)
- ThinkSystem SE350 M.2 SATA 4-Bay Data RAID Mirroring Enablement Kit, 4M17A37606, for data drives
  - o SATA drives: two independent Marvell 88SE9230 6 Gbps SATA controllers; each controller connects to two M.2 drives (RAID-0, 1; Hardware RAID)
  - o NVMe drives: No support

**Intel RSTe:** The use of RSTe embedded RAID is not supported by virtualization hypervisors, including VMware ESXi, Linux KVM, Xen, and Microsoft Hyper-V. The use of AHCI mode (non-RAID) is supported by these hypervisors, however.

Ordering information for the controllers is listed in the following table.

Table 15. M.2 adapters

Part number	Feature code	Description	Maximum supported
<b>Data drive adapters</b>			
4M17A37281	B6FF	ThinkSystem SE350 M.2 SATA/NVMe 4-bay Data Drive Enablement Kit	2
4M17A37606	B6FG	ThinkSystem SE350 M.2 SATA 4-Bay Data RAID Mirroring Enablement Kit	2
<b>Boot drive adapters</b>			
7Y37A01092	AUMU	ThinkSystem M.2 Enablement Kit	1
4M17A60519	B88P	ThinkSystem SE350 M.2 Mirroring Enablement Kit	1
<b>SATA cable</b>			
4Z57A37312	B6FH	ThinkSystem SE350 M.2 Adapter SATA Cable (for field upgrades, when adding a data drive adapter to the left wing; not supported with the right wing)	1

The data drive adapters support NVMe or SATA drives depending on the capabilities of the adapter plus the capabilities of the riser card slot (the "wing") that the data adapter is installed in.

- Both left and right wings support NVMe drives when using the SATA/NVMe 4-bay Data Drive Adapter.
- The SATA HW RAID Adapter does not support NVMe drives.
- The left wing slot of the riser supports connectivity to the onboard SATA controller via a SATA cable (4Z57A37312), however the right wing slot does not support this cable and therefore does not support SATA drives using the SATA/NVMe 4-bay Data Drive adapter.
- Both left and right wings support SATA drives when using the SATA HW RAID Adapter.

The following table lists the supported combinations of drive adapters.



Table 16. Supported combinations of riser card adapters

Config	Riser selection	Left wing (from front)	Drives	Right wing (from front)	Drives
1	PCIe Riser	M.2 SATA/NVMe Adapter	NVMe	PCIe Adapter	None
2	PCIe Riser	M.2 SATA/NVMe Adapter	SATA	PCIe Adapter	None
3	PCIe Riser	M.2 SATA RAID Adapter	SATA	PCIe Adapter	None
4	M.2 Riser	M.2 SATA/NVMe Adapter	NVMe	M.2 SATA/NVMe Adapter	NVMe
5	M.2 Riser	M.2 SATA/NVMe Adapter	SATA	M.2 SATA/NVMe Adapter	NVMe
6	M.2 Riser	M.2 SATA RAID Adapter	SATA	M.2 SATA/NVMe Adapter	NVMe
7	M.2 Riser	M.2 SATA RAID Adapter	SATA	M.2 SATA RAID Adapter	SATA
8	M.2 Riser	M.2 SATA/NVMe Adapter	NVMe	M.2 SATA RAID adapter	SATA
9	M.2 Riser	M.2 SATA/NVMe Adapter	SATA	M.2 SATA RAID adapter	SATA

The ThinkSystem M.2 Enablement Kit (single M.2 boot adapter) is shown in the following figure.



Figure 12. ThinkSystem M.2 Enablement Kit (shown with a 32 GB M.2 drive, not supported in the SE350)

The ThinkSystem SE350 M.2 Mirroring Enablement Kit (dual M.2 boot adapter) is shown in the following figure, with one 128GB M.2 drive partially inserted. The second M.2 drive is installed on the other side of the adapter.



Figure 13. ThinkSystem SE350 M.2 Mirroring Enablement Kit

**Note:** The ThinkSystem SE350 M.2 Mirroring Enablement Kit is the same hardware as the ThinkSystem M.2 with Mirroring Enablement Kit that is supported in ThinkSystem rack servers (7Y37A01093), however the firmware is different. They are not interchangeable and 7Y37A01093 is not supported on the SE350.

## Internal drive options

The following table lists the supported drive options. The table also indicates which drives are supported in a data drive adapter and which drives are supported in a boot drive adapter.

Note: SED drives are not available in all markets:

- All SED drives are not available in China
- ATP SED drives are not available in Russia/CIS



**SATA drives:** As described in the [I/O expansion](#) section, SATA drives are only supported in the left wing of the riser cards. The right wing of the riser only supports NVMe drives, not SATA drives.

Table 17. Supported M.2 drives

Part number	Feature code	Description	Adapter support			
			Data Drive (SATA-NVMe)	Data Drive (RAID)	Boot Drive (Single Adpt)	Boot Drive (Dual Adpt)
<b>SATA</b>						
7N47A00130	AUUUV	ThinkSystem M.2 128GB SATA 6Gbps Non-Hot Swap SSD	No	No	Yes	Yes
<b>SATA - Micron 5100 non-SED</b>						
7SD7A05703	B11V	ThinkSystem M.2 5100 480GB SATA 6Gbps Non-Hot Swap SSD	Yes	Yes	No	No
4XB7A14048	B5UP	ThinkSystem M.2 5100 960GB SATA 6Gbps Non-Hot Swap SSD	Yes	Yes	No	No
4XB7A39425	B75B	ThinkSystem M.2 1.92TB 5100 Pro SATA 6Gbps Non-Hot Swap SSD	Yes	Yes	No	No
<b>SATA - Micron 5100 SED (TCG-e encryption)</b>						
4XB7A37273	B6FM	ThinkSystem M.2 480GB 5100 Pro SATA 6Gbps Non-Hot Swap SED SSD	Yes	Yes	No	No
4XB7A37274	B6FN	ThinkSystem M.2 960GB 5100 Pro SATA 6Gbps Non-Hot Swap SED SSD	Yes	Yes	No	No
4XB7A37275	B6FP	ThinkSystem M.2 1.92TB 5100 Pro SATA 6Gbps Non-Hot Swap SED SSD	Yes	Yes	No	No
<b>SATA - ATP A600i non-SED</b>						
4XB7A39422	B758	ThinkSystem M.2 120GB Industrial A600i SATA SSD	No	No	Yes	Yes
4XB7A39423	B759	ThinkSystem M.2 480GB Industrial A600i SATA SSD	Yes	Yes	No	No
	B91K		No	No	Yes	Yes
4XB7A39424	B75A	ThinkSystem M.2 800GB Industrial A600i SATA SSD	Yes	Yes	No	No
<b>SATA - ATP A600i SED (Opal encryption)</b>						
4XB7A37270	B6FT	ThinkSystem M.2 120GB Industrial A600i SATA SED SSD	No	No	Yes	Yes
4XB7A37271	B6FK	ThinkSystem M.2 480GB Industrial A600i SATA SED SSD	Yes	Yes	No	No
	B91L		No	No	Yes	Yes
4XB7A37272	B6FL	ThinkSystem M.2 800GB Industrial A600i SATA SED SSD	Yes	Yes	No	No
<b>NVMe - Intel P4511 SED (drive options include a heatsink) (Opal encryption)</b>						
4XB7A39426	B75C	ThinkSystem M.2 650GB P4511 NVMe SED High Endurance SSD	Yes	No	No	No
4XB7A39427	B75D	ThinkSystem M.2 1TB P4511 NVMe SED SSD	Yes	No	No	No
4XB7A39428	B75E	ThinkSystem M.2 2TB P4511 NVMe SED SSD	Yes	No	No	No

The use of M.2 drives in high temperature and high shock & vibration conditions is described in the [Operating Environment](#) section.

The following table compares the performance specifications of the M.2 drives.

Table 18. M.2 performance specifications

Part number	Description	Endurance DWPD	Endurance TBW	IOPS reads	IOPS writes	Sequential read rate	Sequential write rate	Read latency	Write latency
Lite-On									
7N47A00130	M.2 128GB SATA 6Gbps NHS SSD	0.28 DWPD	63.9 TB	72,000 IOPS	32,000 IOPS	530 MB/s	470 MB/s	N/A	N/A
Micron 5100									
7SD7A05703	M.2 5100 480GB SATA 6Gbps NHS SSD	1.5 DWPD	1,300 TB	93,000 IOPS	43,000 IOPS	540 MB/s	410 MB/s	500 µs	500 µs
4XB7A14048	M.2 5100 960GB SATA 6Gbps NHS SSD	2.5 DWPD	4,400 TB	93,000 IOPS	37,000 IOPS	540 MB/s	520 MB/s	500 µs	500 µs
4XB7A39425	M.2 1.92TB 5100 Pro SATA 6Gbps NHS SSD	2.5 DWPD	8,800 TB	93,000 IOPS	37,000 IOPS	540 MB/s	520 MB/s	500 µs	500 µs
Micron 5100 SED (TCP-e Encryption)									
4XB7A37273	M.2 480GB 5100 Pro SATA 6Gbps NHS SED SSD	1.5 DWPD	1,300 TB	93,000 IOPS	43,000 IOPS	540 MB/s	410 MB/s	500 µs	500 µs
4XB7A37274	M.2 960GB 5100 Pro SATA 6Gbps NHS SED SSD	2.5 DWPD	4,400 TB	93,000 IOPS	37,000 IOPS	540 MB/s	520 MB/s	500 µs	500 µs
4XB7A37275	M.2 1.92TB 5100 Pro SATA 6Gbps NHS SED SSD	2.5 DWPD	8,800 TB	93,000 IOPS	37,000 IOPS	540 MB/s	520 MB/s	500 µs	500 µs
ATP A600i									
4XB7A39422	M.2 120GB Industrial A600i SATA SSD	0.2 DWPD	48 TB	45,000 IOPS	32,500 IOPS	560 MB/s	125 MB/s	N/A	N/A
4XB7A39423	M.2 480GB Industrial A600i SATA SSD	0.4 DWPD	384 TB	100,200 IOPS	82,800 IOPS	560 MB/s	390 MB/s	N/A	N/A
4XB7A39424	M.2 800GB Industrial A600i SATA SSD	0.5 DWPD	768 TB	97,400 IOPS	78,600 IOPS	560 MB/s	370 MB/s	N/A	N/A
ATP A600i SED (Opal Encryption)									
4XB7A37270	M.2 120GB Industrial A600i SATA SED SSD	0.2 DWPD	48 TB	45,000 IOPS	32,500 IOPS	560 MB/s	125 MB/s	N/A	N/A
4XB7A37271	M.2 480GB Industrial A600i SATA SED SSD	0.4 DWPD	384 TB	100,200 IOPS	82,800 IOPS	560 MB/s	390 MB/s	N/A	N/A
4XB7A37272	M.2 800GB Industrial A600i SATA SED SSD	0.5 DWPD	768 TB	97,400 IOPS	78,600 IOPS	560 MB/s	370 MB/s	N/A	N/A
Intel P4511 SED (Opal Encryption)									
4XB7A39426	M.2 650GB P4511 NVMe SED HE SSD	3.0 DWPD	3900 TB	295,000 IOPS	31,000 IOPS	2000 MB/s	1050 MB/s	85 µs	40 µs

Part number	Description	Endurance DWPD	Endurance TBW	IOPS reads	IOPS writes	Sequential read rate	Sequential write rate	Read latency	Write latency
4XB7A39427	M.2 1TB P4511 NVMe SED SSD	0.5 DWPD	980 TB	295,000 IOPS	31,000 IOPS	2000 MB/s	1050 MB/s	85 µs	40 µs
4XB7A39428	M.2 2TB P4511 NVMe SED SSD	0.5 DWPD	1950 TB	295,000 IOPS	36,000 IOPS	2000 MB/s	1050 MB/s	85 µs	40 µs

## Network Modules

The network ports on the front of the SE350 are provided by a Network Module, a board that plugs into the system board by a dedicated connector. See the [Internal view](#) for the location of the connector.

There are two Network Modules currently available, as listed in the following table

Table 19. Network Modules

Part number	Feature code	Description
CTO only	B6F4	ThinkSystem SE350 10GbE SFP+ 2-Port, 10/100/1GbE RJ45 2-Port Intel i350 Wired Network Module
CTO only	B7Z7	ThinkSystem SE350 4xRJ45 10GBASE-T LOM Package
CTO only	B6F3	ThinkSystem SE350 10GbE SFP+ 2-Port, 1GbE SFP 2-Port Switch, Wireless Capable Wireless Network Module

The Network Modules have the following characteristics:

- Wireless network module (also known as the Wireless enabled LOM package), offering these network connections:
  - Wi-Fi (802.11 a/b/g/n/ac) with two external antennas
  - Optional LTE with two external antennas
  - 2x 10GbE SFP+ ports
  - 2x 1GbE SFP ports
  - 2x 1GbE RJ45 (support 10/100 Mbps)
  - 1x dedicated port for remote management
  - VGA port
  - 2x USB 3.1 G1 ports
- SFP+ Wired network module (also known as the 10G SFP+ LOM package), offering these network connections:
  - 2x 10GbE SFP+
  - 2x 1GbE RJ45 (support 10/100 Mbps)
  - 2x dedicated ports for remote management (can be used as redundant connections or daisy-chain capable)
  - VGA port
  - 2x USB 3.1 G1 ports
- 10GBASE-T Wired network module (also known as the 10GBASE-T LOM Package), offering these network connections:
  - 2x 10GBASE-T RJ45
  - 2x 1GbE RJ45 (support 10/100 Mbps)
  - 2x dedicated ports for remote management (can be used as redundant connections or daisy-chain capable)
  - VGA port
  - 2x USB 3.1 G1 ports

With the Wireless networking module, by default both Wi-Fi and LTE are enabled. If desired, you can remove LTE support by selecting the feature code in the following table.

Table 20. Ordering the Wireless network module without LTE support

Part number	Feature code	Description
CTO only	BAHF	Wireless Adapter Carrier Card for WiFi only

**Country availability:** Wireless is currently not be available in all markets due to homologation requirements. Since Wi-Fi and LTE are required components of the Wireless network module, that means that the Wireless network module may not be available in your region.

**Rack installation:** The Wireless network module is not supported when the servers are installed in the 1U or 2U rack enclosures.

The two network modules are shown in the following figure.

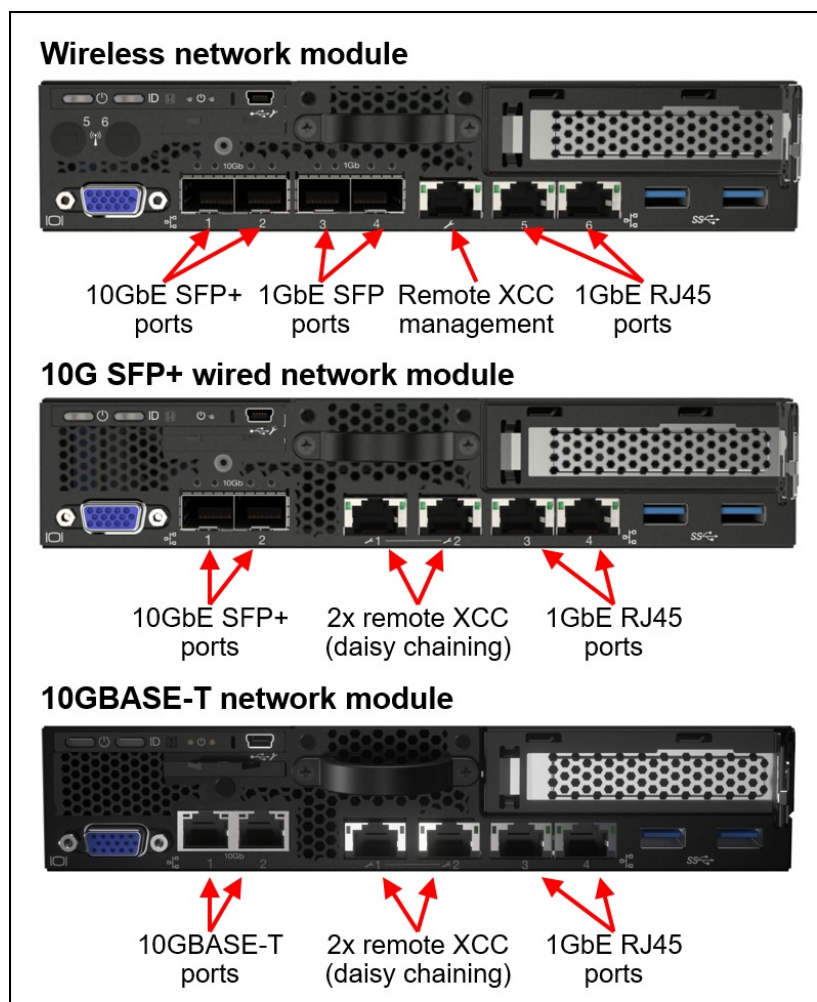


Figure 14. Ports of the available Network Modules

The block diagrams of the Network Modules are shown in the [System architecture](#) section.

The specifications of the connections in the Wireless Network Module are as follows:

- 10 GbE connections:
  - Routed from the networking functions integrated in the Xeon-D processor
  - Supports iWARP (Internet wide area RDMA protocol)
  - Port 1 of the 10GbE ports can be shared with the XCC management processor for Wake-on-LAN and NC-SI support
- Integrated NXP LS1046A network switch chip, provides all network connections other than the 10GbE ports
- Wi-Fi connection can be used as a Wi-Fi client or as a Wi-Fi access point
- Reset pinhole on the front panel to reboot the NXP chip, if needed

The specifications of the connections in the Wired Network Module are as follows:

- 10 GbE connections:
  - Routed from the networking functions integrated in the Xeon-D processor
  - Supports iWARP (Internet wide area RDMA protocol)
  - Port 1 of the 10GbE ports can be shared with the XCC management processor for Wake-on-LAN and NC-SI support
- 1GbE RJ45 ports
  - Based on Intel I350 controller
- 1GbE XCC management ports:
  - Direct connections to the XClarity Controller (XCC) management processor
  - Based on Realtek RTL8363SC controller
  - Two ports, either as a redundant pair of ports or can be used as a daisy chain with multiple nearby SE350 servers

The Wired Network Module provides the ability to daisy-chain the XCC management connections thereby reducing the number of ports you need in your management switches and reducing the number of switch ports needed for systems management. With this feature you can connect the first SE350 to your management network and the adjacent SE350 connects to the first SE350. The third SE350 can then connect to the second SE350. Up to 7 servers can be connected in a daisy-chain configuration.

The two management ports of the Wired Network Module can also be used to form a redundant pair. In such a configuration, they share the same IP address; redundancy is at the Layer 2 level.

The SFP+ ports in both Network Modules support the following transceiver.

Table 21. Transceivers for Network Modules

Part number	Feature code	Description
10Gb transceivers		
46C3447	5053	SFP+ SR Transceiver

The SFP+ ports of the Network Modules support the following fiber optic cables and direct-attach copper (DAC) cables.

Table 22. 10GbE Optical cables and DAC cables

Part number	Feature code	Description
LC-LC OM3 Fiber Optic Cables (these cables require a 10 GbE SFP+ SR transceiver)		
00MN499	ASR5	Lenovo 0.5m LC-LC OM3 MMF Cable
00MN502	ASR6	Lenovo 1m LC-LC OM3 MMF Cable
00MN505	ASR7	Lenovo 3m LC-LC OM3 MMF Cable
00MN508	ASR8	Lenovo 5m LC-LC OM3 MMF Cable
00MN511	ASR9	Lenovo 10m LC-LC OM3 MMF Cable
00MN514	ASRA	Lenovo 15m LC-LC OM3 MMF Cable
00MN517	ASRB	Lenovo 25m LC-LC OM3 MMF Cable
00MN520	ASRC	Lenovo 30m LC-LC OM3 MMF Cable
SFP+ 10Gb Passive DAC Cables		
00AY764	A51N	1.5m Passive DAC SFP+ Cable
00AY765	A51P	2m Passive DAC SFP+ Cable
90Y9430	A1PJ	3m Passive DAC SFP+ Cable

The RJ45 ports of the Network Modules support the following Category 6 (CAT 6) cables.

Table 23. CAT6 cables

Part number	Feature code	Description
CAT6 Green Cables		
00WE123	AVFW	0.75m CAT6 Green Cable
00WE127	AVFX	1.0m CAT6 Green Cable
00WE131	AVFY	1.25m CAT6 Green Cable
00WE135	AVFZ	1.5m CAT6 Green Cable
00WE139	AVG0	3m CAT6 Green Cable

## Network adapters

The following table lists additional supported network adapters that can be installed in the PCIe slot when the PCIe Riser (feature B6FD) is selected.

Table 24. Supported PCIe Network Adapters

Part number	Feature code	Description	Maximum supported
Gigabit Ethernet			
7ZT7A00484	AUZV	ThinkSystem Broadcom 5719 1GbE RJ45 4-Port PCIe Ethernet Adapter	1
10 GbE			
7ZT7A00496	AUKP	ThinkSystem Broadcom 57416 10GBASE-T 2-Port PCIe Ethernet Adapter	1
25 GbE			
4XC7A08249	B653	ThinkSystem Mellanox ConnectX-4 Lx 10/25GbE SFP28 2-port PCIe Ethernet Adapter	1

For more information, including the transceivers and cables that each adapter supports, see the list of Lenovo Press Product Guides in the Networking adapters category:

<https://lenovopress.com/servers/options/ethernet>

## GPU adapters

The following table lists additional supported GPUs that can be installed in the PCIe slot when the PCIe Riser (feature B6FD) is selected.

Table 25. Supported GPUs

Part number	Feature code	Description	Maximum supported
4X67A14926	B4YB	ThinkSystem NVIDIA Tesla T4 16GB PCIe Passive GPU	1

The use of a GPU in high temperature and high shock & vibration conditions is described in the [Operating Environment](#) section.

For information about the GPU, see the ThinkSystem GPU Summary, available at:

<https://lenovopress.com/lp0768-thinksystem-thinkagile-gpu-summary>

## Cooling

The SE350 server has three 40 mm non-hot-swap fans. All three are standard and support N+1 redundancy.

## Power supplies

The SE350 supports two types of power via a Power Distribution Module (PDM):

- 12V DC connected to one or two plug-in external AC adapters
- -48V DC wired input for Telco customers

For the 12DC power distribution module, one of two AC adapters can be used to provide power.

Ordering information is listed in the following table.



Table 26. Power options

Part number	Feature code	Description	Maximum supported
Power distribution modules (PDMs)			
CTO only	B6FU	ThinkSystem SE350 12V PDM	1
CTO only	BAG6	ThinkSystem SE350 -48VDC PDM (-40VDC to -72VDC) (all markets except PRC)	1
CTO only	B6FV	ThinkSystem SE350 -48VDC PDM (-40VDC to -72VDC) (PRC only)	1
AC adapter for 12V PDM			
4X27A37265	B6FW	ThinkSystem SE350 240W AC Adapter <ul style="list-style-type: none"> <li>• 100-240V, 3.1A</li> <li>• Maximum output: 20A, 240W</li> </ul>	2

Details regarding the use of AC adapters:

- One or two AC adapters are supported.
- When two AC adapters are connected, the second AC adapter is redundant.
- Most configurations have a power budget of less than one AC adapter, however any of the following configurations are likely to exceed the power budget of a single AC adapter and will require the second AC adapter be connected:
  - GPU is installed
  - Any quantity of LRDIMMs are installed
  - Processor with 16 cores is selected
  - Four or more NVMe drives are installed
- In case of failure of a single AC adapter, system will throttle if power budget is above a single adapter capacity
- AC Adapters do not include a line cord. See the next section for available power cords.

Details regarding the use of the -48V DC PDM:

- Input range is -40.8 to -72 VDC, 8.4A
- Hardwired (non-plugged) connection
- Supported 2 meter power cable is listed in the table below (feature B7FE)
- Single power input; no redundancy
- Suitable for Telco and Utilities customers

## Power cords

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

Table 27. Power cords

Part number	Feature code	Description
Power cord for -48V PDM		
CTO only	B7FE	ThinkSystem SE350 -48V DC Power Cord
Power cord for AC adapters		
39Y7930	6222	2.8m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord

Part number	Feature code	Description
81Y2384	6492	4.3m 10A/220V, C13 to IRAM 2073 (Argentina) Line Cord
39Y7924	6211	2.8m, 10A/250V, C13 to AS/NZ 3112 (Australia/NZ) Line Cord
81Y2383	6574	4.3m, 10A/230V, C13 to AS/NZS 3112 (Aus/NZ) Line Cord
69Y1988	6532	2.8m, 10A/250V, C13 to NBR 14136 (Brazil) Line Cord
81Y2387	6404	4.3m, 10A/250V, C13 - 2P+Gnd (Brazil) Line Cord
39Y7928	6210	2.8m, 220-240V, C13 to GB 2099.1 (China) Line Cord
81Y2378	6580	4.3m, 10A/220V, C13 to GB 2099.1 (China) Line Cord
39Y7918	6213	2.8m, 10A/250V, C13 to DK2-5a (Denmark) Line Cord
81Y2382	6575	4.3m, 10A/230V, C13 to DK2-5a (Denmark) Line Cord
39Y7917	6212	2.8m, 10A/230V, C13 to CEE7-VII (Europe) Line Cord
81Y2376	6572	4.3m, 10A/230V, C13 to CEE7-VII (Europe) Line Cord
39Y7927	6269	2.8m, 10A/250V, C13(2P+Gnd) (India) Line Cord
81Y2386	6567	4.3m, 10A/240V, C13 to IS 6538 (India) Line Cord
39Y7920	6218	2.8m, 10A/250V, C13 to SI 32 (Israel) Line Cord
81Y2381	6579	4.3m, 10A/230V, C13 to SI 32 (Israel) Line Cord
39Y7921	6217	2.8m, 220-240V, C13 to CEI 23-16 (Italy/Chile) Line Cord
81Y2380	6493	4.3m, 10A/230V, C13 to CEI 23-16 (Italy/Chile) Line Cord
46M2593	A1RE	2.8m, 12A/125V, C13 to JIS C-8303 (Japan) Line Cord
4L67A08357	6533	2.8m, 200V, C13 to JIS C-8303 (Japan) Line Cord
39Y7926	6335	4.3m, 12A/100V, C13 to JIS C-8303 (Japan) Line Cord
4L67A08362	6495	4.3m, 12A/200V, C13 to JIS C-8303 (Japan) Line Cord
39Y7922	6214	2.8m, 10A/250V, C13 to SABS 164 (S Africa) Line Cord
81Y2379	6576	4.3m, 10A/230V, C13 to SABS 164 (South Africa) Line Cord
39Y7925	6219	2.8m, 220-240V, C13 to KETI (S Korea) Line Cord
81Y2385	6494	4.3m, 12A/220V, C13 to KSC 8305 (S. Korea) Line Cord
39Y7919	6216	2.8m, 10A/250V, C13 to SEV 1011-S24507 (Swiss) Line Cord
81Y2390	6578	4.3m, 10A/230V, C13 to SEV 1011-S24507 (Sws) Line Cord
23R7158	6386	2.8m, 10A/125V, C13 to CNS 10917-3 (Taiwan) Line Cord
81Y2375	6317	2.8m, 10A/240V, C13 to CNS 10917-3 (Taiwan) Line Cord
4L67A08363	AX8B	4.3m, 10A 125V, C13 to CNS 10917 (Taiwan) Line Cord
81Y2389	6531	4.3m, 10A/250V, C13 to 76 CNS 10917-3 (Taiwan) Line Cord
39Y7923	6215	2.8m, 10A/250V, C13 to BS 1363/A (UK) Line Cord
81Y2377	6577	4.3m, 10A/230V, C13 to BS 1363/A (UK) Line Cord
90Y3016	6313	2.8m, 10A/120V, C13 to NEMA 5-15P (US) Line Cord
4L67A08359	6370	4.3m, 10A/125V, C13 to NEMA 5-15P (US) Line Cord
4L67A08361	6373	4.3m, 10A/250V, C13 to NEMA 6-15P (US) Line Cord
46M2592	A1RF	2.8m, 10A/250V, C13 to NEMA 6-15P Line Cord
Rack jumper cables for AC adapters		
00Y3043	A4VP	1.0m, C13 to C14 Jumper Cord, Rack Power Cable
4L67A08365	B0N4	2.0m, 10A/100-250V, C13 to C14 Jumper Cord
4L67A08366	6311	2.8m, 10A/100-250V, C13 to C14 Jumper Cord

Part number	Feature code	Description
39Y7937	6201	1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable
39Y7932	6263	4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable

## Systems management

The SE350 contains an integrated service processor, XClarity Controller (XCC), which provides advanced control, monitoring, and alerting functions. The XCC is based on the Pilot4 XE401 baseboard management controller (BMC) using a dual-core ARM Cortex A9 service processor.

Topics in this section:

- [Activation](#)
- [Local management](#)
- [Lenovo XClarity Mobile](#)
- [Remote management](#)
- [Lenovo XClarity Provisioning Manager](#)
- [Lenovo XClarity Administrator](#)
- [Lenovo XClarity Essentials](#)
- [Lenovo XClarity Energy Manager](#)
- [Lenovo Capacity Planner](#)

### Activation

The ThinkSystem SE350 server requires activation before operation. For data security purposes, the SE350 is delivered in system lockdown mode.

There are three ways the server can be activated:

- Using a mobile device (iOS or Android) connect to the server to the mini-USB port on the front of the server and running the [ThinkShield Edge Mobile Management app](#).
- Connecting the SE350 to the Internet via the XCC management port on the front of the server and accessing the [ThinkShield Key Vault Portal](#) from a web browser on another system.
- In a disconnected mode, where neither a mobile device or an internet connection to the SE350 are available.

Details of the activation process are described in the following documents:

- SE350 Activation Guide (2-page flyer that is included with the server)
- SE350 Setup Guide, Chapter 4

These documents are available from:

[https://thinksystem.lenovofiles.com/help/topic/SE350/pdf\\_files.html?cp=2\\_0\\_0](https://thinksystem.lenovofiles.com/help/topic/SE350/pdf_files.html?cp=2_0_0)

For further information on activation and the use of the ThinkShield Edge Mobile Management app, including videos and tours, see this support page:

<https://support.lenovo.com/us/en/solutions/ht509033>

## Local management

The SE350 offers a front operator panel with key LED status indicators, as shown in the following figure.

**Tip:** The Wireless reset pinhole and the front SMA antenna ports are only present when the Wireless network module is selected.

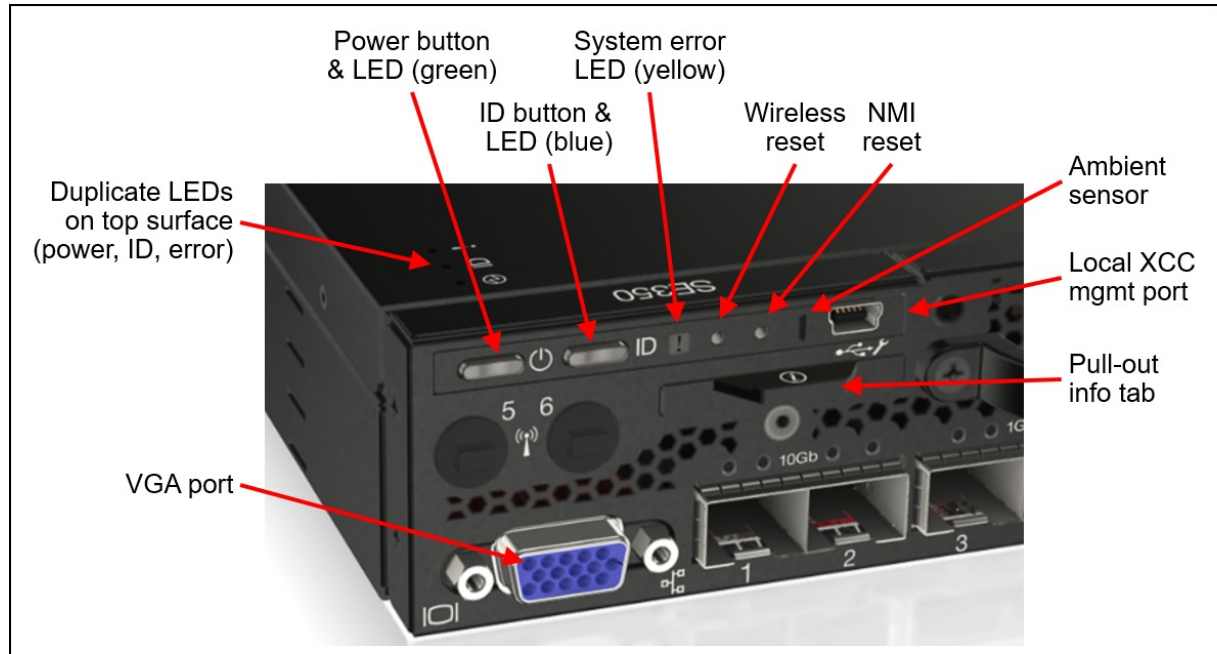


Figure 15. Front operator panel

The buttons on the front of the server:

- Power button
- Identification button - turns on the LED housed within the button as well as passing the signal to the XCC for display remotely in XClarity Administrator
- Wireless reset pinhole (Wireless network module only) - reboots the integrated switch function in the Wireless network module which restarts all wireless functions and all wired ports except the 10GbE connections
- NMI reset pinhole - sends a NMI signal to the processor thereby causing a blue-screen trap of the operating system

The LEDs on the front of the server are as follows:

- Power LED (green) - indicated activation and power status, as follows:
  - Off - Server does not have power applied
  - Fast flash (4 times per second) - Either server has just had power applied and is not ready to be powered on yet, or the server has not been activated yet
  - Slow flash (once per second) - Server is ready to be powered on
  - On solid - Server is powered on
- Identification LED (blue) - lights when the button is pressed or when the function is activated remotely in XClarity Controller.
- System error LED (yellow)


The front of the server also houses an information pull-out tab (also known as the network access tag). See [Figure 2](#) for the location. A label on the tab shows the network information (MAC address and other data) to remotely access the XCC service processor.

## System status with XClarity Mobile

The SE350 also supports local systems management using the XClarity Mobile app. The app includes a tethering function where you can connect your Android or iOS device to the server via the micro-USB port on the server.

You will need a mobile device with a supported operating system installed (iOS 12 or later, Android 5.0 or later), plus the USB charging cable that comes with your phone. You will also need the USB-to-mini-USB cable that ships with the SE350.

The steps to connect the mobile device are as follows:

1. Connect the mobile device via your USB cable and the supplied USB-to-mini-USB cable to the SE350's mini-USB port with the management symbol 
2. In iOS or Android settings, enable Personal Hotspot or USB Tethering
3. Launch the Lenovo XClarity Mobile app

Once connected you can see the following information:

- Server status including error logs (read only, no login required)
- Server management functions (XClarity login credentials required)

## Remote management

Remote server management is provided through industry-standard interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Simple Network Management Protocol (SNMP) Version 3 (no SET commands; no SNMP v1)
- Common Information Model (CIM-XML)
- Representational State Transfer (REST) support
- Redfish support (DMTF compliant)
- Web browser - HTML 5-based browser interface (Java and ActiveX not required) using a responsive design (content optimized for device being used - laptop, tablet, phone) with NLS support

Remote management is available via the following connections:

- Via the dedicated Ethernet ports for management. The wireless and wired network modules both have a dedicated RJ45 Ethernet port for remote management. See the [Network Modules](#) section for the location of these ports.
- Via Port 1 of the 10 GbE SFP+ ports supports NC-SI to allow sharing of the Ethernet port between the operating system and remote management.
- Via a wireless connection (Wireless Network Module only). This connection is disabled by default, but can be enabled and configured in the XCC via the BMC Network Bridge setting.

There are two XClarity Controller upgrades available for the SE350 server, Advanced and Enterprise.

Lenovo XClarity Controller Advanced adds the following remote control functions:

- Remotely viewing video with the following graphics resolutions: Up to 1600x1200 with up to 23 bits per pixel; or Up to 1920x1200 with up to 15 bits per pixel

- Remotely accessing the server using the keyboard and mouse from a remote client
- Capturing blue-screen errors
- International keyboard mapping support
- LDAP-based authentication

Lenovo XClarity Controller Enterprise enables the following additional features:

- Boot Capture
- Remote mounting of CD-ROM (ISO) and diskette (IMG) files as virtual drives
- Virtual console collaboration - Ability for up to 6 remote users to be log into the remote session simultaneously
- Power capping
- License for XClarity Energy Manager

Preconfigured models come with either XClarity Controller Standard, Advanced or Enterprise, depending on the model. See the [Models](#) section for details. The following table shows the field upgrades available for preconfigured models.

Table 28. XClarity Controller field upgrades

Part number	Feature code	Description
4L47A09132	AVUT	ThinkSystem XClarity Controller Standard to Advanced Upgrade (for servers that have XCC Standard)
4L47A09133	AVUU	ThinkSystem XClarity Controller Advanced to Enterprise Upgrade (for servers that have XCC Advanced)

For configure-to-order (CTO) models, you can elect to have one of the following XCC functionality by selecting the appropriate XCC feature codes as listed in the following table:

- XCC Standard - select neither feature listed in the table
- XCC Advanced - select feature AVUT
- XCC Enterprise - select feature AUPW

Table 29. XClarity Controller Upgrades for configure-to-order

Feature code	Description
AVUT	ThinkSystem XClarity Controller Standard to Advanced Upgrade
AUPW	ThinkSystem XClarity Controller Standard to Enterprise Upgrade

## Lenovo XClarity Provisioning Manager

Lenovo XClarity Provisioning Manager (LXPM) is a UEFI-based application embedded in ThinkSystem servers and accessible via the F1 key during system boot.

LXPM provides the following functions:

- Graphical UEFI Setup
- System inventory information and VPD update
- System firmware updates (UEFI and XCC)
- RAID setup wizard
- OS installation wizard (including unattended OS installation)
- Diagnostics functions

## Lenovo XClarity Administrator

Lenovo XClarity Administrator is a centralized resource management solution designed to reduce complexity, speed response, and enhance the availability of Lenovo systems and solutions.

Lenovo XClarity Administrator provides agent-free hardware management for ThinkSystem servers, in addition to ThinkServer, System x, and Flex System servers. The administration dashboard is based on HTML 5 and allows fast location of resources so tasks can be run quickly.

Because Lenovo XClarity Administrator does not require any agent software to be installed on the managed endpoints, there are no CPU cycles spent on agent execution, and no memory is used, which means that up to 1GB of RAM and 1 - 2% CPU usage is saved, compared to a typical managed system where an agent is required.

Lenovo XClarity Administrator provides full management function to ThinkSystem servers, including the following:

- Discovery
- Inventory
- Monitoring and alerting
- Call home
- Centralized user management
- Cryptography modes, server certificates, and encapsulation
- Configuration patterns
- Operating system deployment
- Firmware updates

For more information about Lenovo XClarity Administrator, including ordering part numbers, see the Lenovo XClarity Administrator Product Guide: <https://lenovopress.com/tips1200-lenovo-xclarity-administrator>

## Lenovo XClarity Integrators

Lenovo also offers software plug-in modules, Lenovo XClarity Integrators, to manage physical infrastructure from leading external virtualization management software tools including those from Microsoft and VMware.

These integrators are offered at no charge, however if software support is required, a Lenovo XClarity Pro software subscription license should be ordered.

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 Lenovo x86 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 about all the available Lenovo XClarity Integrators, see the Lenovo XClarity Administrator Product Guide: <https://lenovopress.com/tips1200-lenovo-xclarity-administrator>



## Lenovo XClarity Essentials

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

- **Lenovo Essentials OneCLI**  
OneCLI is a collection of server management tools that uses a command line interface program to manage firmware, hardware, and operating systems. It provides functions to collect full system health information (including health status), configure system settings, and update system firmware and drivers.
- **Lenovo Essentials UpdateXpress**  
The UpdateXpress tool is a standalone GUI application for firmware and device driver updates that enables you to maintain your server firmware and device drivers up-to-date and help you avoid unnecessary server outages. The tool acquires and deploys individual updates and UpdateXpress System Packs (UXSPs) which are integration-tested bundles.
- **Lenovo Essentials Bootable Media Creator**  
The Bootable Media Creator (BOMC) tool is used to create bootable media for offline firmware update.

For more information and downloads, visit the Lenovo XClarity Essentials web page:  
<http://support.lenovo.com/us/en/documents/LNVO-center>

## Lenovo XClarity Energy Manager

Lenovo XClarity Energy Manager is an agent-free, web-based console that provides power management for ThinkSystem servers as well as System x and ThinkServer systems. It enables server density and data center capacity to be increased through the use of power capping.

Lenovo XClarity Energy Manager is a licensed product. A single-node XClarity Energy Manager license is included with the XClarity Controller Enterprise (XCC Enterprise) upgrade as described in the [Remote Management](#) section. If your server does not have the XCC Enterprise upgrade, Energy Manager licenses can be ordered as shown in the following table.

Table 30. Lenovo XClarity Energy Manager

Description	Part number
4L40E51621	Lenovo XClarity Energy Manager Node License (1 license needed per server)

## Lenovo Capacity Planner

Lenovo Capacity Planner is a power consumption evaluation tool that enhances data center planning by enabling IT administrators and pre-sales professionals to understand various power characteristics of racks, servers, and other devices. Capacity Planner can dynamically calculate the power consumption, current, British Thermal Unit (BTU), and volt-ampere (VA) rating at the rack level, improving the planning efficiency for large scale deployments.

For more information, refer to the Capacity Planner web page:  
<http://datacentersupport.lenovo.com/us/en/solutions/Invo-lcp>

## Security

The SE350 offers a number of security features, both electronic and physical.

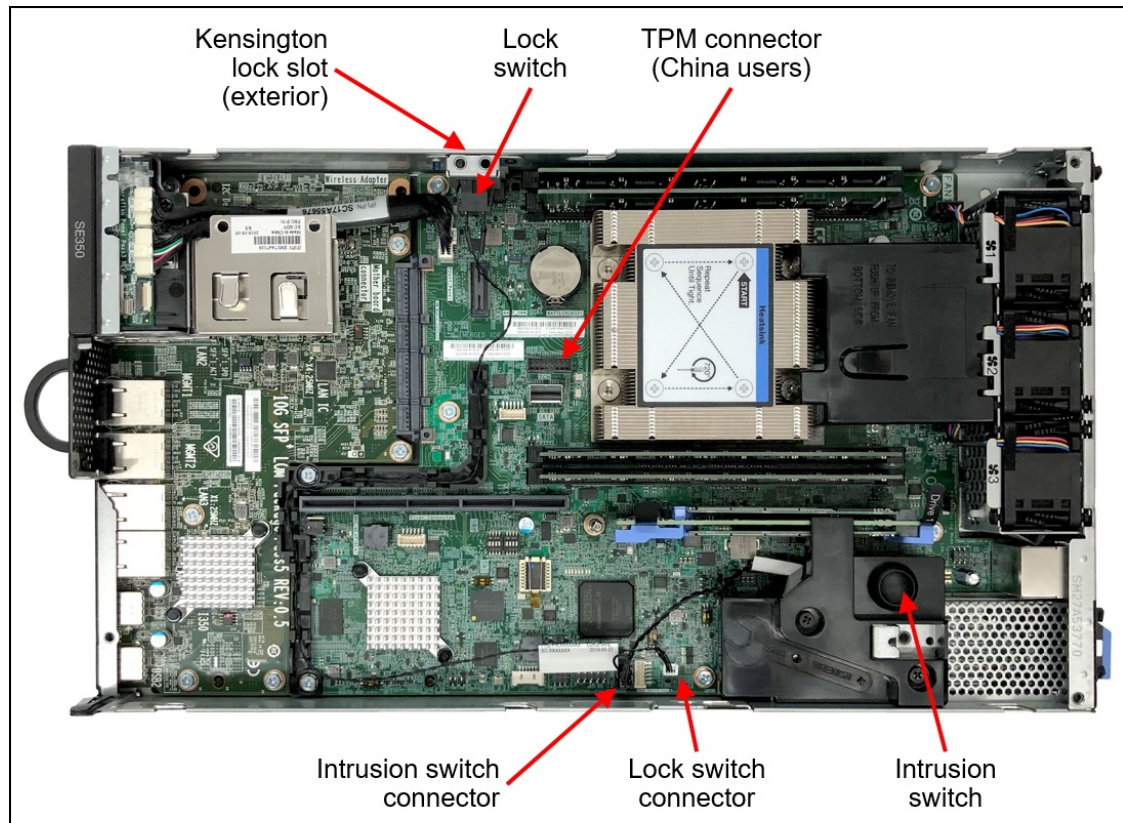


Figure 16. Security features of the SE350

Physical security features:

- Intrusion detection  
The server has an intrusion switch that rests against the server cover. In the event that the cover is removed, the event is recorded and actions can be taken to secure the server. The intrusion switch is standard.
- Motion detection  
The server has an onboard G-sensor accelerometer (disabled by default) that will generate an event if the server is moved. As part of the setup process in XCC, you specify the orientation of the server - desktop, ceiling, wall mount, angled in the bookshelf mount. You can also specify the sensitivity of the motion detection. The motion detection feature is standard.
- Support for a Kensington lock and cable  
The server has a slot on the side of the server which a customer-supplied Kensington lock and cable can be attached to, to help prevent theft of the server.

- Intrusion arm/disarm feature

The Kensington cable slot can also double as an electronic switch to disarm the intrusion switch detection, so that authorized servicing of the hardware can be performed without triggering the security actions. Available as the Tamper Detection Kit, CTO only. The kit includes a Kensington lock (without cable) that is attached to the outside of the server.

**Note:** This intrusion arm/disarm feature is not supported with the 1U or 2U rack enclosure mounting options, due to physical restrictions with the Kensington lock.

- Front bezel with key lock

Optional component that mounts on the front of the server that restricts access to networking connectors on the front of the server. See [Mounting components](#) for more information.

Electronic security features include:

- Automatic actions on tamper detection

In the event of an intrusion or movement, the server can be configured in XCC to perform actions, including server shutdown and disabling remote access to the XCC from the network ports (referred to as the BMC network bridge).

- Self-encrypting (SED) M.2 drives that ensure data is secured when the drives are powered off
- Administrator password and a power-on password in UEFI
- Onboard Trusted Platform Module (TPM) supporting TPM 2.0 enables advanced cryptographic functionality in the operating system and applications.
- For China users, the server has an internal TCM port that supports a Nationz TPM 2.0 module. Available CTO only.

Ordering information for the security components is listed in the following table.

Table 31. Security components

Part number	Feature code	Description
CTO only	B6Q2	ThinkSystem SE350 Tamper Detection Kit with Security Lock <ul style="list-style-type: none"> <li>• Internal lock mechanism with electronic switch</li> <li>• Cable and routing tray</li> <li>• Kensington lock with key</li> </ul>
4M17A37599	B6GD	ThinkSystem SE350 Sleeve Locking Bezel with Dust Filter Holders (see <a href="#">Mounting components</a> ) <ul style="list-style-type: none"> <li>• Locking security bezel with key</li> <li>• Dust filter holders</li> </ul>
CTO only	B22N	ThinkSystem Nationz Trusted Platform Module v2.0

## Mounting options

The SE350 is designed to be used in a variety of locations -- wall, ceiling, bookshelf, table top -- as well as in a rack.

In this section:

- [Mounting components](#)
- [Desktop mount](#)
- [Stacked mount](#)

- Bookshelf mount
- Wall or ceiling mount
- 1U rack installation
- Short-depth 2U rack installation
- Short-depth 1U rack installation for telco

### Mounting components

Many of the mounting options share the same components.

#### Node sleeve

The node sleeve, shown below, holds the SE350 server when mounted on the wall or connected to other SE350 servers. Multiple SE350 servers can be connected together -- the node sleeves are clipped together and then secured using thumbscrews. The servers are then slid into the node sleeves and secured with additional thumbscrews.

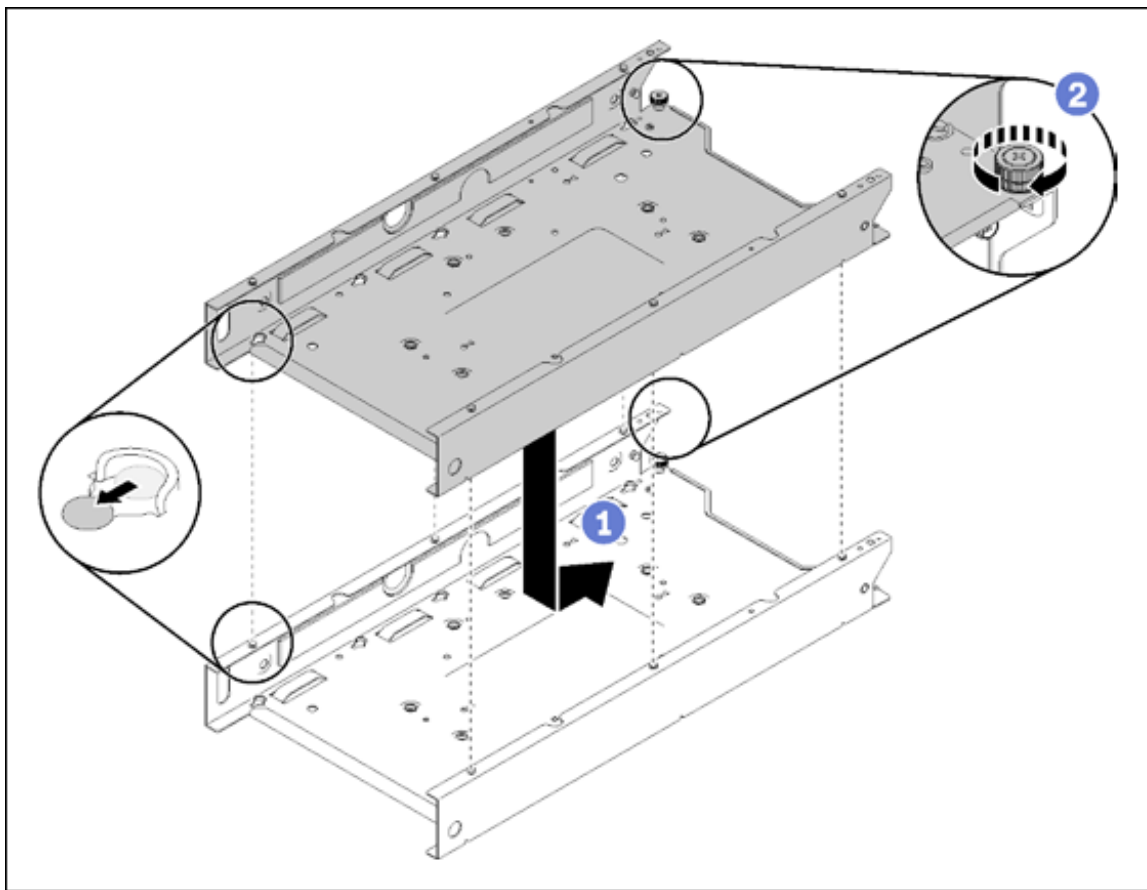


Figure 17. Attaching two node sleeves together

Table 32. Node Sleeve ordering information

Part number	Feature code	Description	Quantity required
4M17A37607	B6EZ	ThinkSystem SE350 Node Sleeve	1 per server

#### Locking bezel

The locking bezel (4M17A37599) is an optional component that mounts on the front of the node sleeve to help prevent physical access to the front components of the server. The bezel includes a lock-and-key mechanism for security. The bezel also includes two brackets that are used to hold the optional dust filters (4M17A37602). The brackets and filters cover the PCIe slot area and the network area to reduce the dust that can enter the server through the front air holes.

**Tip:** The use of the locking bezel requires a node sleeve.

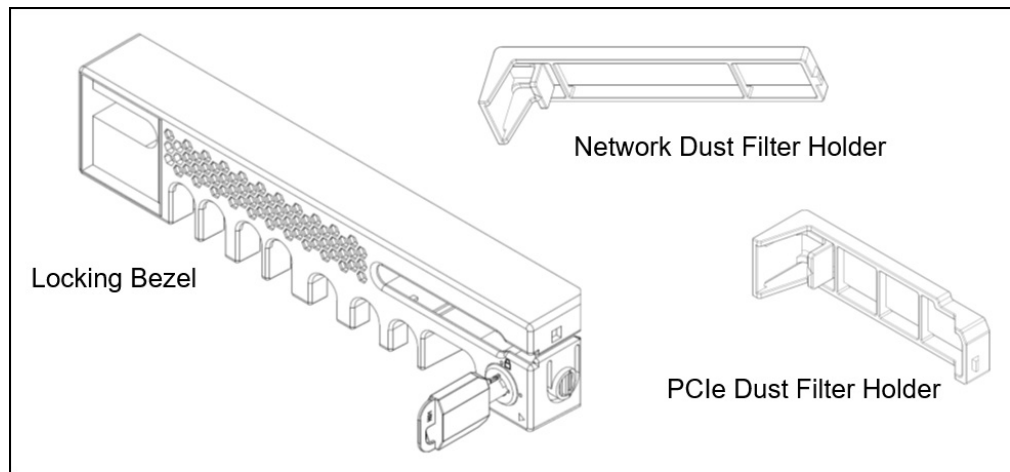


Figure 18. Locking Bezel and Filter Holders (4M17A37599)

Table 33. Locking bezel ordering information

Part number	Feature code	Description	Quantity required
4M17A37599	B6GD	ThinkSystem SE350 Sleeve Locking Bezel with Dust Filter Holders <ul style="list-style-type: none"> <li>• Locking bezel with key</li> <li>• Dust filter holder for the area above the network ports</li> <li>• Dust filter holder for PCIe slot area</li> </ul>	Optional, 1 per server
4M17A37602	B6KU	ThinkSystem SE350 Locking Bezel Dust Filter <ul style="list-style-type: none"> <li>• 1x 5mm foam dust filter for network filter holder</li> <li>• 1x 5mm foam dust filter for PCIe filter holder</li> </ul>	Optional, 1 per server

### Desktop mount

Desktop mounting has the server oriented horizontally with self-adhesive rubber pads mounted to its underside.

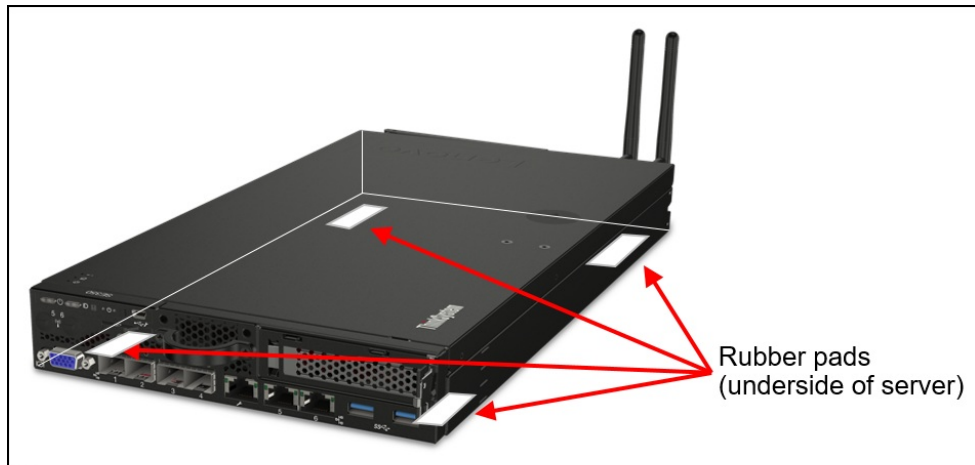


Figure 19. SE350 with Rubber Feet option

The components needed for the desktop mount are shown in the following table.

Table 34. Desktop mount components

Part number	Feature code	Description	Quantity required
4M17A37610	B6Q3	ThinkSystem SE350 Rubber Feet (contains 4 rubber pads)	1

### Stacked mount

Multiple SE350 servers can be each installed into a node sleeve and then stacked horizontally up to 3 high. The node sleeves are secured together using thumbscrews. The bottom node sleeve has rubber feet mounted to its underside.

The components needed for the stacked mount are shown in the following table. See the [Mounting components](#) section for details about the node sleeve and locking bezel.

Table 35. Stacked mount components

Part number	Feature code	Description	Quantity required
4M17A37607	B6EZ	ThinkSystem SE350 Node Sleeve	1 per server
4M17A37610	B6Q3	ThinkSystem SE350 Rubber Feet (contains 4 rubber pads)	1 per stack
4M17A37599	B6GD	ThinkSystem SE350 Sleeve Locking Bezel with Dust Filter Holders	Optional, 1 per server
4M17A37602	B6KU	ThinkSystem SE350 Locking Bezel Dust Filter	Optional, 1 per server

### Bookshelf mount

The bookshelf mount allows up to 3 servers to be mounted vertically and placed like books on a shelf, desk or other flat surface. The servers are angled up at the front for easy access. Three nodes, with optional locking bezels, as shown in the bookshelf mount in the following figure.

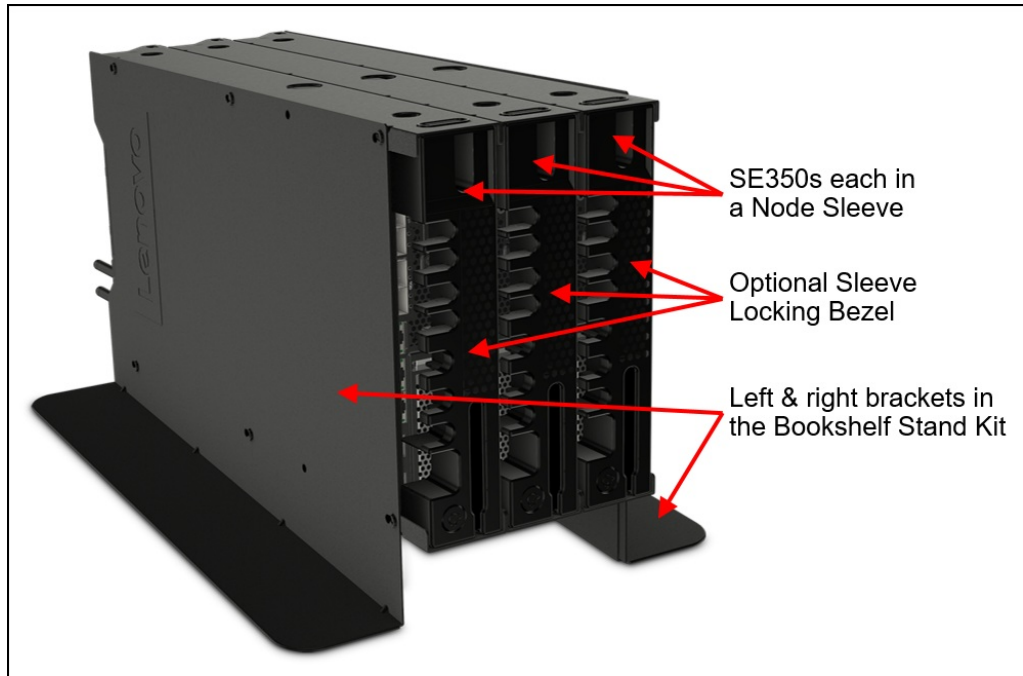


Figure 20. Bookshelf mount (with optional locking bezels)

The components needed for the bookshelf mount are shown in the following table. See the [Mounting components](#) section for details about the node sleeve and locking bezel.

Table 36. Bookshelf mount components

Part number	Feature code	Description	Quantity required
4M17A37608	B6G8	ThinkSystem SE350 Bookshelf Stand Kit (contains left and right brackets)	1
4M17A37607	B6EZ	ThinkSystem SE350 Node Sleeve	1 per server
4M17A37599	B6GD	ThinkSystem SE350 Sleeve Locking Bezel with Dust Filter Holders	Optional, 1 per server
4M17A37602	B6KU	ThinkSystem SE350 Locking Bezel Dust Filter	Optional, 1 per server

### Wall or ceiling mount

The SE350 can be mounted on a wall or the ceiling, using the node sleeve. When wall mounted, the node sleeve can be mounted directly on the wall or onto a DIN rail. The server is then installed in the sleeve.

The components needed for a wall or ceiling mount are shown in the following table. See the [Mounting components](#) section for details about the node sleeve and locking bezel.



Table 37. Wall or ceiling mount

Part number	Feature code	Description	Quantity required
4M17A37607	B6EZ	ThinkSystem SE350 Node Sleeve	1 per server
4M17A37601	B6F0	ThinkSystem SE350 AC Adapter Bracket	1 per server
4M17A37600	B6F1	ThinkSystem SE350 DIN Rail Kit (contains two brackets)	Optional, for DIN rail only, 1 per server
4M17A37599	B6GD	ThinkSystem SE350 Sleeve Locking Bezel with Dust Filter Holders	Optional, 1 per server
4M17A37602	B6KU	ThinkSystem SE350 Locking Bezel Dust Filter	Optional, 1 per server

The DIN Rail Kit contains two brackets, as shown in the following figure.

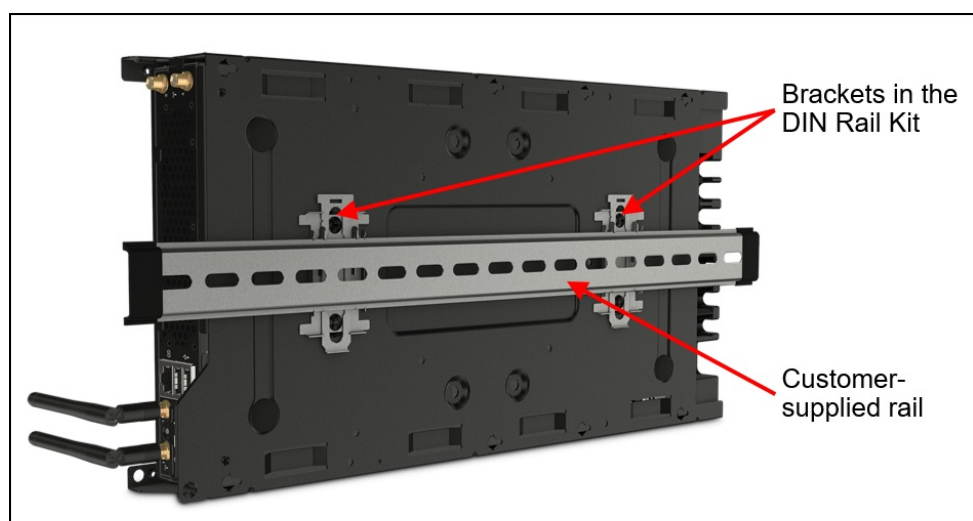


Figure 21. DIN Rail Kit

The AC Adapter Bracket houses the two AC adapters for the SE350 server, as shown in the following figure.



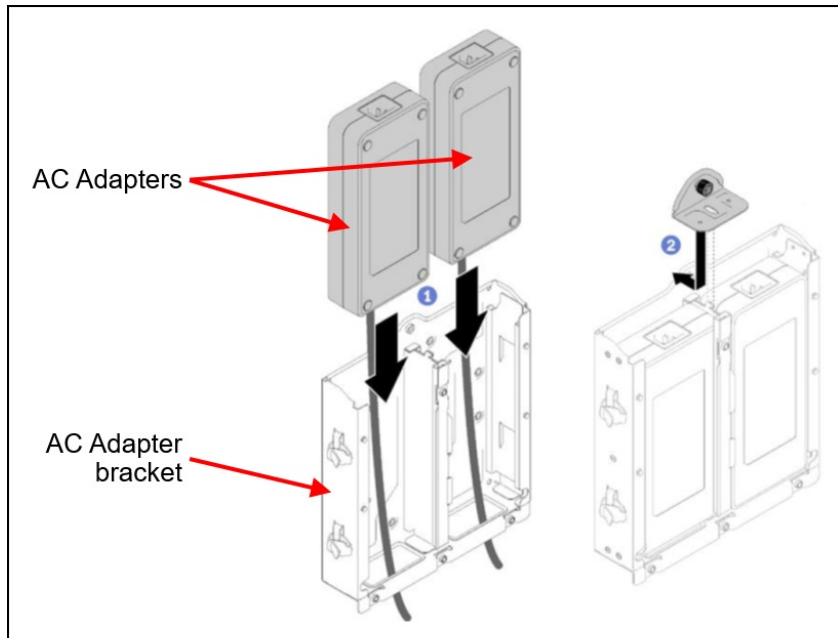


Figure 22. AC Adapter Bracket

When mounting on a DIN rail, the AC Adapter Bracket and Node Sleeve can be mounted side by side, or they can be mounted one on top of the other, where the AC Adapter Bracket attaches to the DIN rail, and the Node Sleeve mounts to the AC Adapter Bracket.

### 1U rack installation

Two SE350 servers and the four companion AC Adapter power supplies can be mounted in a 1U space in a rack server. The components are mounted in the ThinkSystem E1 Enclosure, machine type 7D1R.

**Notes:**

- The E1 Enclosure is only available configure-to-order, using model 7D1RCTO1WW
- The Wireless Network Module is not supported as there is insufficient physical space for the antennas

The following figure shows two SE350 servers installed in the E1 Enclosure.

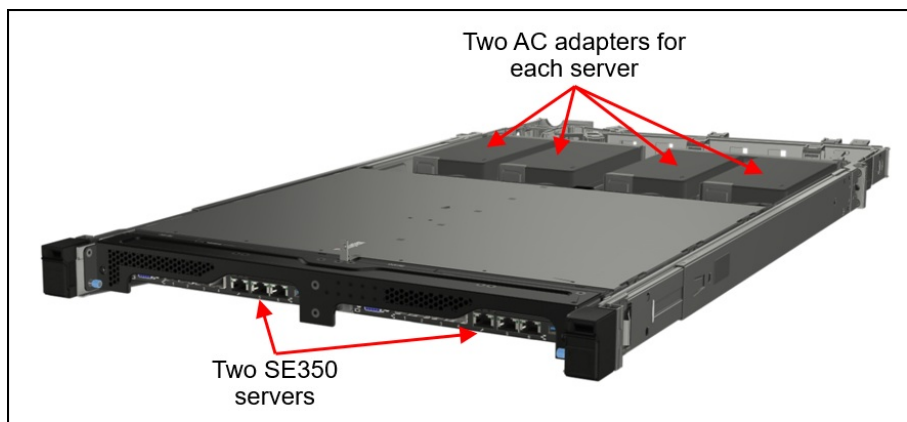


Figure 23. ThinkSystem E1 Enclosure

The following figure shows the components used in the 1U rack installation.

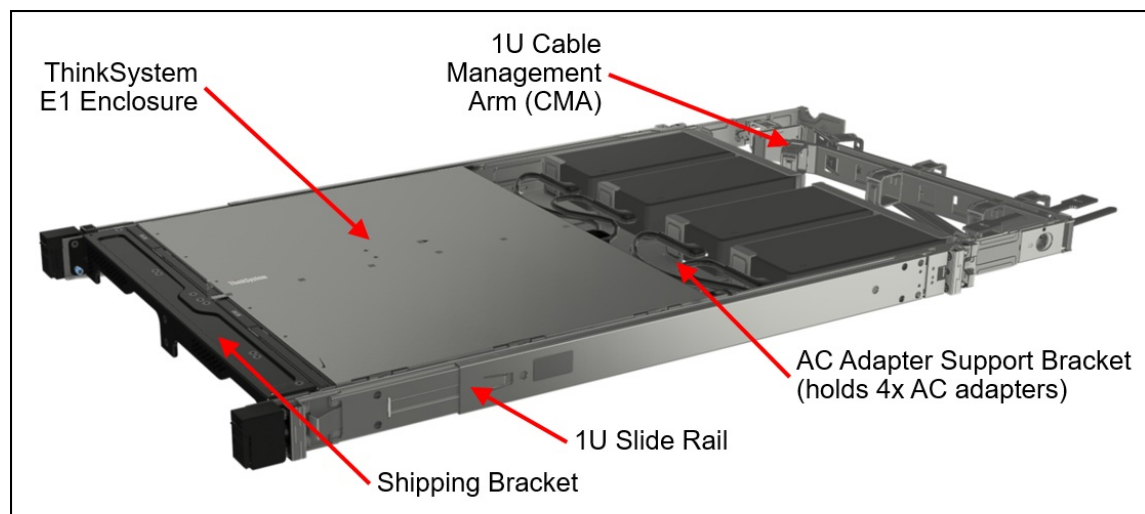


Figure 24. ThinkSystem E1 Enclosure components

The following table lists the components used in the 1U rack installation.

**Tip:** The top cover of the SE350 is removed before installing the server in the enclosure.

Table 38. Components for the E1 Enclosure

Part number	Feature code	Description	Quantity required
Toolless Slide Rail Kit and CMA			
4M17A11683	7D1R AVAL	1U and 2U Slide Rail	1 per Enclosure
CTO only	7D1R AVAX	CMA (1U)	1 per Enclosure
ThinkSystem E1 Enclosure components			
CTO only	7D1R B6PX	ThinkSystem Enclosure for Mounting SE350 Side by Side in Rack	1 per Enclosure
CTO only	7D1R B6EE	ThinkSystem Enclosure AC Adapter Support Bracket	1 per Enclosure
4M17A37283	7D1R B6F2	ThinkSystem Enclosure Front Shipping Bracket <ul style="list-style-type: none"> <li>• 1x Front Shipping/Dust Filter Bracket</li> <li>• 2x Rack Filter Holders</li> </ul>	1 per Enclosure
4M17A37284	7D1R B6PY	ThinkSystem Enclosure Rack Dust Filter <ul style="list-style-type: none"> <li>• 1x 5mm foam dust filter for network filter holder</li> <li>• 1x 5mm foam dust filter for PCIe filter holder</li> </ul>	1 for each server

The following figure shows the components included in the Front Shipping Bracket.

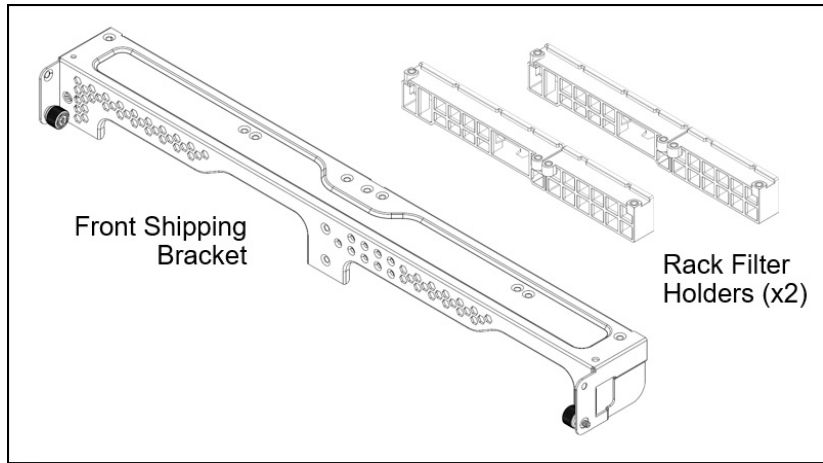


Figure 25. ThinkSystem Enclosure Front Shipping Bracket

The following table summarizes the specifications of the two available rail kits

Table 39. Specifications of rail kit for E1 Enclosure

Feature	Slide Rail Kit
Part number	4M17A11683
CMA	Optional, CTO only (7D1R AVAX)
Rail length	807 mm (31.8 in.)
Rail type	Full-out slide (ball bearing)
Slide travel	810 mm (31.9 in.)
Tool-less installation	Yes
In-rack server maintenance	Yes
1U PDU support	Yes
0U PDU support	Yes
Rack type	IBM and Lenovo 4-post, IEC standard-compliant
Mounting holes	Square or round
Mounting flange thickness	2 mm (0.08 in.) – 3.3 mm (0.13 in.)
Max distance between front and rear mounting flanges	864 mm (34.0 in.)

### Short-depth 2U rack installation

Two SE350 servers and the four companion AC Adapter power supplies can also be mounted in a short-depth rack or a 2-post rack. In such a configuration, the servers occupy 2U of rack space, the two servers in 1U and the AC Adapters mounted in the 1U space above. The components are mounted in the ThinkSystem E2 Enclosure, machine type 7D1R.

#### Notes:

- The E2 Enclosure is only available configure-to-order, using model 7D1RCTO2WW
- The Wireless Network Module is not supported as there is insufficient physical space for the antennas

The following figure shows two SE350 servers installed in the E2 Enclosure.

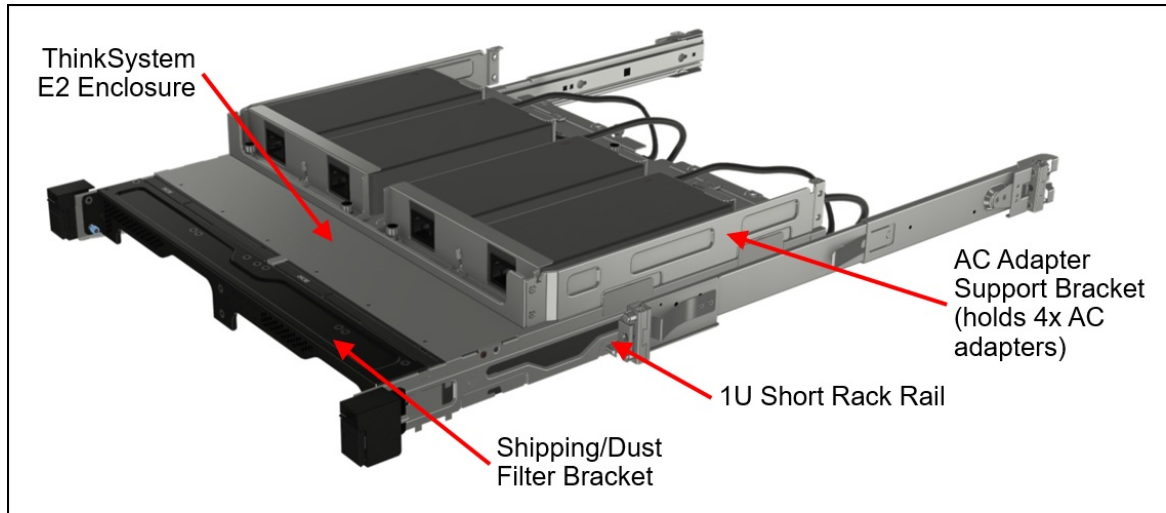


Figure 26. ThinkSystem E2 Enclosure components (rail in open position)

The following table lists the components used in the 1U rack installation.

**Tip:** The top cover of the SE350 is removed before installing the server in the enclosure.

Table 40. Components for the E2 Enclosure

Part number	Feature code	Description	Quantity required
Rail kit selections (choose 1)			
4M17A37105	7D1R B6H2	ThinkSystem Friction 2-Post Screw-in Rail Kit	1 per enclosure
4M17A37605	7D1R B7L3	ThinkSystem Enclosure Short Rack Rail Kit	1 per enclosure
ThinkSystem E2 Enclosure components			
CTO only	7D1R B6PX	ThinkSystem Enclosure for Mounting SE350 Side by Side in Rack	1 per Enclosure
CTO only	7D1R B6EE	ThinkSystem Enclosure AC Adapter Support Bracket	1 per Enclosure
4M17A11683	7D1R AVAL	1U and 2U Slide Rail	1 per Enclosure
CTO only	7D1R AVAX	CMA (1U)	1 per Enclosure
4M17A37283	7D1R B6F2	ThinkSystem Enclosure Front Shipping Bracket <ul style="list-style-type: none"> <li>• 1x Front Shipping/Dust Filter Bracket</li> <li>• 2x Rack Filter Holders</li> </ul>	1 per Enclosure
4M17A37284	7D1R B6PY	ThinkSystem Enclosure Rack Dust Filter <ul style="list-style-type: none"> <li>• 1x 5mm foam dust filter for network filter holder</li> <li>• 1x 5mm foam dust filter for PCIe filter holder</li> </ul>	1 for each server

The following figure shows the components included in the Front Shipping Bracket.

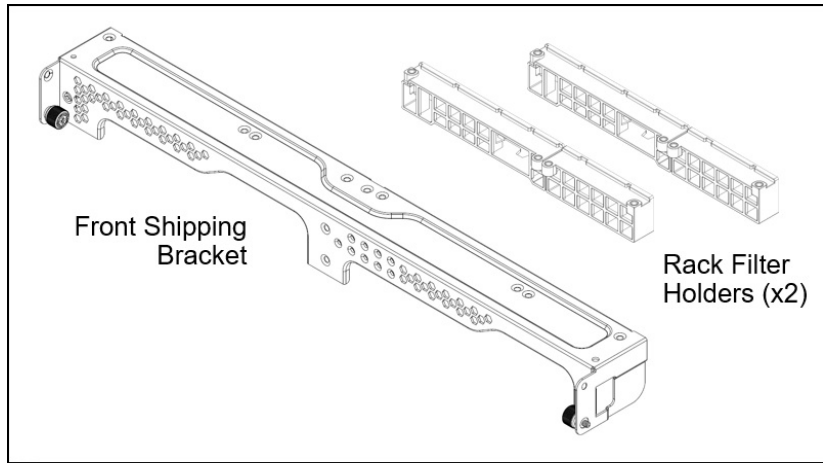


Figure 27. ThinkSystem Enclosure Front Shipping Bracket

The following table summarizes the specifications of the two available rail kits

Table 41. Specifications of rail kits for short-depth installations

Feature	Short Rack Rail Kit	2-Post Screw-in Rail Kit
Part number	4M17A37605	4M17A37105
CMA	None	None
Rail length	484 mm (19.1 in.)	484 mm (19.1 in.)
Rail type	Half-out slide (friction)	Half-out slide (friction)
Slide travel	270 mm (10.6 in.)	270 mm (10.6 in.)
Tool-less installation	Yes	No
In-rack server maintenance	No	No
1U PDU support	Yes	Yes
0U PDU support	Yes	Not applicable
Rack type	14-inch to 24-inch depth	2-post, EIA standard-compliant (3-inch to 8-inch)
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.) – 3.3 mm (0.13 in.)
Max distance between front and rear mounting flanges	810 mm (31.9 in.)	Not applicable

### Short-depth 1U rack installation for Telco

For Telco customers that have a -48V DC power source in their installations, the two SE350 servers can be mounted in a 1U short-depth rack or a 2-post rack. The components are mounted in the ThinkSystem E2 Enclosure, machine type 7D1R. In such a configuration, no AC adapters are needed.

#### Notes:

- The E2 Enclosure is only available configure-to-order, using model 7D1RCTO2WW
- The Wireless Network Module is not supported as there is insufficient physical space for the antennas

The following figure shows two SE350 servers installed in the enclosure without AC adapters.

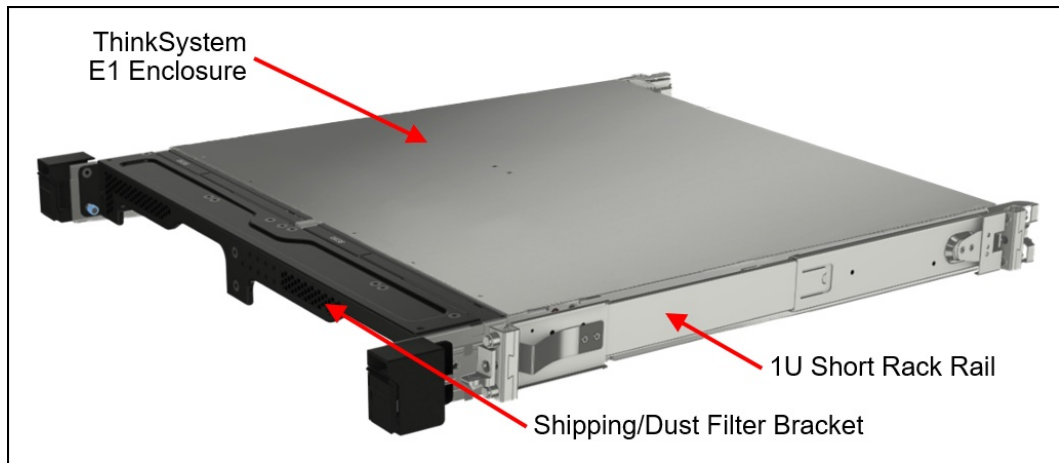


Figure 28. ThinkSystem E2 Enclosure with a short rail kit (rail in closed position)

The following table lists the components used in the 1U rack installation.

**Tip:** The top cover of the SE350 is removed before installing the server in the enclosure.

Table 42. Components for the E2 Enclosure

Part number	Feature code	Description	Quantity required
Rail kit selections (choose 1)			
4M17A37105	7D1R B6H2	ThinkSystem Friction 2-Post Screw-in Rail Kit	1 per enclosure
4M17A37605	7D1R B7L3	ThinkSystem Enclosure Short Rack Rail Kit	1 per enclosure
Enclosure components			
CTO only	7D1R B6PX	ThinkSystem Enclosure for Mounting SE350 Side by Side in Rack	1 per Enclosure
4M17A37283	7D1R B6F2	ThinkSystem Enclosure Front Shipping Bracket <ul style="list-style-type: none"> <li>• 1x Front Shipping/Dust Filter Bracket</li> <li>• 2x Rack Filter Holders</li> </ul>	1 per Enclosure
4M17A37284	7D1R B6PY	ThinkSystem Enclosure Rack Dust Filter <ul style="list-style-type: none"> <li>• 1x 5mm foam dust filter for network filter holder</li> <li>• 1x 5mm foam dust filter for PCIe filter holder</li> </ul>	1 for each server

Specifications for the supported rail kits are listed in the [rail kit table in the preceding section](#).

## Operating system support

The SE350 supports the following operating systems:

- Microsoft Windows Server 2016
- Microsoft Windows Server 2019
- Red Hat Enterprise Linux 7.6
- SUSE Linux Enterprise Server 15
- SUSE Linux Enterprise Server 15 Xen
- VMware ESXi 6.5 U2
- VMware ESXi 6.7 U2

For a complete list of supported, certified and tested operating systems, plus additional details and links to relevant web sites, see the Operating System Interoperability Guide:

<https://lenovopress.com/osig#servers=se350-7z46-7d1x>

For configure-to-order configurations, the server can be preloaded with VMware ESXi on M.2 cards installed in an M.2 Boot Adapter. Ordering information is listed in the following table.

Table 43. VMware ESXi preload

Part number	Feature code	Description
CTO only	B3VW	VMware ESXi 6.5 U2 (Factory Installed)
CTO only	B6U1	VMware ESXi 6.7 U2 (Factory installed)

## Physical and electrical specifications

Dimensions and weight of the SE350 server:

- Height 43 mm (1.7 in.)
- Width: 209 mm (8.2 in.)
- Depth: 376 mm (14.8 in.)
- Maximum weight: 3.6 kg (7.9 lbs)

Dimensions and weight of the E1 Enclosure (without CMA and front bracket):

- Height: 43 mm (1.7 in.)
- Width: 434 mm (17.1 in.)
- Depth: 736 mm (29.0 in.)
- Weight: 10 kg (with 2 power supplies), 15 kg (with 4 power supplies)

Dimensions and weight of the E2 Enclosure (without front bracket):

- Height: 87 mm (3.4 in.)
- Width: 434 mm (17.1 in.)
- Depth: 441 mm (17.3 in.)
- Weight: 10 kg (with 2 power supplies), 15 kg (with 4 power supplies)

Electrical specifications:

- Electrical Input - 12V AC Adapters
  - 100 to 127 (nominal) V AC, 50 Hz or 60 Hz, 3.2 A
  - 200 to 240 (nominal) V AC, 50 Hz or 60 Hz, 1.6 A
- Electrical Input - -48V DC
  - -40.8 to -72 VDC, 8.4A

## Operating environment

The ThinkSystem SE350 complies with ASHRAE A4 specifications 5°C to 45°C (41°F to 113°F). System performance may be impacted when operating temperature is outside ASHRAE A4 specification or in the event of a fan failure.

The server is supported in the following environment:

- Air temperature:
  - Operating: ASHRAE Class A4: 5°C to 45°C (41°F to 113°F); the maximum ambient temperature decreases by 1°C for every 125 m (410 ft) increase in altitude above 900 m (2,953 ft).
  - Server off: 5°C to 45°C (41°F to 113°F)
  - Shipment/storage: -40°C to 60°C (-40°F to 140°F)
  - With the following configuration restrictions, the SE350 can operate 0°C to 55°C ambient temperature:
    - No GPU
    - No 5100 M.2 drives or the 128 GB M.2 drive; only P4511 and A600i Industrial M.2 drives supported
- Maximum altitude: 3,050 m (10,000 ft)
- Relative Humidity (non-condensing):
  - Operating: ASHRAE Class A4: 8% to 90%; maximum dew point: 24°C (75°F)
  - Shipment/storage: 8% to 90%
  - Non-operating (unpacked) storage: 5% to 95% at 38.7°C (101.7°F) maximum dry-bulb temperature for 48 hrs.

The server generates the following heat and noise:

- Heat/thermal output:
  - Minimum configuration: 287 BTU per hour (84 watts)
  - Maximum configuration: 783 BTU per hour (229 watts)
- Noise level (LWAm):
  - Sound power, idling: 4.9 bels (minimum), 5.0 bels (typical), 5.4 bels (maximum)
  - Sound power, operating: 5.3 bels (minimum), 5.4 bels (typical), 5.7 bels (maximum)

The server has the vibration and shock limits listed in the following table for when the server is in operation. The terms "left wing" and "right wing" in the table refer to the two sides of the riser card as described in the [I/O expansion](#) section.

Table 44. Vibration and shock values - server operation

Riser configuration		Vibration limit	Shock limit
Left wing	Right wing		
SATA	Empty	3.06 G rms, 3-500 Hz, 60 min/axis	30 G, 11ms, half-sine, ±X, ±Y, ±Z
SATA	GPU	3.06 G rms, 3-500 Hz, 15 mins/axis	30 G, 11ms, half-sine, ±X, ±Y, ±Z
NVMe	NVMe	0.21 G rms, 3-500 Hz, 30 mins/axis	15 G, 11ms, half-sine, ±X, ±Y, ±Z
NVMe	GPU	0.21 G rms, 3-500 Hz, 30 mins/axis	15 G, 11ms, half-sine, ±X, ±Y, ±Z

Non-operation shock & vibration data is as follows:

- Vibration, non-operating:
  - Single SE350 server: 7.7 G rms at 20 - 2000 Hz for 60 minutes across 6 surfaces
  - Rack installation: 1.04 G rms at 2 - 200 Hz for 15 minutes across 6 surfaces



- Shock, non-operating:
  - Single SE350 server:
    - 50 G for 11ms in each direction (positive and negative X, Y, and Z axes)
  - Rack installation:
    - 0-4 kg: 50 G for 180 in./sec velocity change across 6 surfaces
    - 4-12 kg: 50 G for 167 in./sec velocity change across 6 surfaces
    - 12-23 kg: 50 G for 152 in./sec velocity change across 6 surfaces
    - 23-32 kg: 35 G for 152 in./sec velocity change across 6 surfaces
    - 32-69 kg: 35 G for 136 in./sec velocity change across 6 surfaces
    - 69-107 kg: 25 G for 118 in./sec velocity change across 6 surfaces

For CTO orders, specify the operational temperature requirement and the shock & vibration requirement, by selecting the feature codes listed in the following table. Selecting the higher temperature and shock/vibration values will ensure the correct heat/vibration tolerant components are selected.

Table 45. Environmental requirements for CTO orders

Feature code	Description
Operational temperature selections	
B8ZT	Operational Temperature 0-45°C
B8ZU	Operational Temperature 0-55°C
Shock & Vibration selections	
B8ZR	Standard Shock & Vibration (15G & .21Grms) <ul style="list-style-type: none"> <li>• Shock: 15 G, 11ms, half-sine, ±X, ±Y, ±Z</li> <li>• Vibration: 0.21 G rms, 3-500 Hz, 30 mins/axis</li> </ul>
B8ZQ	High Shock & Vibration (30G & 3Grms) <ul style="list-style-type: none"> <li>• Shock: 30 G, 11ms, half-sine, ±X, ±Y, ±Z</li> <li>• Vibration: 3.06 G rms, 3-500 Hz, 15 mins/axis</li> </ul>

The following table indicates what environmental conditions (ambient temperature as well as shock & vibration) are supported with the M.2 drives and GPUs.

Table 46. Drive and GPU support based on environmental selections (shock/vibration and ambient temperature)

Part number	Description	Std S&V* + 45°C	Std S&V* + 55°C	High S&V* + 45°C	High S&V* + 55°C
<b>SATA M.2 - Lite-On</b>					
7N47A00130	M.2 128GB SATA 6Gbps NHS SSD	Yes	No	No	No
<b>SATA M.2 - Micron 5100</b>					
7SD7A05703	M.2 5100 480GB SATA 6Gbps NHS SSD	Yes	No	Yes	No
4XB7A14048	M.2 5100 960GB SATA 6Gbps NHS SSD	Yes	No	Yes	No
4XB7A39425	M.2 1.92TB 5100 Pro SATA 6Gbps NHS SSD	Yes	No	Yes	No
4XB7A37273	M.2 480GB 5100 Pro SATA 6Gbps NHS SED SSD	Yes	No	Yes	No
4XB7A37274	M.2 960GB 5100 Pro SATA 6Gbps NHS SED SSD	Yes	No	Yes	No
4XB7A37275	M.2 1.92TB 5100 Pro SATA 6Gbps NHS SED SSD	Yes	No	Yes	No
<b>SATA M.2 - ATP A600i</b>					
4XB7A39422	M.2 Industrial A600i 120GB SATA SSD	Yes	Yes	Yes	Yes
4XB7A39423	M.2 Industrial A600i 480GB SATA SSD	Yes	Yes	Yes	Yes
4XB7A39424	M.2 Industrial A600i 800GB SATA SSD	Yes	Yes	Yes	Yes
4XB7A37270	M.2 Industrial A600i 120GB SATA SED SSD	Yes	Yes	Yes	Yes
4XB7A37271	M.2 Industrial A600i 480GB SATA SED SSD	Yes	Yes	Yes	Yes
4XB7A37272	M.2 Industrial A600i 800GB SATA SED SSD	Yes	Yes	Yes	Yes
<b>NVMe M.2 - Intel P4511 (drive options include a heatsink)</b>					
4XB7A39426	M.2 650GB P4511 NVMe SED HE SSD	Yes	Yes	No	No
4XB7A39427	M.2 1TB P4511 NVMe SED SSD	Yes	Yes	No	No
4XB7A39428	M.2 2TB P4511 NVMe SED SSD	Yes	Yes	No	No
<b>GPU</b>					
4X67A14926	NVIDIA Tesla T4 16GB PCIe Passive GPU	Yes	No	Yes	No

\* Standard S&V refers to 15G for 11ms shock and 0.21 G vibration for 30 minutes.  
High S&V refers to 30G for 11ms shock and 3.06 G vibration for 15 minutes.

## Warranty and Support

The ThinkSystem SE350 has a 1-year or 3-year warranty based on the machine type of the system:

- 7Z46 - 1 year warranty
- 7D1X - 3 year warranty
- 7D27 - 3 year warranty (India)

The ThinkSystem E1 and E2 Enclosures have the following warranty:

- 7D1R - 3 year warranty

The standard warranty terms are customer-replaceable unit (CRU) and onsite (for field-replaceable units FRUs only) with standard call center support during normal business hours and 9x5 Next Business Day Parts Delivered.

Lenovo's additional support services provide a sophisticated, unified support structure for your data center, with an experience consistently ranked number one in customer satisfaction worldwide. Available offerings include:

- **Premier Support**

Premier Support provides a Lenovo-owned customer experience and delivers direct access to technicians skilled in hardware, software, and advanced troubleshooting, in addition to the following:

- Direct technician-to-technician access through a dedicated phone line
- 24x7x365 remote support
- Single point of contact service
- End to end case management
- Third-party collaborative software support
- Online case tools and live chat support
- On-demand remote system analysis

- **Warranty Upgrade (Preconfigured Support)**

Services are available to meet the on-site response time targets that match the criticality of your systems.

- 3, 4, or 5 years of service coverage
- 1-year or 2-year post-warranty extensions
- **Foundation Service:** 9x5 service coverage with next business day onsite response. YourDrive YourData is an optional extra (see below).
- **Essential Service:** 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select countries). Bundled with YourDrive YourData.
- **Advanced Service:** 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select countries). Bundled with YourDrive YourData.

- **Managed Services**

Lenovo Managed Services provides continuous 24x7 remote monitoring (plus 24x7 call center availability) and proactive management of a your data center using state of the art tools, systems, and practices by a team of highly skilled and experienced Lenovo services professionals.

Quarterly reviews check error logs, verify firmware & OS device driver levels, and software as needed. We'll also maintain records of latest patches, critical updates, and firmware levels, to ensure you systems are providing business value through optimized performance.

- **Technical Account Management (TAM)**

A Lenovo Technical Account Manager helps you optimize the operation of your data center based on a deep understanding of your business. You gain direct access to your Lenovo TAM, who serves as your single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time. In addition, your TAM will help proactively make service recommendations and manage your service relationship with Lenovo to make certain your needs are met.

- **Enterprise Server Software Support**

Enterprise Software Support is an additional support service providing customers with software support on Microsoft, Red Hat, SUSE, and VMware applications and systems. Around the clock availability for critical problems plus unlimited calls and incidents helps customers address challenges fast, without incremental costs. Support staff can answer troubleshooting and diagnostic questions, address product comparability and interoperability issues, isolate causes of problems, report defects to software vendors, and more.

- **YourDrive YourData**

Lenovo's YourDrive YourData 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, and is optional with Foundation Service. It is bundled with Essential Service and Advanced Service.

- **Health Check**

Having a trusted partner who can perform regular and detailed health checks is central to maintaining efficiency and ensuring that your systems and business are always running at their best. Health Check supports Lenovo-branded server, storage, and networking devices, as well as select Lenovo-supported products from other vendors that are sold by Lenovo or a Lenovo-Authorized Reseller.

Examples of region-specific warranty terms are second or longer business day parts delivery or parts-only base warranty.

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

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

Lenovo Service offerings are region-specific. Not all preconfigured support and upgrade options are available in every region. For information about Lenovo service upgrade offerings that are available in your region, refer to the following resources:

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

For service definitions, region-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>

## Services

Lenovo Services is a dedicated partner to your success. Our goal is to reduce your capital outlays, mitigate your IT risks, and accelerate your time to productivity.

Here's a more in-depth look at what we can do for you:

- **Asset Recovery Services**

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

- **Assessment Services**

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

- **Design Services**

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

- **Basic Hardware Installation**

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.

- **Deployment Services**

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

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

Move existing physical & virtual workloads easily, or determine technical requirements to support increased workloads while maximizing performance. Includes tuning, validation, and documenting ongoing run processes. Leverage migration assessment planning documents to perform necessary migrations.

Some service options may not be available in all countries. For more information, go to <https://www.lenovo.com/systems/services>. For information about Lenovo service upgrade offerings that are available in your region, contact your local Lenovo sales representative or business partner.

## **Regulatory compliance**

The SE350 server conforms to the following standards:

- UL62368-1
- CSA C22.2, No. 62368-1-14
- NOM-019
- IEC 60950-1 (CB Certificate and CB Test Report), IEC 62368-1 (CB Certificate and CB Test Report)
- China CCC (GB4943.1), GB9254 Class A, GB17625.1, CECP, CELP (planned for 12/2019)
- Taiwan BSMI CNS13438, Class A; CNS14336-1
- EAC Russia, Belorussia and Kazakhstan, TR CU 020/2011 and TR CU 004/2011
- CE Mark (EN55032 Class A, EN60950-1, EN55024, EN61000-3-2, and EN61000-3-3, EN 62368-1)
- TUV-GS ( EN62368-1, EK1-ITB2000)
- India BIS certification
- USA FCC Title 47 CFR Part 15 Subpart B
- Canada ICES-003, issue 6, Class A
- Australia/New Zealand AS/NZS CISPR 32, Class A
- Japan VCCI 32-1
- Taiwan BSMI CNS13438, Class A; CNS14336-1
- Korea KN32, Class A; KN35
- CE Mark (EN55032 Class A, EN60950-1, EN55024, EN61000-3-2, and EN61000-3-3, EN 62368-1)
- CISPR 32, Class A

## Top-of-rack Ethernet switches

The server supports the top-of-rack Ethernet switches that are listed in the following table. These switches have front-to-rear (reverse) airflow for use with servers where the networking ports are at the front of the server.

Table 47. Top-of-rack switches

Part number	Description
1 Gb top-of-rack switches	
7Y810012WW	Lenovo ThinkSystem NE0152T RackSwitch (Front to Rear)
715952F	Lenovo RackSwitch G8052 (Front to Rear)
10 Gb top-of-rack switches	
7159A2X	Lenovo ThinkSystem NE1032 RackSwitch (Front to Rear)
7159B2X	Lenovo ThinkSystem NE1032T RackSwitch (Front to Rear)
7159C2X	Lenovo ThinkSystem NE1072T RackSwitch (Front to Rear)
715964F	Lenovo RackSwitch G8264 (Front to Rear)
7159DFX	Lenovo RackSwitch G8264CS (Front to Rear)
7159CFV	Lenovo RackSwitch G8272 (Front to Rear)
7159GR5	Lenovo RackSwitch G8296 (Front to Rear)
25 Gb top-of-rack switches	
7159E2X	Lenovo ThinkSystem NE2572 RackSwitch (Front to Rear)
40 Gb top-of-rack switches	
7159BFX	Lenovo RackSwitch G8332 (Front to Rear)
100 Gb top-of-rack switches	
7159D2X	Lenovo ThinkSystem NE10032 RackSwitch (Front to Rear)

For more information, see the list of Product Guides in the Top-of-rack switches categories:

- 1 Gb Ethernet switches: <http://lenovopress.com/networking/tor/1gb?rt=product-guide>
- 10 Gb Ethernet switches: <http://lenovopress.com/networking/tor/10gb?rt=product-guide>
- 25 Gb Ethernet switches: <https://lenovopress.com/networking/tor/25gb?rt=product-guide>
- 40 Gb Ethernet switches: <http://lenovopress.com/networking/tor/40gb?rt=product-guide>
- 100 Gb Ethernet switches: <https://lenovopress.com/networking/tor/100Gb?rt=product-guide>

## Uninterruptible power supply units

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

Table 48. Uninterruptible power supply units

Part number	Description
55941AX	RT1.5kVA 2U Rack or Tower UPS (100-125VAC)
55941KX	RT1.5kVA 2U Rack or Tower UPS (200-240VAC)
55942AX	RT2.2kVA 2U Rack or Tower UPS (100-125VAC)
55942KX	RT2.2kVA 2U Rack or Tower UPS (200-240VAC)
55943AX	RT3kVA 2U Rack or Tower UPS (100-125VAC)
55943KX	RT3kVA 2U Rack or Tower UPS (200-240VAC)
55945KX	RT5kVA 3U Rack or Tower UPS (200-240VAC)
55946KX	RT6kVA 3U Rack or Tower UPS (200-240VAC)
55948KX	RT8kVA 6U Rack or Tower UPS (200-240VAC)
55949KX	RT11kVA 6U Rack or Tower UPS (200-240VAC)
55948PX	RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)
55949PX	RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)
55943KT†	ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)
55943LT†	ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)
55946KT†	ThinkSystem RT6kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)
5594XKT†	ThinkSystem RT10kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)

† Only available in China and countries in the Asia Pacific region.

For more information, see the list of Product Guides in the UPS category:

<https://lenovopress.com/servers/options/ups>



## Power distribution units

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

Table 49. Power distribution units

Part number	Description
<b>0U Basic PDUs</b>	
00YJ776	0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord
00YJ777	0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord
00YJ778	0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 line cord
00YJ779	0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord
<b>Switched and Monitored PDUs</b>	
00YJ780	0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 line cord
00YJ781	0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P line cord
00YJ782	0U 18 C13/6 C19 Switched / Monitored 32A/200-240V/346-415V/3Ph PDU w/ IEC60309 532P6 cord
00YJ783	0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 line cord
46M4002*	1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)
46M4003*	1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord
46M4004*	1U 12 C13 Switched and Monitored DPI PDU (without line cord)
46M4005*	1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord
<b>Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)</b>	
71762NX	Ultra Density Enterprise C19/C13 PDU Module (without line cord)
71763NU	Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord
<b>C13 Enterprise PDUs (12x IEC 320 C13 outlets)</b>	
39M2816	DPI C13 Enterprise PDU+ (without line cord)
39Y8941	DPI Single Phase C13 Enterprise PDU (without line cord)
<b>C19 Enterprise PDUs (6x IEC 320 C19 outlets)</b>	
39Y8948	DPI Single Phase C19 Enterprise PDU (without line cord)
39Y8923	DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord
<b>Front-end PDUs (3x IEC 320 C19 outlets)</b>	
39Y8938	DPI 30amp/125V Front-end PDU with NEMA L5-30P line cord
39Y8939	DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord
39Y8934	DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
39Y8940	DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
39Y8935	DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
<b>NEMA PDUs (6x NEMA 5-15R outlets)</b>	
39Y8905	DPI 100-127V PDU with Fixed NEMA L5-15P line cord
<b>Line cords for PDUs that ship without a line cord</b>	
40K9611	DPI 32a Line Cord (IEC 309 3P+N+G)
40K9612	DPI 32a Line Cord (IEC 309 P+N+G)
40K9613	DPI 63a Cord (IEC 309 P+N+G)
40K9614	DPI 30a Line Cord (NEMA L6-30P)

<b>Part number</b>	<b>Description</b>
40K9615	DPI 60a Cord (IEC 309 2P+G)
40K9617	DPI Australian/NZ 3112 Line Cord
40K9618	DPI Korean 8305 Line Cord

\* Not available in USA and Canada

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

## Rack cabinets

The SE350 supports installation in a rack when mounted in either the 1U E1 Enclosure or the 2U E2 Enclosure. See [Mounting options](#) for details.

The following table lists the supported rack cabinets.

Table 50. Rack cabinets

Part number	Description
93072RX	25U Standard Rack
93072PX	25U Static S2 Standard Rack
93634PX	42U 1100mm Dynamic Rack
93634EX	42U 1100mm Dynamic Expansion Rack
93604PX	42U 1200mm Deep Dynamic Rack
93614PX	42U 1200mm Deep Static Rack
93084EX	42U Enterprise Expansion Rack
93084PX	42U Enterprise Rack
93074RX	42U Standard Rack
Withdrawn rack cabinets	
201886X*	11U Office Enablement Kit
93604EX*	42U 1200mm Deep Dynamic Expansion Rack
93614EX*	42U 1200mm Deep Static Expansion Rack
93074XX*	42U Standard Rack Extension
93624PX*	47U 1200mm Deep Static Rack
93624EX*	47U 1200mm Deep Static Expansion Rack
93634BX*	PureFlex System 42U Expansion Rack
93634DX*	PureFlex System 42U Expansion Rack
93634AX*	PureFlex System 42U Rack
93634CX*	PureFlex System 42U Rack

\* Withdrawn from marketing

For specifications about these racks, see the Lenovo Rack Cabinet Reference, available from: <https://lenovopress.com/lp0658-lenovo-rack-cabinet-reference>

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

Notes:

- The following racks do not support the use of the cable management arm (CMA):
  - 25U racks, type 9307
  - 42U racks, type 9307

## KVM console options

The following table lists the supported KVM consoles, keyboards, and KVM switches.

Table 51. Console keyboards

Part number	Description
Consoles	
17238BX	1U 18.5" Standard Console (without keyboard)
Console keyboards	
7ZB7A05469	ThinkSystem Keyboard w/ Int. Pointing Device USB - Arabic 253 RoHS v2
7ZB7A05468	ThinkSystem Keyboard w/ Int. Pointing Device USB - Belg/UK 120 RoHS v2
7ZB7A05206	ThinkSystem Keyboard w/ Int. Pointing Device USB - Czech 489 RoHS v2
7ZB7A05207	ThinkSystem Keyboard w/ Int. Pointing Device USB - Danish 159 RoHS v2
7ZB7A05208	ThinkSystem Keyboard w/ Int. Pointing Device USB - Dutch 143 RoHS v2
7ZB7A05210	ThinkSystem Keyboard w/ Int. Pointing Device USB - Fr/Canada 445 RoHS v2
7ZB7A05209	ThinkSystem Keyboard w/ Int. Pointing Device USB - French 189 RoHS v2
7ZB7A05211	ThinkSystem Keyboard w/ Int. Pointing Device USB - German 129 RoHS v2
7ZB7A05212	ThinkSystem Keyboard w/ Int. Pointing Device USB - Greek 219 RoHS v2
7ZB7A05213	ThinkSystem Keyboard w/ Int. Pointing Device USB - Hebrew 212 RoHS v2
7ZB7A05214	ThinkSystem Keyboard w/ Int. Pointing Device USB - Hungarian 208 RoHS v2
7ZB7A05215	ThinkSystem Keyboard w/ Int. Pointing Device USB - Italian 141 RoHS v2
7ZB7A05216	ThinkSystem Keyboard w/ Int. Pointing Device USB - Japanese 194 RoHS v2
7ZB7A05217	ThinkSystem Keyboard w/ Int. Pointing Device USB - Korean 413 RoHS v2
7ZB7A05218	ThinkSystem Keyboard w/ Int. Pointing Device USB - LA Span 171 RoHS v2
7ZB7A05219	ThinkSystem Keyboard w/ Int. Pointing Device USB - Norwegian 155 RoHS v2
7ZB7A05220	ThinkSystem Keyboard w/ Int. Pointing Device USB - Polish 214 RoHS v2
7ZB7A05221	ThinkSystem Keyboard w/ Int. Pointing Device USB - Portuguese 163 RoHS v2
7ZB7A05222	ThinkSystem Keyboard w/ Int. Pointing Device USB - Russian 441 RoHS v2
7ZB7A05223	ThinkSystem Keyboard w/ Int. Pointing Device USB - Slovak 245 RoHS v2
7ZB7A05231	ThinkSystem Keyboard w/ Int. Pointing Device USB - Slovenian 234 RoHS v2
7ZB7A05224	ThinkSystem Keyboard w/ Int. Pointing Device USB - Spanish 172 RoHS v2
7ZB7A05225	ThinkSystem Keyboard w/ Int. Pointing Device USB - Swed/Finn 153 RoHS v2
7ZB7A05226	ThinkSystem Keyboard w/ Int. Pointing Device USB - Swiss F/G 150 RoHS v2
7ZB7A05227	ThinkSystem Keyboard w/ Int. Pointing Device USB - Thai 191 RoHS v2
7ZB7A05467	ThinkSystem Keyboard w/ Int. Pointing Device USB - Trad Chinese/US 467 RoHS v2
7ZB7A05228	ThinkSystem Keyboard w/ Int. Pointing Device USB - Turkish 179 RoHS v2
7ZB7A05229	ThinkSystem Keyboard w/ Int. Pointing Device USB - UK Eng 166 RoHS v2
7ZB7A05470	ThinkSystem Keyboard w/ Int. Pointing Device USB - US Eng 103P RoHS v2
7ZB7A05230	ThinkSystem Keyboard w/ Int. Pointing Device USB - US Euro 103P RoHS v2
ThinkSystem Digital and Analog KVM Console switches and cables	
1754D1T	ThinkSystem Digital 2x1x16 KVM Switch (DVI video output port)
1754A1T	ThinkSystem Analog 1x8 KVM Switch (DVI video output port)
4X97A11108	ThinkSystem VGA to DVI Conversion Cable

Part number	Description
4X97A11109	ThinkSystem Single-USB Conversion Cable for Digital KVM
4X97A11107	ThinkSystem Dual-USB Conversion Cable for Digital KVM
4X97A11106	ThinkSystem USB Conversion Cable for Analog KVM
GCM and LCM Console switches and cables	
1754D2X	Global 4x2x32 Console Manager (GCM32)
1754D1X	Global 2x2x16 Console Manager (GCM16)
1754A2X	Local 2x16 Console Manager (LCM16)
1754A1X	Local 1x8 Console Manager (LCM8)
43V6147	Single Cable USB Conversion Option (UCO)
39M2895	USB Conversion Option (4 Pack UCO)
46M5383	Virtual Media Conversion Option Gen2 (VCO2)
46M5382	Serial Conversion Option (SCO)

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

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## Related publications and links

For more information, see these resources:

- Lenovo landing page for IoT Edge Computing:  
<https://www.lenovo.com/iot-edge>
- Lenovo ThinkSystem SE350 product page:  
<https://www.lenovo.com/us/en/data-center/servers/edge/ThinkSystem-SE350/p/77XX6DSSE35>
- Interactive 3D Tour of the ThinkSystem SE350:  
<https://lenovopress.com/lp1212>
- Lenovo Press video walk-through of the ThinkSystem SE350:  
<https://lenovopress.com/lp1213>
- ThinkSystem SE350 drivers and support  
<https://datacentersupport.lenovo.com/products/servers/thinksystem/se350/7d1x/downloads>
- Lenovo ThinkSystem SE350 product publications:  
<http://thinksystem.lenovofiles.com/help/index.jsp>
  - Quick Start
  - Activation Guide
  - Setup Guide
  - Configuration Installation Guide (Bookshelf, DIN Rail and Wall-Mount installation)
  - Toolless Slide Rail Kit Guide
  - Toolless Slide Rail CMA Guide
  - Short Rail Kit Guide
  - 2-Post Screw-in Rail Kit Guide
  - Maintenance Manual
  - Messages and Codes Reference
- ServerProven hardware compatibility:  
<http://www.lenovo.com/us/en/serverproven>

## Related product families

Product families related to this document are the following:

- [Edge Servers](#)
- [Internet of Things \(IoT\)](#)
- [ThinkSystem SE350 Edge Server](#)

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This document, LP1168, was created or updated on December 3, 2019.

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