

## Lenovo ThinkEdge SE360 V2 Server

### Product Guide

The ThinkEdge SE360 V2 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, ceiling, placed on a desk or mounted in a rack. The ThinkEdge SE360 V2 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 SE360 V2 is designed to handle a wide range of workloads, such as: Augmented Reality, CDN, Edge AI & MRP, Machine Learning, NFV, Online Gaming, Realtime processing, Smart surveillance, Video Analytic & Streaming.



Figure 1. Lenovo ThinkEdge SE360 V2 (shown with wireless LAN antennas)

### 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 ThinkEdge SE360 V2 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 SE360 V2 can be mounted on a wall, rack, ceiling and placed on a desk. It is also designed to operate in rugged environments from 0°C to up to 55°C.

## Key features

The ThinkEdge SE360 V2 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. The small footprint with integrated AC/DC can be mounted on a wall, ceiling, in a rack or placed on a desk.

The ThinkEdge SE360 V2 server 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 for 1GbE, 10GbE/25GbE and optionally supporting wireless LAN (WLAN) to enable connectivity to Wi-Fi clients.

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 SE360 V2 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 2.1 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 -- NVMe -- provide efficient and rugged storage for edge workloads.
- Supports 1 or 2 additional M.2 NVMe 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.
- 1GbE I/O board or 10GbE/25GbE SFP28 I/O board to support low and high-speed networking to back-end servers.
- One PCIe 4.0 x16 slot for a GPU or LAN adapter provides I/O flexibility as needed. Two PCIe 4.0 x16 slot for GPU or other adapter types
- Support for the NVIDIA A2 , NVIDIA L4 or Qualcomm Cloud AI 100 for enhanced workloads at the edge of your network.

## Availability and serviceability

The SE360 V2 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 for greater system uptime.
- Two external redundant AC Adapter power supplies and N+1 redundant fans to provide improved availability.
- 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 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 SE360 V2:

- The server includes XClarity Controller 2 (XCC2) to monitor server availability. Optional upgrade to XCC Platinum to provide remote control (keyboard video mouse) functions, support for the mounting of remote media files (ISO and IMG image files), boot capture, power capping and new XCC2 Platinum features. New XCC2 Platinum features include System Guard, new security modes including a CNSA-compliant mode, FIPS 140-3 and NIST 800-193 support, and a new Neighbor Group feature.
- Lenovo XClarity Administrator offers comprehensive hardware management tools that help to increase uptime, reduce costs and improve productivity through advanced server management capabilities.
- IT Administrators can securely claim and activate the SE360 V2 remotely through the ThinkShield Key Vault Portal, available on the web. They can also manage and unlock their global IoT edge fleet for initial operation and in case of tamper. The ThinkShield Edge Mobile Management app enables Edge Users to securely claim and activate the ThinkSystem SE360 V2 in an easy to use Web UI. ThinkShield 2.0 support.
- 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.

### **View in Augmented Reality**

View the SE360 V2 in augmented reality (AR) using your smartphone or tablet.

Simply follow these steps:

1. Scan the QR code with the camera app on your phone\*
2. Point your phone at a flat surface
3. Wait a few seconds for the model to appear

\* If you're viewing this document on your phone or tablet, simply tap the QR code

Once the server appears, you can move your phone around it. You can also drag or rotate the server to reposition it.



## Components and connectors

The ports on the front of the SE360 V2 server depend on which network module is installed.

The following figure shows server with the 1GbE board network module installed. With this network module, the server supports a variety of wired connectivity capabilities: four 1GbE Ethernet ports, two 2.5 Gb Ethernet ports, and 1 port management LAN.

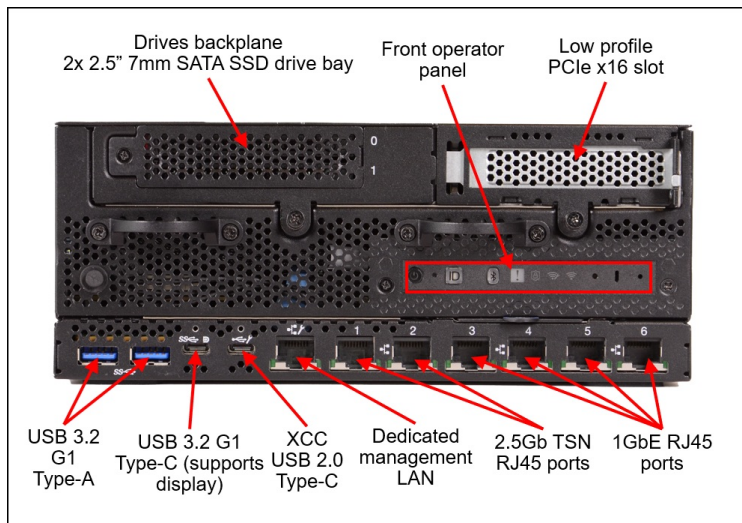


Figure 2. Front view of the Lenovo ThinkEdge SE360 V2 server with 1GbE network module

The following figure shows server with the 10/25GbE network module installed. With this network module, the server supports a variety of wired connectivity capabilities: four 10/25GbE Ethernet ports, two 2.5 Gb Ethernet ports, and 1 port management LAN.

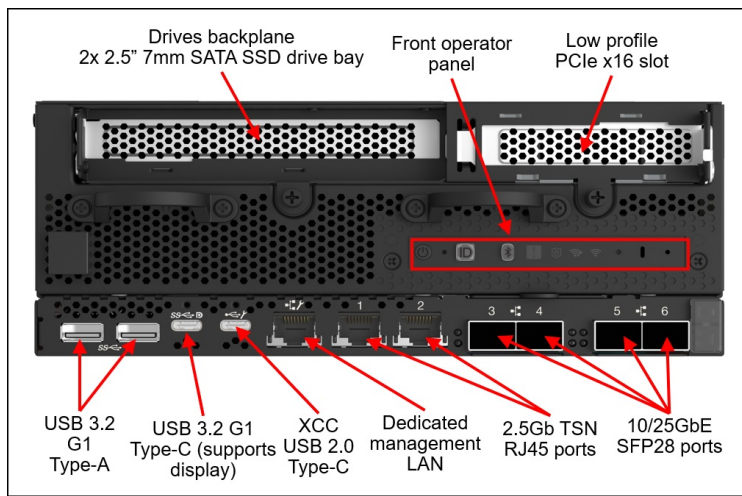


Figure 3. Front view of the Lenovo ThinkEdge SE360 V2 server with 10/25GbE network module

The following figure shows the rear of the SE360 V2 server.

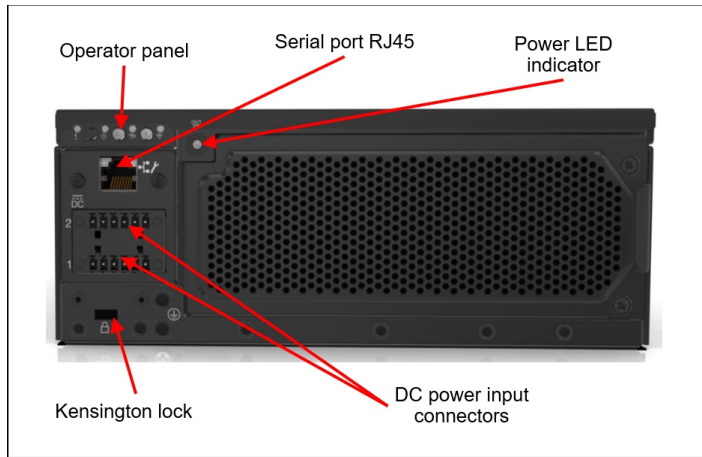


Figure 4. Rear view of the Lenovo ThinkEdge SE360 V2 with DC input connector  
 The following figure shows the rear of the SE360 V2 with AC input.

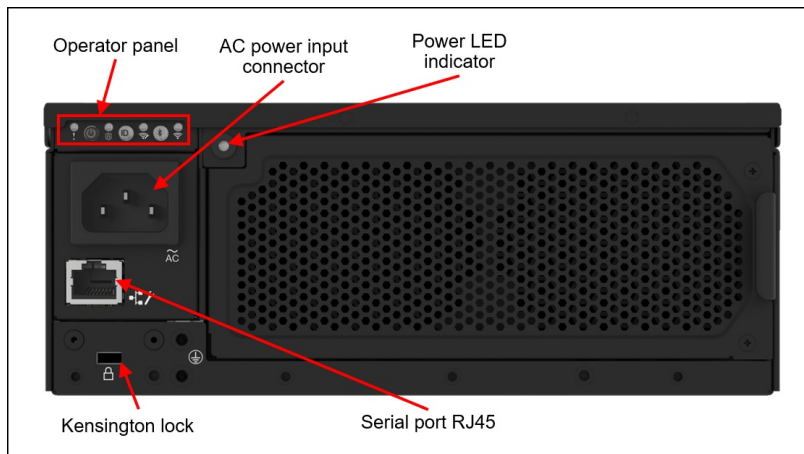


Figure 5. Rear view of the Lenovo ThinkEdge SE360 V2 with AC input connector  
 The following figure shows the locations of key components inside the server.

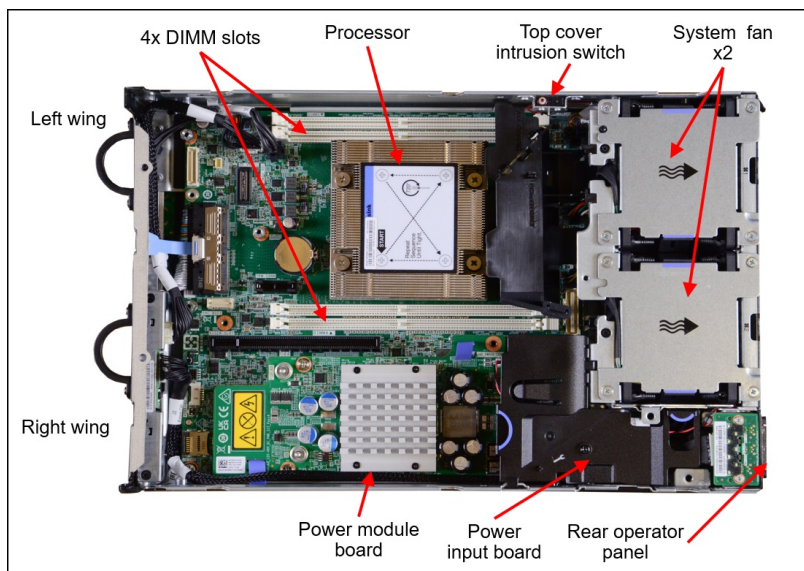


Figure 6. Top internal view of the Lenovo ThinkEdge SE360 V2

The following figure shows the location of boot drives.

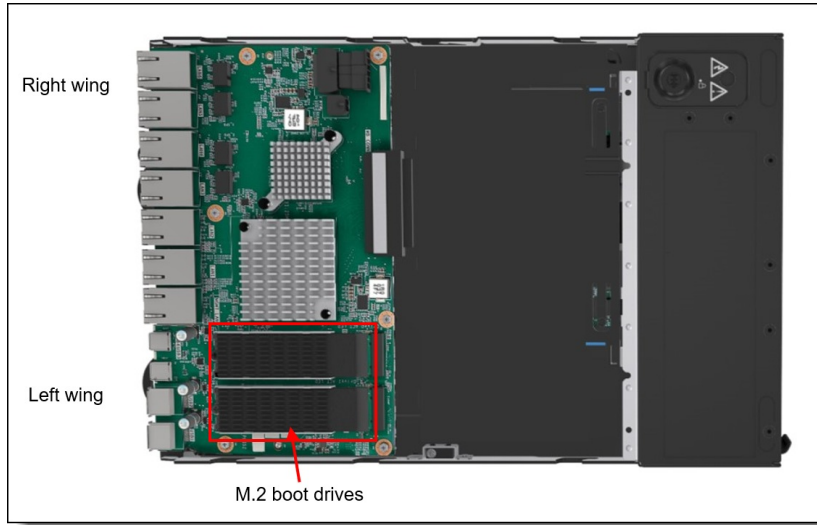


Figure 7. Bottom internal view SE360 V2

## System architecture

The following figure shows the architectural block diagram of the SE360 V2 system, showing the major components and connections.

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

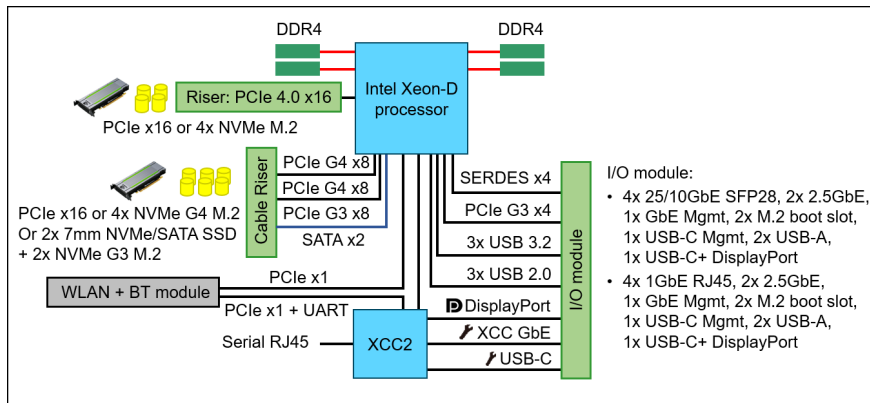


Figure 8. SE360 V2 system board - architectural block diagram

The system board connects to a network module which provides all wired and wireless network connections. Two network modules are offered. 1Gb I/O Board Module, 25G/10G IO Board Module. The block diagrams are shown in the following figures. All wired connections are at the front of the server.

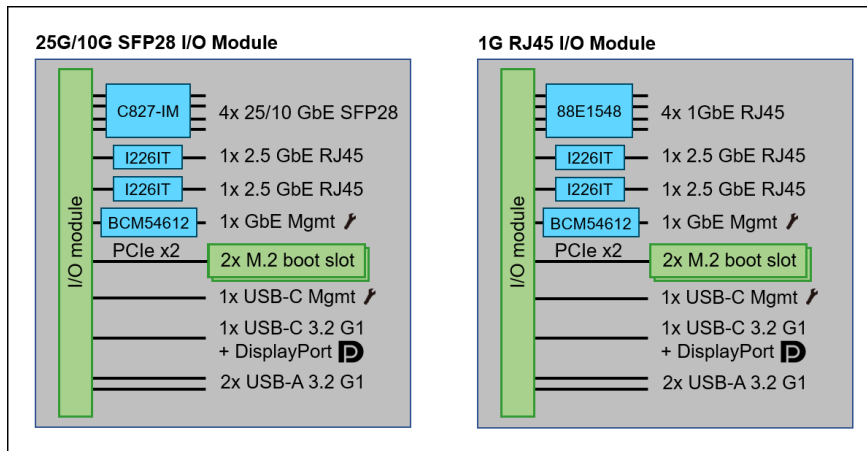


Figure 9. SE360 V2 network modules - architectural block diagrams

## Standard specifications

The following table lists the standard specifications.

Table 1. Standard specifications

Components	Specification
Machine types	7DAM - SE360 V2 - 3 year warranty 7DBN - SE360 V2 2U2N Enclosure - 3 year warranty
Form factor	ThinkEdge, 2U high
Processor	One Intel Xeon D-2700 Series processor (formerly codenamed "Icelake D"). Supports processors up to 16 cores, core speeds of up to 2.1 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 3200 MHz. RDIMMs are supported
Memory maximum	Up to 256GB with 4x 64GB RDIMMs
Memory protection	ECC, SDDC (for x4-based memory DIMMs)
Drive bays	2.5-inch 7mm drive bays: •Up to 2x 2.5-inch 7mm hot-swap bays (NVMe/SATA) Internal drives for Data drive: •Up to 8x 2280/22110 NVMe M.2 drives Internal drives for OS boot: •I/O module supporting up to two 2280 NVMe M.2 drives
Maximum data storage	NVMe drives: •30.72 TB using 8x 3.84TB M.2 NVMe SSD drives or 7.68 TB using 2x 3.84 7mm NVMe drives SATA drives: •15.36 TB using 2x 7.68TB 7mm SATA SSD drives
Storage controller	<ul style="list-style-type: none"> <li>• Boot drives: <ul style="list-style-type: none"> <li>◦ Onboard NVMe controller supporting RAID 0, 1 (with Intel VROC RAID support)</li> </ul> </li> <li>• Data drives: <ul style="list-style-type: none"> <li>◦ Onboard SATA controller supporting RAID 0, 1 (with Intel VROC RAID support)</li> <li>◦ Onboard NVMe controller supporting RAID 0, 1, 5, 10 (with Intel VROC RAID support)</li> </ul> </li> </ul>
Network interfaces	Networking depends the network module selected: <ul style="list-style-type: none"> <li>• System Front View with 1G IO board: 4x 1GbE RJ45, 2x 2.5GbE RJ45, dedicated port for remote management, 1x 1GbE RJ45 can be shared with the XCC management processor.</li> <li>• System Front View with 25G/10G IO board: 4x 10 / 25GbE SFP, 2x 2.5GbE RJ45, dedicated port for remote management HIDE</li> <li>• Wireless/Bluetooth <ul style="list-style-type: none"> <li>◦ Four wireless SMA connectors for WLAN</li> <li>◦ One wireless SMA connector for Bluetooth</li> <li>◦ WLAN 128/192-bits encrypted WPA2, WPA3 802.11 a/b/g/n/ac/ax</li> </ul> </li> </ul> <p>The PCIe 4.0 x16 slot can also be used for an additional network card if desired</p>
PCI Expansion slots	Up to two PCIe 4.0 x16 slots: <ul style="list-style-type: none"> <li>• One full height half length + One half height half length or two half height half length</li> </ul>
Ports	Front: 2x USB 3.2 Gen 1 (5 Gbps) Type-A ports, 1x USB 3.2 Gen 1 (5 Gbps) Type-C, 1x USB 2.0 Type-C connector Rear: 1x RJ-45 serial port
Cooling	Two non hot-swap 80mm FANs, N+1 redundant in most configurations.
Power supply	AC-DC converter embedded: <ul style="list-style-type: none"> <li>• AC Power Cord to external 300W adapter mode (5°C to 40°C with node, not supported in Rack)</li> <li>• DC using Direct Connection (12-48V) (0°C to 55°C)</li> <li>• Pure AC Input Mode (0°C to 55°C)</li> </ul>
Video	Embedded graphics with 16 MB memory with 2D hardware accelerator, integrated into the XClarity Controller 2 management controller. Maximum resolution is 1920x1200 32bpp at 60Hz.
Systems management	Operator panel with status LEDs. Dedicated ports for local management (USB type-C 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 2 (XCC2) embedded management controller, 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 SE360 V2 server management.
Security features	TPM 2.0 (WW) / TCM Nation Z (China only).
Operating systems supported	Alma Linux, Canonical Ubuntu, Ubuntu enterprise, Microsoft Windows Server, Red Hat Enterprise Linux, Rocky Linux, SUSE Linux Enterprise Server, VMware ESXi. See the <a href="#">Operating system support</a> section for specifics.
Mounting options	Standalone, desktop mount, DIN Rail or Wall mount, ceiling mount and Standard Rack (2U2N).



Components	Specification
Limited warranty	Three-year customer-replaceable unit and onsite limited warranty with 9x5 next business day (NBD).
Service and support	Optional service upgrades are available through 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 84.5 mm (3.33 in.), width: 212 mm (8.35 in.), depth: 317.5 mm (12.5 in.)
Weight	Max weight: 6.5kg (14.33 lbs) – without external AC adapter Max weight: 6.572kg (14.5 lbs) – with 2 external AC adapter

## Models

ThinkEdge SE360 V2 models can be configured by using the [Lenovo Data Center Solution Configurator \(DCSC\)](#).

Configure-to-order (CTO) models are used to create models with factory-integrated server customizations. One CTO model is available for the SE360 V2 as listed in the following table:

- The CTO1WW base CTO model is for general business and is selectable by choosing **General Purpose** mode in DCSC.

Table 2. Base CTO models

Description	Machine Type/Model General purpose
ThinkEdge SE360 V2 - 3yr Warranty	7DAMCTO1WW
Lenovo ThinkEdge SE360 V2 2U2N Enclosure	7DBNCTO1WW

## Processors

The SE360 V2 supports processors in the Intel Xeon D-2700 family of processors (formerly codenamed "Icelake 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:

- AI capable: Intel AVX-512, VNNI, OpenVINO
- Intel Turbo Boost 3.1
- Intel Hyper-Threading Technology
- Intel Virtualization Technology (VT-c, VT-x, VT-d)
- Intel AES New Instructions
- Intel Trusted Execution Technology
- Converged Boot Guard (CBnT)
- Intel Software Guard Extensions (SGX)
- Intel Boot Guard
- Faster Boot with Slim Bootloader
- Time Coordinated Computing (TCC)

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

Table 3. Processor options for the SE360 V2

Feature code*	Description
BS3W / BS41	ThinkEdge SE350 V2/SE360 V2 Planar with Intel Xeon D-2733NT 8C 80W 2.1 GHz
BS3V / BS40	ThinkEdge SE350 V2/SE360 V2 Planar with Intel Xeon D-2712T 4C 65W 1.9 GHz
BS3Z / BS44	ThinkEdge SE360 V2 Planar with Intel Xeon D-2752TER 12C 77W 1.8 GHz**
BS3X / BS42	ThinkEdge SE350 V2/SE360 V2 Planar with Intel Xeon D-2775TE 16C 100W 2.0 GHz

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

\*\*12C processor supports - 20C to 65C degree configuration. The other processors support 0C-55C degree configuration only

The following table lists the features of the supported processors.

Table 4. Processor specifications

Intel model	Cores / Threads	HT	TB	Base Frequency	Max Turbo Frequency	L3 Cache	Ethernet mode	Memory channels	Memory bus	TDP
D-2712T	4	Y	Y	1.90 GHz	3.0 GHz	15 MB	50 G	4	2667 MHz	65 W
D-2733NT	8	Y	Y	2.10 GHz	3.20 GHz	15 MB	50 G	4	2667 MHz	80 W
D-2752TER	12	Y	Y	1.80 GHz	2.80 GHz	20 MB	50 G	4	2933 MHz	77 W
D-2775TE	16	Y	Y	2.00 GHz	3.1 GHz	25 MB	100 G	4	2933 MHz	100 W

Note: 10/25GbE I/O module LAN speed depends on CPU ethernet mode, 4x 10GbE (max 50 G) or 4x 25GbE (max 100G)

Note: 20-core processor support: The processors listed here have up to 16 cores. The server also supports 20-core processors, however these are currently only available via special bid/CORE. Please contact your Lenovo sales representative.

## 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 RDIMMs.

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 5. Supported memory options

Part number	Feature code	Description	Minimum supported	Maximum supported
RDIMMs				
4X77A08635	B966	ThinkSystem 64GB TruDDR4 3200 MHz (2Rx4 1.2V) RDIMM	1	4
4X77A08634	B965	ThinkSystem 32GB TruDDR4 3200 MHz (2Rx8 1.2V) RDIMM	1	4
4X77A08632	B963	ThinkSystem 16GB TruDDR4 3200 MHz (2Rx8 1.2V) RDIMM	1	4
4X77A08633	B964	ThinkSystem 32GB TruDDR4 3200 MHz (2Rx4 1.2V) RDIMM	1	4
4X77A83361	BS5C	ThinkSystem 32GB TruDDR4 3200 MHz (2Rx4 1.2V) RDIMM Extended Temperature	1	4

The following rules apply when selecting the memory configuration:

- DIMM installation sequence 1, 4, 2 & 3
- One DIMM per channel only
- Three DIMMs are not supported
- The server supports RDIMMs
- Mix of 2Rx4 and 2Rx8 based DIMMs across channels are not supported
- Mix of 16GB 2Rx8 & 32GB 2Rx8 across channels are supported
- Mix of 32GB 2Rx4 & 64GB 2Rx4 across channels are supported
- Memory mirroring and memory rank sparing are not supported
- Server supports Independent mode
- Rank sparing, ADDC, channel mirroring, hemisphere modes, and 2LM are not supported with Software Guard Extensions (SGX)
- Extended Temperature DIMM must selected with 12 Core MB
- Extended Temperature DIMM support -20C to 65C degree configuration while other DIMM support 0-55C only.
- ThinkSystem 32GB TruDDR4 3200 MHz (2Rx4 1.2V) RDIMM Extended Temperature not allow to mix with other DIMMs even across channel.
- ThinkSystem 32GB TruDDR4 3200 MHz (2Rx4 1.2V) RDIMM Extended Temperature must select with 12Core MB\_CPU

The following memory protection technologies are supported:

- ECC detection/correction

## I/O expansion

The SE360 V2 supports riser cage (or riser assembly) for I/O and storage.

The SE360 V2 has seven types of riser cage that supply 7mm Backplane or PCIe slot or M.2 adapter or space for Geotracking. The following figure shows the location of the riser cage.

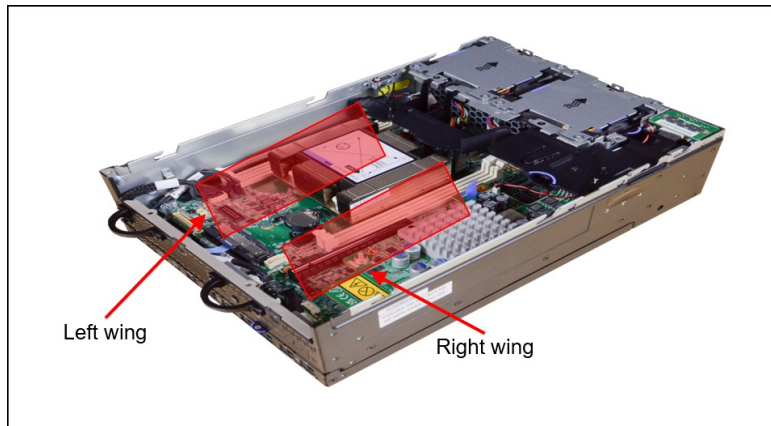


Figure 10. Location of riser cage SE360 V2

The two halves of the riser, referred to as "wings", support 7mm Backplane or PCIe slot or M.2 data drive adapter depending on the riser. The left wing is on the left side and the right wing is on the right side as viewed from the front of the server. You must select a riser card in the server.

Table 6. SE360 V2 riser card selections

Part number	Feature code	Description	Maximum supported
4XF7A86293	BS5J	ThinkEdge SE360 V2 Riser Assembly (PCIe Riser + 7mm Backplane)	1
4XF7A86292	BS5H	ThinkEdge SE360 V2 Riser Assembly (M.2 Riser)	1
4XF7A86291	BS5F	ThinkEdge SE360 V2 Riser Assembly (M.2 Riser + PCIe Riser)	1
4XF7A86290	BS5D	ThinkEdge SE360 V2 Riser Assembly (PCIe Riser + PCIe Riser)	1
4XF7A86294	BS5K	ThinkEdge SE360 V2 Riser Assembly (M.2 Riser + 7mm Backplane)	1
4XF7A86288	BS5E	ThinkEdge SE360 V2 Riser Assembly (PCIe Riser + PCIe Riser) w/ Geotracking	1
4XF7A86289	BS5G	ThinkEdge SE360 V2 Riser Assembly (M.2 Riser + PCIe Riser) w/ Geotracking	1

The following are images of the supported riser cage

Riser assembly (PCIe Riser + 7mm Backplane): When viewed from the underside, is shown in the following figure. The figure shows the left wing supports SATA/NVMe 7mm SSD drives and the right wing offers a PCIe 4.0 x16 Low Profile slot for supported adapters.

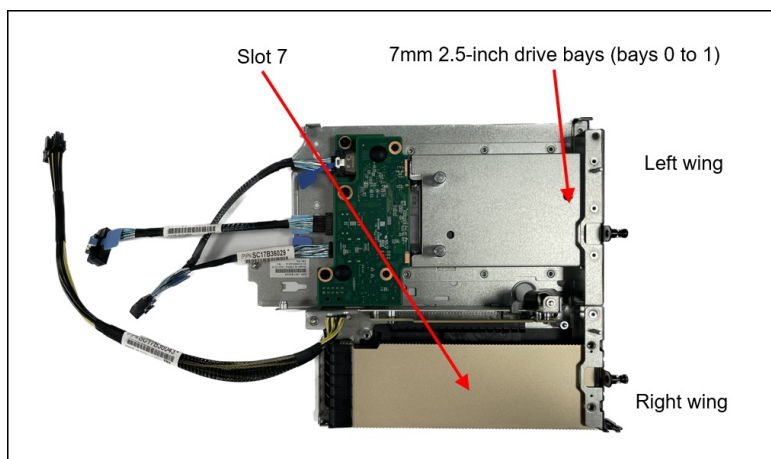


Figure 11. ThinkSystem SE360 V2 PCIe Riser Cage (feature BS5J)

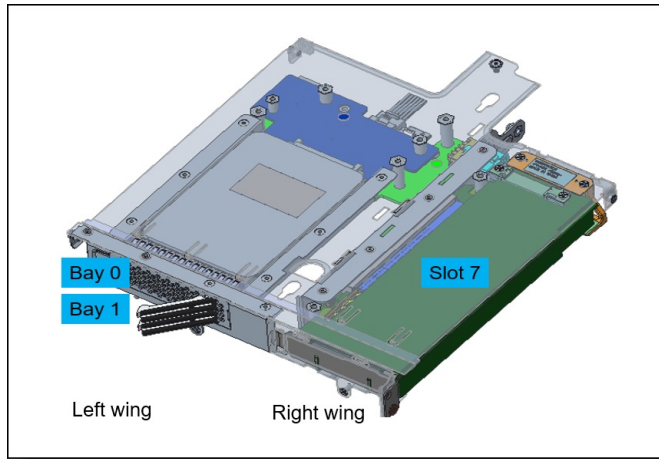


Figure 12. ThinkEdge SE360 V2 Riser Assembly (PCIe Riser + 7mm Backplane) (feature BS5J)

Riser Assembly (M.2 Riser): The left wing support up to 4x 2280/22110 NVMe M.2 drives and right wing support up to 4x 2280/22110 NVMe M.2 drives, which can support up to 8x M.2 drives on riser totally.

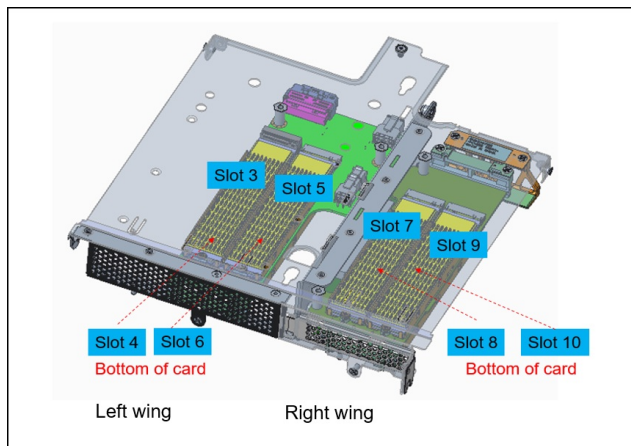


Figure 13. ThinkEdge SE360 V2 Riser Assembly (M.2 Riser) (feature BS5H)

Riser Assembly (M.2 Riser + PCIe Riser): The left wing offers a PCIe 4.0 x16 full high half length slot for supported adapters and right wing support up to 4x 2280/22110 NVMe M.2 drives.

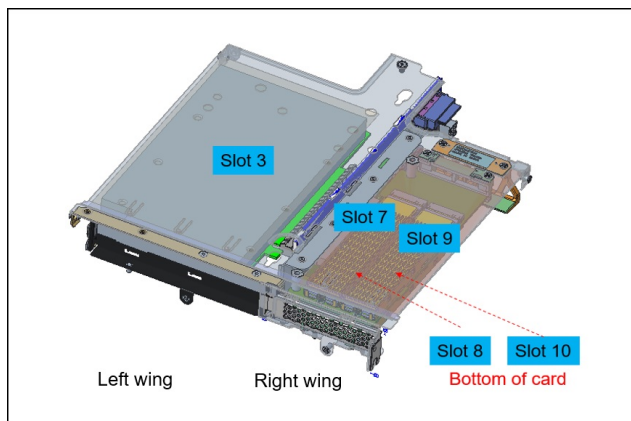


Figure 14. ThinkEdge SE360 V2 Riser Assembly (M.2 Riser + PCIe Riser) (feature BS5F)

Riser Assembly (PCIe Riser + PCIe Riser): The left wing offers a PCIe 4.0 x16 full high half length slot for supported adapters and right wing offers a PCIe 4.0 x16 Low Profile slot for supported adapters, this riser can support up to 2x PCIe adapter totally.

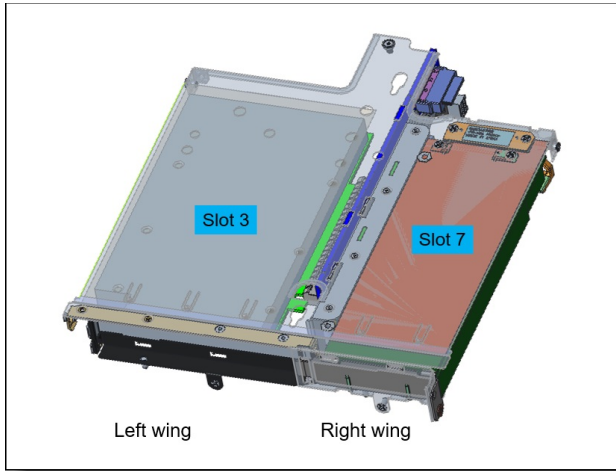


Figure 15. ThinkEdge SE360 V2 Riser Assembly (PCIe Riser + PCIe Riser) (feature BS5D)

Riser Assembly (M.2 Riser + 7mm Backplane): The left wing supports SATA/NVMe 7mm SSD drives and the right wing support up to 4x 2280/22110 NVMe M.2 drives.

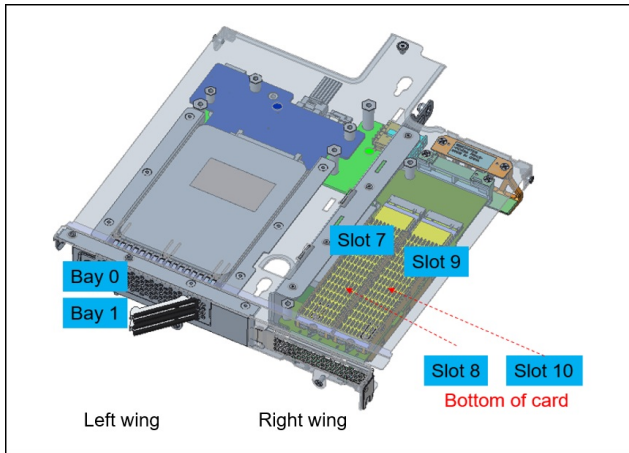


Figure 16. ThinkEdge SE360 V2 Riser Assembly (M.2 Riser + 7mm Backplane) (feature BS5K)

Riser Assembly (PCIe Riser + PCIe Riser) w/ Geotracking: The left wing and right wing offers two PCIe 4.0 x16 Low Profile slot for supported adapters and left wing have space for Geotracking, this riser can support up to 2x PCIe adapter totally.

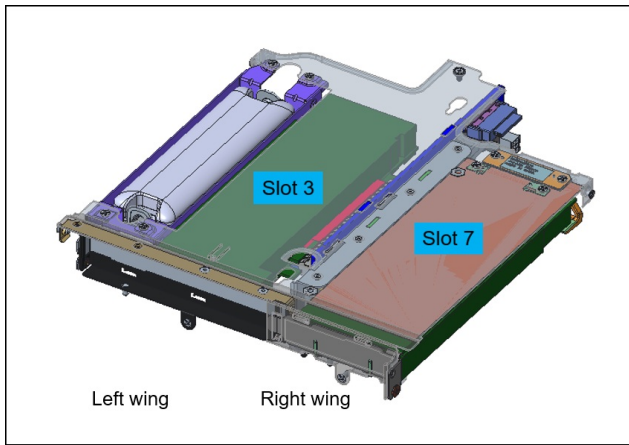


Figure 17. ThinkEdge SE360 V2 Riser Assembly (PCIe Riser + PCIe Riser) w/ Geotracking (feature BS5E)

Riser Assembly (M.2 Riser + PCIe Riser) w/ Geotracking: The left wing have space for Geotracking with one PCIe 4.0 x16 Low Profile slot for supported adapters and right wing support up to 4x 2280/22110 NVMe M.2 drives.

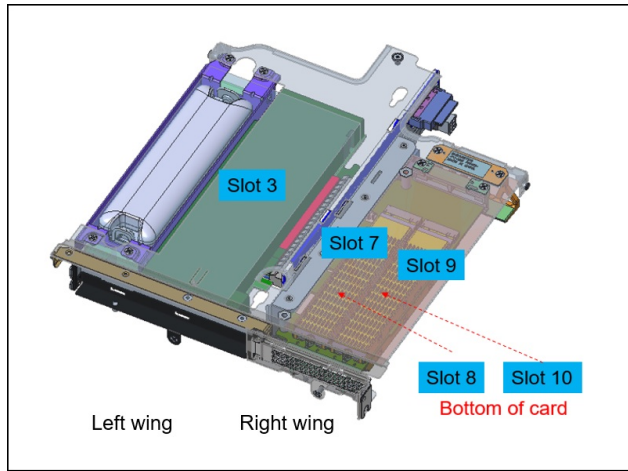


Figure 18. ThinkEdge SE360 V2 Riser Assembly (M.2 Riser + PCIe Riser) w/ Geotracking (feature BS5G)

### Internal storage

The internal storage of the SE360 V2 server is implemented as M.2 NVMe drives and 7mm SATA/NVMe SSD. 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 left wing or right wing of riser cage and in bottom M.2 adapter. System can support up to 8x NVMe M.2 drives total.
- Left wing: up to 2x SATA/NVMe 2.5-inch 7mm drives or up to 4x M.2 PCIe 4.0 drives with M.2 adapter.
- Right wing: up to 4x M.2 PCIe 4.0 drives with M.2 adapter.
- Bottom M.2 adapter (M.2 cabled adapter module BS5M): up to 2x M.2 PCIe 3.0 drives with M.2 adapter. However due to thermal limitations bottom adapter BS5M is not supported when Riser Assembly (M.2 Riser) (feature BS5H) is installed in server.

Note: Left wing and right wing M.2 adapter design use one M.2 holder to assembly M.2 SSD on top/bottom side, which means M.2 SSD length must be the same as 2280/22110 that assembled on one holder.

Boot drives are installed on I/O module with dedicated slot, either one or two 2280 NVMe M.2 drives are supported.

Ordering information for the adapter module is listed in the following table.

Table 7. Adapter module

Part number	Feature code	Description	Maximum supported
CTO only	BS5M	ThinkEdge SE360 V2 M.2 Cabled Adapter Module	1

### Controllers for internal storage

The SE360 V2 supports the following for internal storage:

- Onboard NVMe controller supporting RAID 0, 1 (with Intel VROC RAID support) - boot drives
- Onboard SATA\* controller supporting RAID 0, 1 (with Intel VROC RAID support) - data drives
- Onboard NVMe controller supporting RAID 0, 1, 5, 10 (with Intel VROC RAID support) - data drives

\*Up to 2 SATA SSD are supported

Note: RAID 5 minimum 3 drives are required. RAID 10 minimum 4 drives are required.

Additional RAID notes:

- For a maximum of 8 SSDs two VROC RAID are needed.
- SE360 V2 RAID volume can't cross NVMe controller.
- Not allow to support RAID between below 3 NVMe controller.
- Data RAID NVMe controller: Slot3, Slot4, Slot5, Slot6
- Data RAID NVMe controller: Slot7, Slot8, Slot9, Slot10
- Data RAID NVMe controller: Slot11, Slot12, Bay0, Bay1

### Intel VROC onboard RAID

Intel VROC (Virtual RAID on CPU) is a feature of the Intel processor that enables RAID support.

There are two separate functions of VROC in the SE360 V2:

- Intel VROC SATA RAID, formerly known as Intel RSTe

- Intel VROC NVMe RAID

VROC SATA RAID (RSTe) is available and supported with all SATA drives, both SATA SSDs and SATA HDDs. It offers a 6 Gb/s connection to each drive and on the SE360 V2 implements RAID levels 0 and 1. RAID 1 is limited to 2 drives per array. Hot-spare functionality is also supported.

VROC NVMe RAID offers RAID support for any NVMe drives directly connected to the ports on the server's system board. On the SE360 V2, it implements RAID levels 0, 1, 5, and 10. RAID 1 is limited to 2 drives per array, and RAID 10 is limited to 4 drives per array. Hot-spare functionality is also supported.

The following options are available as follows:

- VROC NVMe RAID on the SE360 V2 by default is disabled and does not support NVMe RAID. In configurator selecting "none" would mean default, same as JBOD.
- Selecting VROC Standard, feature code BR9B/BS7M, to support RAID-0/1/10.
- Selecting VROC Premium, feature code B96G/BS7N, to support RAID-0/1/5/10.

VROC Standard or Premium are fulfilled as a Feature on Demand (FoD) license and is activated via the XCC management processor user interface.

Table 8. VROC upgrade

Part number	Feature code	Description
4L47A39164	B96G / BS7N	Intel VROC (VMD NVMe RAID) Premium / Premium for M.2
4L47A83669	BR9B / BS7M	Intel VROC (VMD NVMe RAID) Standard / Standard for M.2

VROC Premium is only needed on the SE360 V2 for RAID-5 support with NVMe drives. You do not need the VROC Premium license upgrade under any of the following conditions:

- If you have SATA drives connected to the onboard SATA ports, you do not need VROC Premium.
- If you are using RAID 0, 1 or 10 with NVMe drives, you do not need VROC Premium.

**Virtualization support:** Virtualization support for Intel VROC is as follows:

- **VROC SATA RAID (RSTe)**: VROC SATA RAID is not supported by virtualization hypervisors such as ESXi, KVM, Xen, and Hyper-V. Virtualization is only supported on the onboard SATA ports in AHCI (non-RAID) mode.
- **VROC (VMD) NVMe RAID**: VROC (VMD) NVMe RAID is supported by ESXi, KVM, Xen, and Hyper-V. ESXi support is limited to RAID 1 only; other RAID levels are not supported. Windows and Linux OSes support VROC RAID NVMe, both for host boot functions and for guest OS function, and RAID-0, 1, 5, and 10 are supported.

## Internal drive options

The following table lists the supported drive options.

- 7mm drive bays:
  - 7mm 2.5-inch hot-swap 6 Gb SATA SSDs
  - 7mm 2.5-inch hot-swap PCIe 4.0 NVMe SSDs
- M.2 drives for boot and data:
  - 2280/22110 NVMe M.2 drives

The following table lists the supported drive options.

Table 9. Supported list of drives

Part number	Feature code	Description
<b>7mm 2.5-inch hot-swap 6 Gb SATA SSDs</b>		
4XB7A17106	BK79	ThinkSystem 7mm S4520 240GB Read Intensive SATA 6Gb HS SSD
4XB7A17107	BK7A	ThinkSystem 7mm S4520 480GB Read Intensive SATA 6Gb HS SSD
4XB7A17108	BK7B	ThinkSystem 7mm S4520 960GB Read Intensive SATA 6Gb HS SSD
4XB7A78622	BM8E	ThinkSystem 7mm S4520 1.92TB Read Intensive SATA 6Gb HS SSD
4XB7A78623	BM8D	ThinkSystem 7mm S4520 3.84TB Read Intensive SATA 6Gb HS SSD
4XB7A78624	BM8C	ThinkSystem 7mm S4520 7.68TB Read Intensive SATA 6Gb HS SSD
4XB7A82264	BQ1U	ThinkSystem 7mm 5400 PRO 240GB Read Intensive SATA 6Gb HS SSD
4XB7A82265	BQ1V	ThinkSystem 7mm 5400 PRO 480GB Read Intensive SATA 6Gb HS SSD
4XB7A82266	BQ1W	ThinkSystem 7mm 5400 PRO 960GB Read Intensive SATA 6Gb HS SSD
4XB7A82267	BR13	ThinkSystem 7mm 5400 PRO 1.92TB Read Intensive SATA 6Gb HS SSD
4XB7A82268	BR12	ThinkSystem 7mm 5400 PRO 3.84TB Read Intensive SATA 6Gb HS SSD
4XB7A82269	BR11	ThinkSystem 7mm 5400 PRO 7.68TB Read Intensive SATA 6Gb HS SSD
<b>7mm 2.5-inch hot-swap PCIe 4.0 NVMe SSDs</b>		
4XB7A82851	BS45	ThinkSystem 7mm U.3 7450 MAX 800GB Mixed Use NVMe PCIe 4.0 x4 HS SSD
4XB7A82853	BPZ4	ThinkSystem 7mm U.3 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 HS SSD
4XB7A82855	BPZ5	ThinkSystem 7mm U.3 7450 PRO 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD
4XB7A82856	BPZ6	ThinkSystem 7mm U.3 7450 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD
<b>2280/22110 NVMe M.2 drives</b>		
4XB7A82674	BQUJ* / BSW7	ThinkSystem M.2 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink) (2280)
4XB7A83139	BS46* / BSW6	ThinkSystem M.2 7450 PRO 480GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink) (2280)
4XB7A82676	BQUL	ThinkSystem M.2 7450 MAX 800GB Mixed Use NVMe PCIe 4.0 x4 NHS SSD (with Heatsink) (2280)
4XB7A82675	BQUK	ThinkSystem M.2 7450 PRO 1.92TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink) (22110)
4XB7A82852	BRFZ	ThinkSystem M.2 7450 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink) (22110)

\* Boot drive

## Optical drive

The server supports the external USB optical drive listed in the following table.

Table 10. External optical drive

Part number	Feature code	Description
7XA7A05926	AVV8	ThinkSystem External USB DVD RW Optical Disk Drive

The drive is based on the Lenovo Slim DVD Burner DB65 drive and supports the following formats: DVD-RAM, DVD-RW, DVD+RW, DVD+R, DVD-R, DVD-ROM, DVD-R DL, CD-RW, CD-R, CD-ROM.



## Network Modules

The network ports on the front of the SE360 V2 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 cable. The Network Modules are listed in the following table.

Table 11. Network Modules

Part number	Feature code	Description
CTO only	BS58	ThinkEdge SE360 V2 4x 1Gb, 2x 2.5Gb(TSN) I/O Module
CTO only	BS57	ThinkEdge SE360 V2 4x 10/25Gb, 2x 2.5Gb(TSN) I/O Module
CTO only	BS66	ThinkEdge SE360 V2 IO Cover Assembly for 1GbE I/O Module
CTO only	BS65	ThinkEdge SE360 V2 IO Cover Assembly for 10/25GbE I/O Module

The 1GbE I/O module has the following characteristics:

- 1GbE I/O module board
  - Two USB 3.2 Gen1 Type-A connectors
  - USB 3.2 Gen 1 Type-C connector (for display)
  - USB 2.0 Gen 1 Type-C connector with Lenovo XClarity Controller (XCC) management
  - One XCC system management port (1GbE RJ-45)
  - Four 1GbE RJ-45 connectors (LAN 3 to 6). LAN 6 with shared-NIC feature for Lenovo XClarity Controller
  - Two 2.5GbE RJ-45 connectors
  - Note:
    - 2.5Gb RJ45 ports support 100Mbps data transfer, but link speed LED keep dark, do not support 10Mbps.
    - 2.5Gb port can support 1Gb speed as well with LED behaviors normally.
    - 1Gb RJ45 port support 100M bps if link peer does not force speed on 100Mbps since Icelake D doesn't support 100M half-duplex and link LED is always green status, while ACT LED keeps green and wont blinking when transferring data; do not support 10Mbps

The 1GbE I/O network module is shown in the following figure.

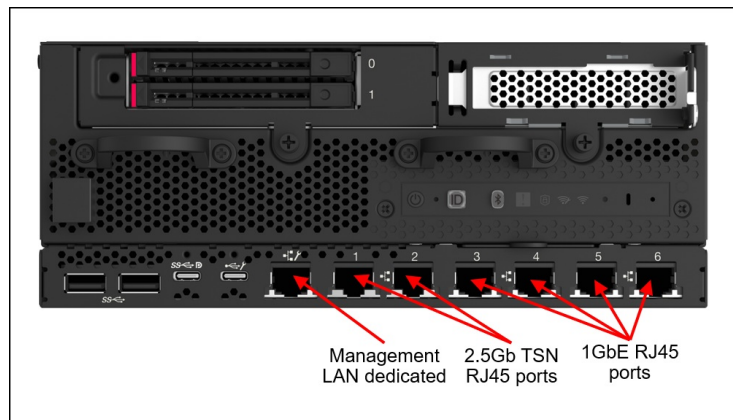


Figure 19. Ports of the available 1GbE I/O network module

The 10/25GbE I/O network module has the following characteristics:

- 10/25GbE SFP28 I/O module board
  - Two USB 3.2 Gen 1 Type-A connectors
  - USB 3.2 Gen 1 Type-C connector (supporting display)
  - USB 2.0 Gen 1 Type-C connector with Lenovo XClarity Controller (XCC) management
  - One XCC system management port (1GbE RJ-45)
  - Four 10/25GbE SFP28 connectors
  - 10G/25G port don't support 10M/100M bps
  - Two 2.5GbE RJ-45 connectors

The 10/25GbE I/O network module is shown in the following figure.

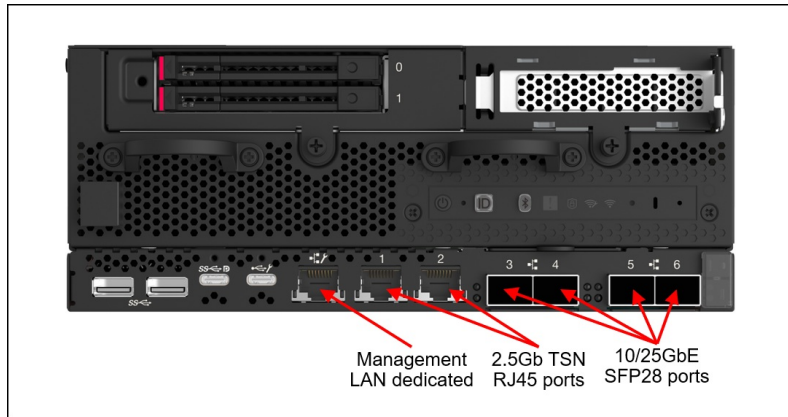


Figure 20. Ports of the available 10/25GbE I/O network module

The Wireless Network Module has the following characteristics:

- Support for wireless solution for data transmission and remote management
- No LTE/5G wireless connection support
- Support CPU WLAN and XCC WLAN with Bluetooth
  - By default both CPU WLAN and XCC WLAN with Bluetooth functions are disabled
  - CPU WLAN need install OS driver to enabled, XCC WLAN and Bluetooth can be enabled and configured in the XCC Web
  - WLAN 128/192-bits encrypted WPA2, 802.11 a/b/g/n/ac/ax
  - XCC Bluetooth support for activation to unlock server
  - CPU WLAN is able to make Wireless connectivity. Not only to connect to internet, but also be used as a backup network in the event that wired connections are offline
- BMC WLAN + Bluetooth:
  - M.2 2230 WLAN card, industrial grade
  - Enablement/ Inventory controlled by XCC
  - Cannot support country code auto-detection
  - Enabling Bluetooth selectively for mobile app activation
  - Cannot support AP mode for security consideration
- X86 WLAN
  - M.2 2230 WLAN card, Industrial grade
  - Set by Intel UEFI
  - Support country code auto-detection
  - Enablement/Inventory is not controlled by XCC
  - Support soft AP mode for WLAN clients to connect (max: 8 clients)
- Note:
  - CPU WLAN based on Intel AX210 module which have OS dependency as noted below:
    - Microsoft Windows Server
    - Red Hat Enterprise Linux
    - SUSE Linux Enterprise Server

Table 12. Ordering the Wireless network module

Part number	Feature code	Description	Quantity required
CTO only	BS59	ThinkEdge SE360 V2 Wireless Module	1
4XF7A91007	BS5A	ThinkEdge SE360 V2 WLAN Antenna	4

**Market availability:** Government regulations in different countries relevant to wireless radio frequency for WLAN" as "homologation", or telecom regulation or wireless RF compliance and the criteria is laid out by government. Wireless may not be available in all markets/region due to homologation requirements.

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

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

The following are the supported transceivers for the Network Modules.

Table 13. Transceivers for Network Modules

Part number	Feature code	Description
<b>10Gb transceivers</b>		
4TC7A78615	BNDR	ThinkSystem Accelink 10G SR SFP+ Ethernet transceiver
46C3447	5053	SFP+ SR Transceiver
00MY034	ATTJ	Lenovo Dual Rate 1G/10GB SFP Transceiver
<b>25Gb transceivers</b>		
4M27A67041	BFH2	Lenovo 25Gb SR SFP28 Ethernet Transceiver
7G17A03537	AV1B	Lenovo Dual Rate 10G/25G SR SFP28 Transceiver

The SFP28 ports of the Network Modules support the following fiber optic cables and direct-attach copper (DAC) cables.

Table 14. Optical cables and DAC cables

Part number	Feature code	Description
<b>LC-LC OM3 Fiber Optic Cables (these cables require a 10 GbE SFP+ SR transceiver)</b>		
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
<b>OM4 LC to LC Cables (these cables require a transceiver)</b>		
4Z57A10845	B2P9	Lenovo 0.5m LC-LC OM4 MMF Cable
4Z57A10846	B2PA	Lenovo 1m LC-LC OM4 MMF Cable
4Z57A10847	B2PB	Lenovo 3m LC-LC OM4 MMF Cable
4Z57A10848	B2PC	Lenovo 5m LC-LC OM4 MMF Cable
4Z57A10849	B2PD	Lenovo 10m LC-LC OM4 MMF Cable
4Z57A10850	B2PE	Lenovo 15m LC-LC OM4 MMF Cable
4Z57A10851	B2PF	Lenovo 25m LC-LC OM4 MMF Cable
4Z57A10852	B2PG	Lenovo 30m LC-LC OM4 MMF Cable
<b>SFP+ 10Gb Passive DAC Cables</b>		
00AY764	A51N	1.5m Passive DAC SFP+ Cable
00AY765	A51P	2m Passive DAC SFP+ Cable
90Y9430	A1PJ	3m Passive DAC SFP+ Cable
<b>25G SFP28 Active Optical Cables</b>		
7Z57A03541	AV1F	Lenovo 3m 25G SFP28 Active Optical Cable
7Z57A03542	AV1G	Lenovo 5m 25G SFP28 Active Optical Cable
7Z57A03543	AV1H	Lenovo 10m 25G SFP28 Active Optical Cable
7Z57A03544	AV1J	Lenovo 15m 25G SFP28 Active Optical Cable
7Z57A03545	AV1K	Lenovo 20m 25G SFP28 Active Optical Cable
<b>100G QSFP28 Breakout Active Optical Cables</b>		
7Z57A03551	AV1R	Lenovo 3m 100G to 4x25G Breakout Active Optical Cable
7Z57A03552	AV1S	Lenovo 5m 100G to 4x25G Breakout Active Optical Cable
7Z57A03553	AV1T	Lenovo 10m 100G to 4x25G Breakout Active Optical Cable
7Z57A03554	AV1U	Lenovo 15m 100G to 4x25G Breakout Active Optical Cable
7Z57A03555	AV1V	Lenovo 20m 100G to 4x25G Breakout Active Optical Cable

The following table lists the direct-attach copper (DAC) cables that are supported in the 25GbE port.

Table 15. Copper cables

Part number	Feature code	Description
<b>SFP+ 10Gb Passive DAC Cables</b>		
00D6288	A3RG	0.5m Passive DAC SFP+ Cable
90Y9427	A1PH	1m Passive DAC SFP+ Cable
00AY764	A51N	1.5m Passive DAC SFP+ Cable
00AY765	A51P	2m Passive DAC SFP+ Cable
90Y9430	A1PJ	3m Passive DAC SFP+ Cable
90Y9433	A1PK	5m Passive DAC SFP+ Cable
00D6151	A3RH	7m Passive DAC SFP+ Cable
<b>SFP28 25Gb Passive DAC Cables</b>		
7Z57A03557	AV1W	Lenovo 1m Passive 25G SFP28 DAC Cable
7Z57A03558	AV1X	Lenovo 3m Passive 25G SFP28 DAC Cable
7Z57A03559	AV1Y	Lenovo 5m Passive 25G SFP28 DAC Cable
<b>QSFP28 100G-to-4x25G Breakout Cables</b>		
7Z57A03564	AV22	Lenovo 1m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable
7Z57A03565	AV23	Lenovo 3m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable
7Z57A03566	AV24	Lenovo 5m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable

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

Table 16. CAT6 cables

Part number	Feature code	Description
<b>CAT6 Green Cables</b>		
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
90Y3715	A1MS	10m Yellow Cat6 Cable
90Y3718	A1MT	10m Green Cat6 Cable
90Y3721	A1MU	10m Blue Cat6 Cable
90Y3724	A1MV	25m Yellow Cat6 Cable
90Y3727	A1MW	25m Green Cat6 Cable
90Y3730	A1MX	25m Blue Cat6 Cable
<b>CAT6 RJ45/RJ45</b>		
4X97A83980	BRW9	Lenovo 750mm Cat6 RJ45 White Cable without Jacket
4X97A83981	BRWA	Lenovo 1000mm Cat6 RJ45 White Cable without Jacket
4X97A83982	BRWB	Lenovo 1250mm Cat6 RJ45 White Cable without Jacket
4X97A83983	BRWC	Lenovo 1500mm Cat6 RJ45 White Cable without Jacket
4X97A83984	BRWD	Lenovo 3000mm Cat6 RJ45 White Cable without Jacket

## Network adapters

The following table lists additional supported network adapters that can be installed in the PCIe slot when the PCIe Riser (feature BS5J, BS5F, BS5D, BS5E or BS5G) is selected.

Table 17. Supported PCIe Network Adapters

Part number	Feature code	Description	Maximum supported
<b>Gigabit Ethernet</b>			
7ZT7A00535	AUZW	ThinkSystem I350-T4 PCIe 1Gb 4-Port RJ45 Ethernet Adapter	2
<b>10 GbE</b>			
4XC7A79699	BMXB	ThinkSystem Intel X710-T4L 10GBase-T 4-Port PCIe Ethernet Adapter	2
<b>10/25 GbE</b>			
4XC7A08295	BCD6	ThinkSystem Intel E810-DA2 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	2

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.

## GPU adapters

The following table lists additional supported GPUs that can be installed in the PCIe slot when the PCIe Riser (feature BS5J, BS5F, BS5D, BS5E, or BS5G) is selected.

Table 18. Supported GPUs

Part number	Feature code	Description	Maximum supported
CTO only	BP05	ThinkSystem NVIDIA A2 16GB PCIe Gen4 Passive GPU w/o CEC	2
4X67A81547	BQZT	ThinkSystem NVIDIA A2 16GB PCIe Gen4 Passive GPU w/o CEC	2
4X67A84824	BS2C	ThinkSystem NVIDIA L4 24GB PCIe Gen4 Passive GPU	2
4X67A84009	BS49	ThinkSystem Qualcomm Cloud AI 100	2

Configuration notes:

- Some NVIDIA A Series GPUs are available as two feature codes, one with a CEC chip and one without a CEC chip (ones without the CEC chip have "w/o CEC" in the name). The CEC is a secondary Hardware Root of Trust (RoT) module that provides an additional layer of security, which can be used by customers who have high regulatory requirements or high security standards. NVIDIA uses a multi-layered security model and hence the protection offered by the primary Root of Trust embedded in the GPU is expected to be sufficient for most customers. The CEC defeatured products still offer Secure Boot, Secure Firmware Update, Firmware Rollback Protection, and In-Band Firmware Update Disable. Specifically, without the CEC chip, the GPU does not support Key Revocation or Firmware Attestation. CEC and non-CEC GPUs of the same type of GPU can be mixed in field upgrades.

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

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

## Cooling

The SE360 V2 server has two non-hot swap 80mm dual motor fan solution, supports N+1 redundancy.

## Power supplies

The SE360 V2 supports three type of power input path as following components and options:

- AC Power Cord to external 300W adapter mode (5°C to 40°C)
  - 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.
    - In case of failure of an AC adapter, system will throttle if power budget is above adapter capacity.
    - AC Adapters need bridge cable to connection with system, can't connect adapter with system directly.
    - AC Adapters do not include a line cord. See the next section for available power cords.
    - 300W adapter supports the following configuration:
      - 8Core CPU MB
      - 4x DIMM
      - 1x PCIe card
      - 2x 7mm SATA
      - riser cage
      - 1G IO Board
      - 2x M.2 NVMe Boot drive
- DC power source input - using Direct Connection (12-48V) (0°C to 55°C)
  - Details regarding the use of DC power:
    - One or two DC power input source are supported.
    - When two DC power input are connected, the second DC input is redundant.
    - In case of failure of DC input, system will throttle if power budget is above DC input capacity.
    - DC Terminal block cable for DC power source connection with system.
- AC power source input (0°C to 55°C)
  - Details regarding the use of AC power:
    - One AC power input source are supported only.
    - Pure AC input do not support power redundant and hot swap.
    - Power supply do not include a line cord. See the next section for available power cords.

Ordering information is listed in the following table.

Table 19. Power options

Part number	Feature code	Description	Maximum supported
AC Power Cord to external 300W adapter mode			
CTO only	BS4B	ThinkEdge SE360 V2 12-48V DC Power Module Board	1
CTO only	BS5N	ThinkEdge SE360 V2 DC Power Input Board	1
4X27A88607	BW2K	ThinkEdge 300W 230V/115V External Power Supply	2
4X97A88738	BW2J	ThinkEdge SE360 V2 External 300W Bridge Cable	2
CTO only	BS50	ThinkEdge SE360 V2 DC Power Input Board to DC Power Module Board Cable	1
DC using Direct Connection (12-48V)			
CTO only	BS4B	ThinkEdge SE360 V2 12-48V DC Power Module Board	1
CTO only	BS5N	ThinkEdge SE360 V2 DC Power Input Board	1
4L67A91005	BS5P	ThinkEdge SE360 V2 External DC Terminal Block Cable	2
CTO only	BS50	ThinkEdge SE360 V2 DC Power Input Board to DC Power Module Board Cable	1
AC power - internal power supply			
CTO only	BUGU	ThinkEdge SE360 V2 AC Power Input Board	1
CTO only	BW8U	ThinkEdge SE360 V2 500W 230V/115V Non-Hot Swap Power Supply	1

## Power cords

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

Table 20. Power cords

Part number	Feature code	Description
Power cord for AC adapters		
39Y7930	6222	2.8m, 10A/250V, C13 to IRAM 2073 (Argentina) Line Cord
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
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
Rack Y-type jumper cables for AC adapters		
00Y3046	A4VQ	1.345m, 2X C13 to C14 Jumper Cord, Rack Power Cable
00Y3047	A4VR	2.054m, 2X C13 to C14 Jumper Cord, Rack Power Cable

## Systems management

The SE360 V2 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:

- [Local management](#)
- [Lenovo XClarity Mobile](#)
- [Remote management](#)
- [XCC2 Platinum](#)
- [Lenovo XClarity Provisioning Manager](#)
- [Lenovo XClarity Administrator](#)
- [Lenovo XClarity Essentials](#)
- [Lenovo XClarity Energy Manager](#)
- [Lenovo Capacity Planner](#)

## Local management

The SE360 V2 offers a front operator panel with key LED status indicators, as shown in the following figure.

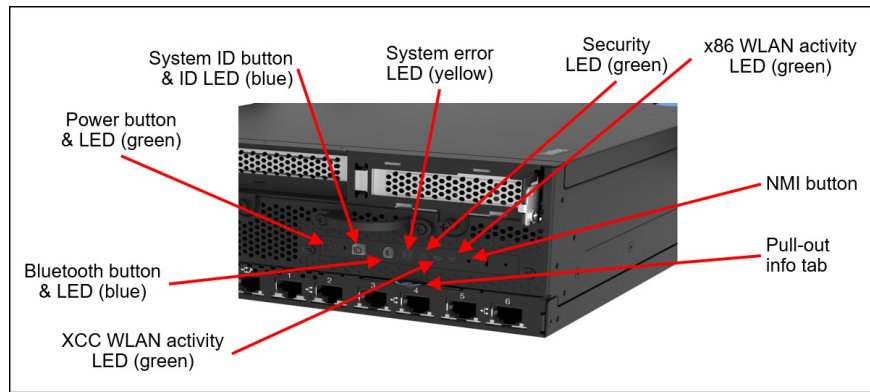


Figure 21. Front operator panel

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
- 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
- Security LED - (green) - indicates system security status.
  - Solid on - the server is operating with security enabled
  - Blinking - the server is in lockdown mode. Activate or unlock the system for operation or activation. See [activate or unlock](#) system.
  - Off - No security feature is enabled on the server.

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.

The SE360 V2 also supports optional connection to local VGA monitor.

Table 21. USB type-C to VGA cable

Part number	Feature code	Description
4X97A86591	BS4E	ThinkEdge 130mm USB-C to VGA Display Cable


## System status with XClarity Mobile

The SE360 V2 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 USB type-C 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 type-C type-A cable that ships with the SE360 V2.

The steps to connect the mobile device are as follows:



1. Connect the mobile device via your USB cable. You will also need the USB type-C to type-A cable (FC:BS4D) cable to the SE360 V2's USB type-C 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)

The supported USB cable is listed in the following table.

Table 22. USB type-C cable

Part number	Feature code	Description
4X97A88620	BS4D	ThinkEdge USB-C to USB-A Console Cable

### 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

The SE360 V2 offers a MicroSD card port on the system board to enable the use of a MicroSD card for additional storage for use with the XCC2 controller. XCC2 can use the storage as a Remote Disc on Card (RDOC) device (up to 32GB of storage). It can also be used to store firmware updates (including N-1 firmware history) for ease of deployment.

Tip: Without a MicroSD card installed, the XCC2 controller will have 100MB of available RDOC storage.

Ordering information for the supported Micro SD card is listed in the following table.

Table 23. MicroSD card

Part number	Feature code	Description
4X77A77064	BNWP	ThinkSystem MicroSD 32GB Class 10 Flash Memory Card

### XCC2 Platinum

The XCC2 service processor in the SE360 V2 supports an upgrade to a Platinum level of features. Compared to the XCC functions of ThinkSystem and earlier systems, Platinum adds the same features as Enterprise and Advanced levels in ThinkSystem, plus additional features.

XCC2 Platinum adds the following Enterprise and Advanced functions:

- Remotely viewing video with graphics resolutions up to 1600x1200 at 75 Hz with up to 23 bits per pixel, regardless of the system state
- Remotely accessing the server using the keyboard and mouse from a remote client
- International keyboard mapping support
- Syslog alerting
- Redirecting serial console via SSH
- Component replacement log (Maintenance History log)
- Access restriction (IP address blocking)
- Lenovo SED security key management
- Displaying graphics for real-time and historical power usage data and temperature
- Boot video capture and crash video capture
- Virtual console collaboration - Ability for up to 6 remote users to be log into the remote session simultaneously
- Remote console Java client
- Mapping the ISO and image files located on the local client as virtual drives for use by the server
- Mounting the remote ISO and image files via HTTPS, SFTP, CIFS, and NFS
- Power capping
- System utilization data and graphic view
- Single sign on with Lenovo XClarity Administrator
- Update firmware from a repository
- License for XClarity Energy Manager

XCC2 Platinum also adds the following features that are new to XCC2:

- System Guard - Monitor hardware inventory for unexpected component changes, and simply log the event or prevent booting

- Enterprise Strict Security mode - Enforces CNSA 1.0 level security
- Neighbor Group - Enables administrators to manage and synchronize configurations and firmware level across multiple servers

Ordering information is listed in the following table. XCC2 Platinum is a software license upgrade - no additional hardware is required.

Table 24. XCC2 Platinum license upgrade

Part number	Feature code	Description
CTO only	BRPJ	Lenovo XClarity Controller 2 (XCC2) Platinum Upgrade

With XCC Platinum, for CTO orders, you can request that System Guard be enabled in the factory and the first configuration snapshot be recorded. To add this to an order, select feature code listed in the following table. The selection is made in the Security tab of the DCSC configurator.

Table 25. Enable System Guard in the factory (CTO orders)

Feature code	Description
BUT2	Install System Guard

For more information about System Guard, see [https://pubs.lenovo.com/xcc2/NN1ia\\_c\\_systemguard](https://pubs.lenovo.com/xcc2/NN1ia_c_systemguard)

### 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. It 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 is an optional software component for the SE360 V2. The software can be downloaded and used at no charge to discover and monitor the SE360 V2 and to manage firmware upgrades.

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

The following table lists the Lenovo XClarity software license options.

Table 26. Lenovo XClarity Pro ordering information

Part number	Feature code	Description
00MT201	1339	Lenovo XClarity Pro, per Managed Endpoint w/1 Yr SW S&S
00MT202	1340	Lenovo XClarity Pro, per Managed Endpoint w/3 Yr SW S&S
00MT203	1341	Lenovo XClarity Pro, per Managed Endpoint w/5 Yr SW S&S
7S0X000HWW	SAYV	Lenovo XClarity Pro, per Managed Endpoint w/6 Yr SW S&S
7S0X000JWW	SAYW	Lenovo XClarity Pro, per Managed Endpoint w/7 Yr SW S&S

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

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

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

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

For more information, refer to the Lenovo XClarity Administrator Product Guide:

<http://lenovopress.com/tips1200>

### 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 (LXEM) is a power and temperature management solution for data centers. It is an agent-free, web-based console that enables you to monitor and manage power consumption and temperature in your data center through the management console. It enables server density and data center capacity to be increased through the use of power capping.

LXEM is a licensed product. A single-node LXEM license is included with the XClarity Controller 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 27. Lenovo XClarity Energy Manager

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

For more information about XClarity Energy Manager, see the following resources:

- **Lenovo Support page:**  
<https://datacentersupport.lenovo.com/us/en/solutions/Invo-lxem>
- **Lenovo Information Center:**  
[https://sysmgmt.lenovofiles.com/help/topic/LXEM/lxem\\_overview.html?cp=4](https://sysmgmt.lenovofiles.com/help/topic/LXEM/lxem_overview.html?cp=4)

### **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

Topics in this section:

- [Security features](#)
- [Intrusion switch](#)
- [System Lockdown Mode](#)
- [SED encryption in factory orders](#)
- [System Guard](#)
- [Geotracking module](#)
- [Platform Firmware Resiliency - Lenovo ThinkShield](#)
- [Intel Transparent Supply Chain](#)

### Security features

The SE360 V2 offers a number of security features, both electronic and physical.

#### 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.
- Self-encrypting (SED) are supported on M.2 and 2.5" SSD. M.2 drives that ensure data is secured when the drives are powered off
- Administrator password and a power-on password in UEFI
- Root of Trust (RoT) module providing Platform Firmware Resiliency (PFR) and 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.
- The server is NIST SP 800-147B compliant.

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

Table 28. Security components

Part number	Feature code	Description
CTO only	B8LE	ThinkSystem NationZ TPM 2.0 for PRC
4XF7A88740	BS5S	ThinkEdge SE360 V2 Kensington Lock Kit

#### Physical security features:

- Lockable top / bottom cover
- Front security bezel with key lock (optional, available as a field upgrade). See [Security bezel](#).
- Intrusion detection. See [Intrusion switch](#).
- 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 or wall 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 rear side of the server which a customer-supplied Kensington lock and cable can be attached to, to help prevent theft of the server.

The following image shows Kensington lock in the rear of the SE360 V2.

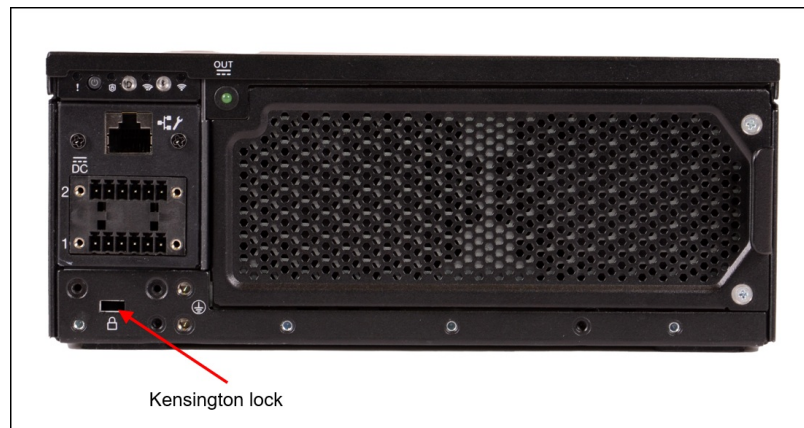


Figure 22. Kensington lock in the back of the SE360 V2

- Intrusion arm/disarm feature

The security keylock can be used 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.

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.

For additional information, see ThinkEdge Security, available from: <https://lenovopress.lenovo.com/lp1725-thinkedge-security>

Note: Customers who purchased server with former firmware prior to November 2023, can seamlessly upgrade to latest firmware to take advantage of latest security features or contact your local Lenovo sales representative or business partner.

### Intrusion switch

The server supports an intrusion switch that rests against the top cover. The following images show the location of this component. In the event that the cover is removed, a Warning event is recorded in XClarity Controller and actions can be taken to secure the server.

The intrusion switch is included in all orders.

The SE360 V2 offers a number of security features, both electronic and physical.

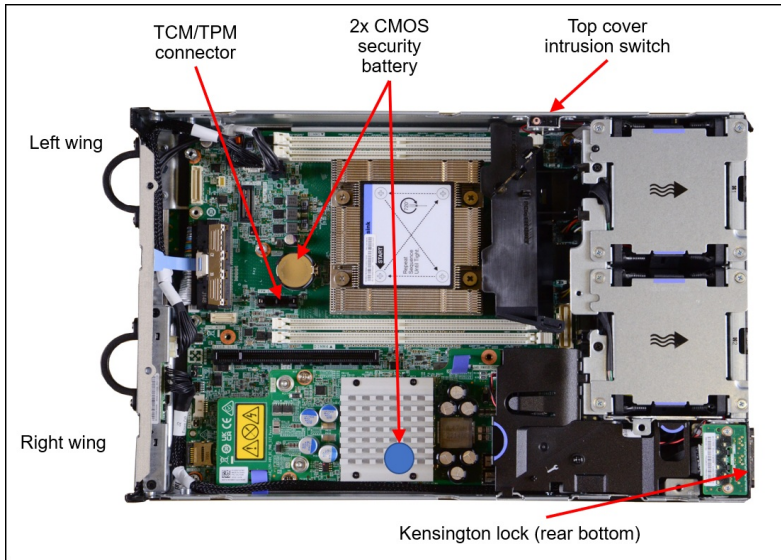


Figure 23. Security features of the SE360 V2

The following image shows the bottom view of the SE360 V2.

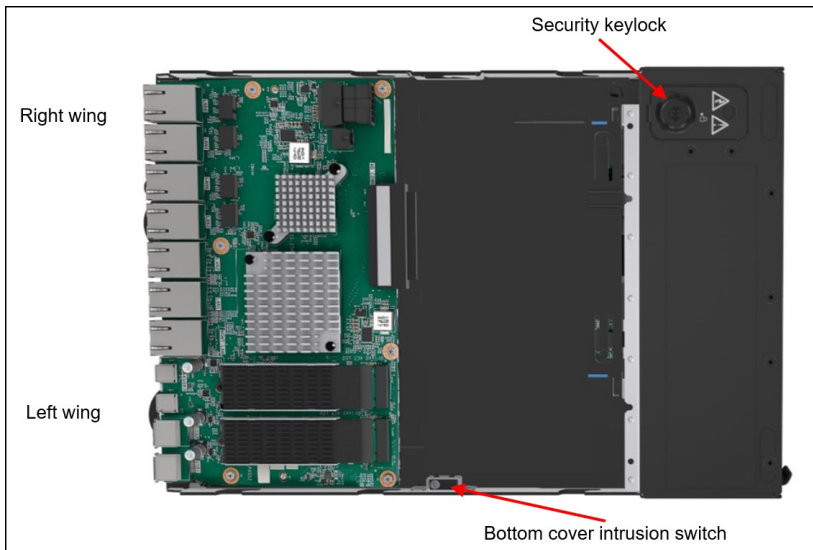


Figure 24. Security features of the SE360 V2

## System Lockdown Mode

System Lockdown Mode is an optional security feature of the SE360 V2 that ensures that the system is only used by its intended recipient and that all data and applications remains secure.

System Lockdown Mode is an optional feature that can be remotely managed in two ways:

- ThinkShield Key Vault Portal Managed. This provides a centralised remote management approach, allowing the administrator to remotely managed multiple systems and to register ownership of systems to their company, which reduces the system's value is stolen.
- XClarity Controller Managed. This provides remote management level control to an individual system using XCC web interface, OneCLI or Redfish.

To select ThinkShield Key Vault Portal Managed in factory orders, select feature BYBR, as listed in the following table. The default in DCSC is to select XClarity Controller Managed, feature BYBQ.

Table 29. Feature codes to activate System Lockdown mode

Feature code	Description	Purpose
BYBR	ThinkShield Key Vault Portal Managed	System Lockdown Mode is enabled in the factory (Activation required on delivery). The server remains secured and in System Lockdown Mode until registered and activated with the ThinkEdge Key Vault Portal. Unauthorized tampering of the server will result in the server being locked down and the data secured, and will remain in this state until reauthenticated with the Key Vault Portal.
BYBQ	XClarity Controller Managed	Default choice in DCSC. System Lockdown Mode is not enabled in the factory. Configures the server security to be managed by the XCC2 management processor. Server will boot at first power on and, by default, will not be locked down on any tamper event. You can configure tamper detection in the XCC2 interface if desired. The server can be converted to be managed ThinkShield Key Vault Portal at a later stage if desired (one-way conversion).

If System Lockdown is enabled in the factory, the system will be delivered in system lockdown mode and will require activation before operation. There are three ways the server can be activated:

- Using a mobile device (iOS or Android) connect to the server to the USB management port on the front of the server and running the [ThinkShield Edge Mobile Management app](#).
- Connecting the system 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 SE360 V2 are available.

For more information, see ThinkEdge Security, available from: <https://lenovopress.lenovo.com/lp1725-thinkedge-security>

**Converting from XCC Managed to Portal Managed :** Is it possible to convert a system from XCC Managed security to ThinkShield Key Vault Portal Managed via the XCC management interface, however the reverse is not possible. Once a server is in ThinkShield Key Vault Portal Managed mode, it cannot be converted back to XClarity Controller Managed.

The SE360 V2 offers a Security LED that indicates the status of the server:

- LED on: Security is enabled; System is operational.
- LED blinking: Security is enabled and the server is in lockdown, either due to being delivered from the factory in lockdown mode or has entered lockdown as a result of a tamper event. System must be activated or reactivated before becoming operational.
- LED off: Security is disabled; System is operational.

## SED encryption in factory orders

The SE360 V2 also optionally supports enabling SED drive encryption in the factory using feature BYBS as listed in the following table. This feature enables SED on the selected drives and sets and SED Authentication Key (SED AK).

**Tip:** SED encryption is a function that is independent of System Lockdown Control.

Table 30. System Lockdown Mode

Feature code	Description	Purpose
BYBS	SED Enabled	Enables SED drive encryption on all factory installed drives and sets an SED Authentication Key (AK).

## System Guard

The System Guard feature takes a snapshot of the hardware component inventory as trusted reference, then monitors for any deviation from the reference snapshot.

When deviation occurs, it can report an event to the user, optionally, can also prevent the server from booting into the OS and prompt the user for response.

- System Guard is only enabled with XCC2 on V3 code
- Server supports this feature (BUT2) when XCC Platinum enabled only.
- The System Guard feature is disabled by default

System Guard is a feature of XCC Platinum. Sytem Guard (BUT2) should only be selectable if XCC Platinum (BRPJ) is selected.



Table 31. XCC platinum and System Guard details

Feature code	Description
BRPJ	XCC Platinum
BUT2	Enable System Guard

### Geotracking module

Geotracking module is an Airgain device so customers need to check on Airgain website on which countries they can sell to before purchasing, buy it and get service support from vendor directly.

- Lenovo [user guide](#) will provide guide for how to install the module
- Lenovo XClarity won't manage this Airgain module for privacy data consideration
- All Geotracking privacy data won't be managed by Lenovo, it is the deal and agreement between customers and Airgain
- No plan to support it with SE360 V2 enclosure for wireless signal consideration

**Tip:** Geotracking module is a Third Party device. As such, third party options are excluded from Lenovo Statement of Limited Warranty. Engage third party for support.

The following image shows the Geotracking installation location in the SE360 V2 server.

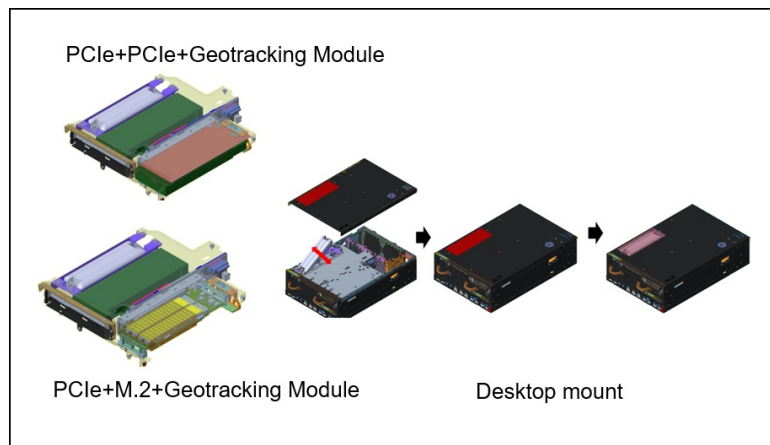


Figure 25. Geotracking device by third party Airgain

Choose ThinkEdge SE360 V2 with two dedicated risers: (all with lower profile GPU cards)

- ThinkEdge SE360 V2 Riser Assembly (M.2 Riser + PCIe Riser + Geotracking, 4XF7A86289)
- ThinkEdge SE360 V2 Riser Assembly (PCIe Riser + PCIe Riser + Geotracking, 4XF7A86288)

The following are some links for additional information from third party:

- Lenovo and Airgain jointly website: <https://www.airgain.com/partners/asset-tracker-solution-partners/lenovo/>
- Asset tracker: <https://www.airgain.com/partners/asset-tracker-solution-partners/>
- Warranty from Airgain: <https://www.airgain.com/Documentation/Legal/TC-AssetTracker.pdf>
- How to order: <https://www.airgain.com/wp-content/uploads/2023/09/lenovo-order-process.pdf>

### Platform Firmware Resiliency - Lenovo ThinkShield

Lenovo's ThinkShield Security is a transparent and comprehensive approach to security that extends to all dimensions of our data center products: from development, to supply chain, and through the entire product lifecycle.

The includes Platform Firmware Resiliency (PFR) hardware Root of Trust (RoT) which enables the system to be NIST SP800-193 compliant. This offering further enhances key platform subsystem protections against unauthorized firmware updates and corruption, to restore firmware to an integral state, and to closely monitor firmware for possible compromise from cyber attacks.

PFR operates upon the following server components:

- UEFI image – the low-level server firmware that connects the operating system to the server hardware
- XCC image – the management “engine” software that controls and reports on the server status separate from the server operating system
- FPGA image – the code that runs the server’s lowest level hardware controller on the motherboard

The Lenovo Platform Root of Trust Hardware performs the following three main functions:

- Detection – Measures the firmware and updates for authenticity
- Recovery – Recovers a corrupted image to a known-safe image
- Protection – Monitors the system to ensure the known-good firmware is not maliciously written



These enhanced protection capabilities are implemented using a dedicated, discrete security processor whose implementation has been rigorously validated by leading third-party security firms. Security evaluation results and design details are available for customer review – providing unprecedented transparency and assurance.

The SE360 V2 includes support for Secure Boot, a UEFI firmware security feature developed by the UEFI Consortium that ensures only immutable and signed software are loaded during the boot time. The use of Secure Boot helps prevent malicious code from being loaded and helps prevent attacks, such as the installation of rootkits. Lenovo offers the capability to enable secure boot in the factory, to ensure end-to-end protection. Alternatively, Secure Boot can be left disabled in the factory, allowing the customer to enable it themselves at a later point, if desired.

The following table lists the relevant feature code(s).

Table 32. Secure Boot options

Part number	Feature code	Description	Purpose
CTO only	AUK7	TPM 2.0 and Secure Boot	Configure the system in the factory with Secure Boot enabled.
CTO only	B0MK	Enable TPM 2.0	Configure the system without Secure Boot enabled. Customers can enable Secure Boot later if desired.

**Tip:** If Secure Boot is not enabled in the factory, it can be enabled later by the customer. However once Secure Boot is enabled, it cannot be disabled.

### Intel Transparent Supply Chain

Add a layer of protection in your data center and have peace of mind that the server hardware you bring into it is safe authentic and with documented, testable, and provable origin.

Lenovo has one of the world's best supply chains, as ranked by Gartner Group, backed by extensive and mature supply chain security programs that exceed industry norms and US Government standards. Now we are the first Tier 1 manufacturer to offer Intel® Transparent Supply Chain in partnership with Intel, offering you an unprecedented degree of supply chain transparency and assurance.

To enable Intel Transparent Supply Chain for the Intel-based servers in your order, add the following feature code in the [DCSC configurator](#), under the Security tab.

Table 33. Intel Transparent Supply Chain ordering information

Feature code	Description
BB0P	Intel Transparent Supply Chain

For more information on this offering, see the paper *Introduction to Intel Transparent Supply Chain on Lenovo ThinkSystem Servers*, available from <https://lenovopress.com/p1434-introduction-to-intel-transparent-supply-chain-on-thinksystem-servers>.

### Mounting options

The SE360 V2 is designed to be used in a variety of locations - table top - and on other mounting options.

In this section:

- [Mounting components](#)
- [Desktop mount](#)
- [Wall or ceiling mount](#)
- [Short-depth 2U rack installation](#)

For additional information on desktop or stand alone mounting option refer to the following section.

#### Mounting components

Many of the mounting options share the same components.

##### Node sleeve

The node sleeve, shown below, holds the SE360 V2 server when mounted on the wall. The server is then slid into the node sleeve and secured with additional thumbscrews.

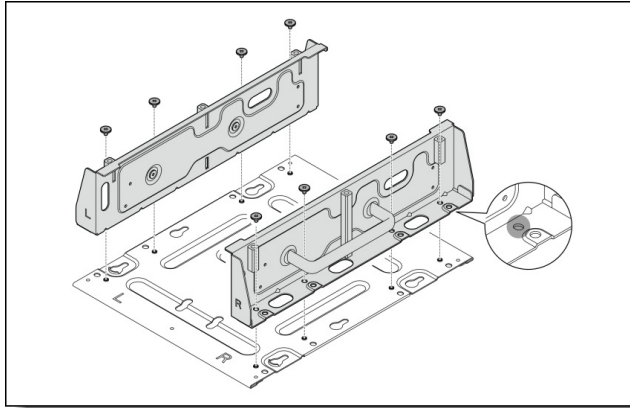


Figure 26. Node sleeve

Table 34. Node Sleeve ordering information

Part number	Feature code	Description	Quantity required
CTO only	BS5Q	ThinkEdge SE360 V2 Node Sleeve	1 per server

### Security bezel

The security bezel 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 and filter help cover the PCIe slot area and the network area to reduce the dust that can enter the server through the front air holes.

Security bezel can prevent LAN cable plug or unplug after installed in node sleeve.

SE360 V2 supports two types of security bezel to support different I/O module board.

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

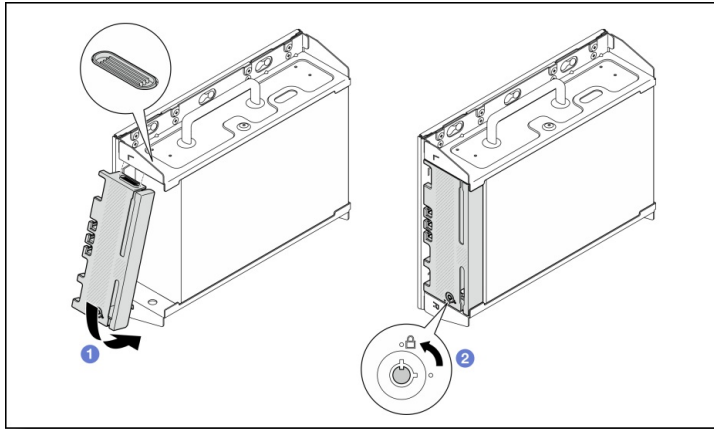


Figure 27. Security Bezel

The following image shows the supported mounting / installation options for the ThinkEdge SE360 V2 server.

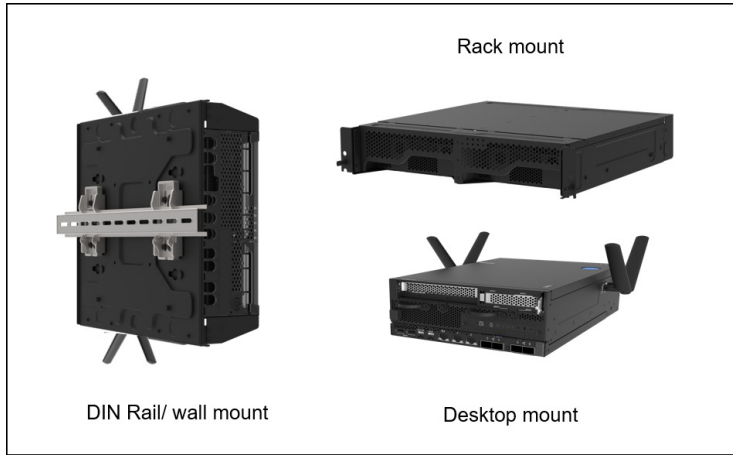


Figure 28. Installation options for ThinkEdge SE360 V2 server

The following table shows a list of components for mounting server, bezel and airflow.

Table 35. Components for mounting

Part number	Feature code	Description	Maximum
<b>Wall/Ceiling Mount Mode</b>			
4XF7A86295	BS5Q	ThinkEdge SE360 V2 Node Sleeve	1
<b>DIN RAIL Mount Mode</b>			
4XF7A86295	BS5Q	ThinkEdge SE360 V2 Node Sleeve	1
4M17A37285	B87S	ThinkEdge DIN Mount Kit (Extreme Shock & Vibe)	1
<b>Security Bezel</b>			
4B37A86299	BT92	ThinkEdge SE360 V2 Security Bezel for 10/25GbE I/O Module	1
4M17A37285	BT91	ThinkEdge SE360 V2 Security Bezel for 1GbE I/O Module	1
<b>Rear to front airflow feature</b>			
4XF7A91006	BS5V	ThinkEdge SE360 V2 Fan Assembly (Rear to Front)	1
4XF7A91958	BS5T	ThinkEdge SE360 V2 Air Flow Sensor Module	1
4XF7A86287	BS5U	ThinkEdge SE360 V2 Dust Filter Assembly (Rear)	1

### Desktop mount

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

- Air flow of node system in this mount type can be front to rear or rear to front.
- Rear to front air flow can select airflow sensor to check rear dust filter status.

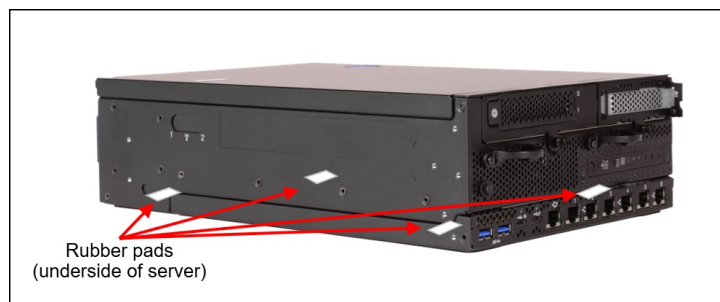


Figure 29. SE360 V2 with Rubber Feet option

The following table shows a list of components for mounting server and airflow.

Table 36. Components for mounting and options

Part number	Feature code	Description	Maximum
Desktop mount			
4M17A37610	B6Q3	ThinkEdge Rubber Feet (contains 4 rubber pads)	1
Rear to front airflow feature			
4XF7A91006	BS5V	ThinkEdge SE360 V2 Fan Assembly (Rear to Front)	1
4XF7A91958	B87S	ThinkEdge DIN Mount Kit (Extreme Shock & Vibe)	1
4XF7A86287	BS5U	ThinkEdge SE360 V2 Dust Filter Assembly (Rear)	1
Front to rear airflow feature			
4XF7A91007	BS5W	ThinkEdge SE360 V2 Fan Assembly (Front to Rear)	1

### Wall or ceiling mount

The SE360 V2 can be mounted on a wall or the ceiling, using the node sleeve. When wall mounted, the server needs to be installed into the node sleeve first.

When wall/ceiling mounted, the node sleeve can be mounted directly on the wall/ceiling. A DIN mount kit is needed for DIN rail. Air flow of node system in this mount type must be rear to front and can select airflow sensor to check rear dust filter status.

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 security bezel.

Table 37. Wall or ceiling mount

Part number	Feature code	Description	Quantity required
CTO only	BS5Q	ThinkEdge SE360 V2 Node Sleeve	1 per server
CTO only	BS5U	ThinkEdge SE360 V2 Dust Filter Assembly (Rear)	1 per server
CTO only	BSMR	ThinkEdge SE360 V2 Rack Front Bottom Filter	1 per server
CTO only	BVE5	ThinkEdge SE350 V2/SE360 V2 Dust Cover Kit for I/O Ports	1 per server

The DIN Rail and SE360 V2 inside node sleeve is shown in the following figure.

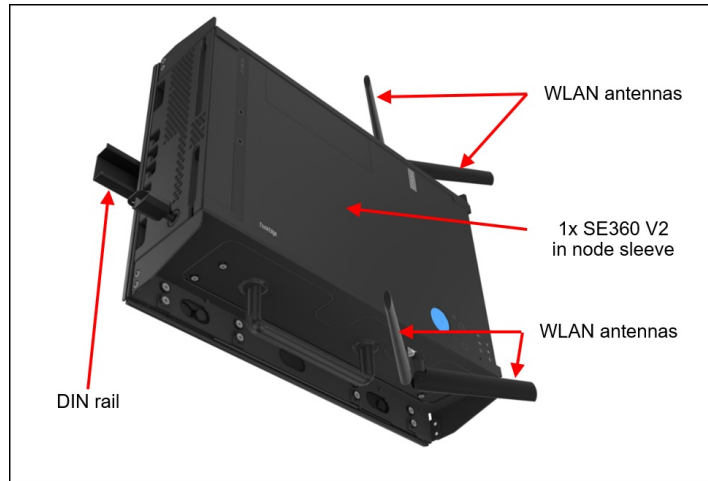


Figure 30. DIN Rail Kit and mounted node

### Short-depth 2U rack installation

Two SE360 V2 servers 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 components are mounted in the ThinkEdge SE360 V2 2U2N Enclosure, machine type 7DBN.

**Notes:**

- The 2U2N Enclosure is available in DCSC using CTO base model 7DBNCTO1WW
- The Wireless Network Module is not supported as there is insufficient physical space for the antennas

The following figure shows two SE360 V2 servers installed in the 2U2N Enclosure.

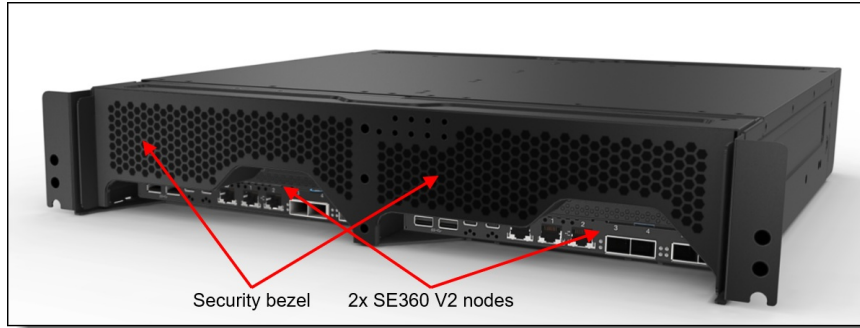


Figure 31. ThinkEdge SE360 V2 2U2N Enclosure

The following table lists the components used in the 2U rack installation.

Table 38. Components for the E2 Enclosure

Part number	Feature code	Description	Quantity required
2U2N Enclosure components			
CTO / model only*	7DBN BSMQ	ThinkEdge SE360 V2 2U2N Enclosure	1 per enclosure
CTO / model only*	7DBN BSN0	ThinkEdge SE360 V2 Enclosure Shipping Bracket	1 per enclosure
4XF7A86297	7DBN BT94	ThinkEdge SE360 V2 Rack Front Top Filter	1 per server
	7DBN BSMR	ThinkEdge SE360 V2 Rack Front Bottom Filter	1 per server

\* Available via configure-to-order (CTO) or via predefined enclosure models

The following table summarizes the specifications of the available rail kits

Table 39. Specifications of rail kits for short-depth installations

Feature	ThinkEdge 1000mm Friction Rail Kit v2	ThinkEdge 600mm Ball Bearing Rail Kit	ThinkEdge 2-Post Friction Rail Kit	ThinkEdge 1000mm Friction Rail Kit
Part number	4XF7A90718	4XF7A81942	4XF7A81941	4XF7A81940
CMA	None	None	None	None
Rail length	751 mm (29.56 in)	454 mm (17.87 in)	484 mm (19.1 in.)	751 mm (29.56 in)
Rail type	Full-out slide rail (friction)	Full-out slide rail (ball bearing)	Half-out slide rail (friction)	Full-out slide rail (friction)
Slide travel	480 mm (18.9 in)	485 mm (19.1 in)	270 mm (10.6 in.)	480 mm (18.9 in)
Tool-less installation	Yes	Yes	No (screw-in)	Yes
In-rack server maintenance	No	No	No	No
1U PDU support	Yes	Yes	Yes	Yes
0U PDU support	Yes	Not applicable	Not applicable	Yes
Rack type	Four-post IBM and Lenovo standard rack	Four-post 600 mm depth standard rack	2-post rack	Four-post IBM and Lenovo standard rack
Mounting holes	Square or round	Square or round	Square, round, or threaded	Square or round
Mounting flange thickness	2 - 3.3 mm (0.08 - 0.13 in)	2 - 3.3 mm (0.08 - 0.13 in)	76 - 279 mm (3 - 11 in)	2 - 3.3 mm (0.08 - 0.13 in)
Max distance between front and rear mounting flanges	610 - 864 mm (24 - 34 in)	380 - 500mm (15 - 19.7 in)	Not applicable	610 - 864 mm (24 - 34 in)

## Operating system support

The SE360 V2 supports the following operating systems:

- Microsoft Windows Server 2019
- Microsoft Windows Server 2022
- Red Hat Enterprise Linux 8.6
- Red Hat Enterprise Linux 8.8
- Red Hat Enterprise Linux 9.0
- Red Hat Enterprise Linux 9.2
- SUSE Linux Enterprise Server 15 SP4
- SUSE Linux Enterprise Server 15 SP5
- SUSE Linux Enterprise Server 15 Xen SP4
- SUSE Linux Enterprise Server 15 Xen SP5
- VMware ESXi 7.0 U3
- VMware ESXi 8.0 U1
- VMware ESXi 8.0 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.lenovo.com/osig#support=all>

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 40. VMware ESXi preload

Part number	Feature code	Description
CTO only	BMEY	VMware ESXi 7.0 U3 (Factory Installed)
CTO only	BQ8S	VMware ESXi 8.0 U1 (Factory Installed)
CTO only	BYC7	VMware ESXi 8.0 U2 (Factory Installed)

Configuration rule:

- An ESXi preload cannot be selected if the configuration includes an NVIDIA GPU (ESXi preload cannot include the NVIDIA driver)
- You can download supported VMware vSphere hypervisor images from the following web page and load it on the M.2 drives or 7mm drives using the instructions provided:
  - [https://vmware.lenovo.com/content/custom\\_iso/](https://vmware.lenovo.com/content/custom_iso/)

## Hyperconverged infrastructure support

Lenovo ThinkEdge systems can be used in hyperconverged solutions either as part of a Lenovo configured and optimized Lenovo ThinkAgile solution, or as a user-configured system.

Refer to the following links for full details.

### VMware vSAN

SE360 V2 supports vSAN OSA. For more information refer to this page: [vSAN Original Storage Architecture \(OSA\)](#)

### Microsoft Azure Stack HCI

SE360 V2 is listed in Microsoft Azure Stack HCI catalog. For more information refer to this page: <https://azurestackhcisolutions.azure.microsoft.com/#/catalog/details/8b9c87d9-f31a-484f-843f-ac603e745309>

### Sunlight

SE360 V2 is supported by Sunlight HyperConverged Edge. For more information refer to this page: <https://sunlight.io/products/thinkedgethinksystem>

## Physical and electrical specifications

Dimensions and weight of the SE360 V2 server:

Node

- Height: 84.5 mm (3.33 inches)
- Width: 212 mm (8.35 inches)
- Depth: 317.5 mm (12.5 inches)

Node with node sleeve

- Height: 95.95 mm (3.78 inches)
- Width: 295 mm (11.61 inches)
- Depth: 345.7 mm (13.61 inches)

Weight

- Maximum weight: 6.5kg (14.33 lbs) – without external AC adapter
- Maximum weight: 6.572kg (14.5 lbs) – with 2 external AC adapter

Dimensions and weight of the 2U2N Enclosure:

- Height: 87 mm (3.4 in.)
- Height: 87 mm (3.43 inches)
- Width: 482.1 mm (18.98 inches)
- Depth: 466 mm (18.35 inches)
- Weight: Maximum (with two nodes installed): 16.66 kg (36.73 lbs)

The shipping dimensions (cardboard packaging) of the SE360 V2 are as follows:

- Width: 400 mm (15.7 inches)
- Height: 240 mm (9.4 inches)
- Depth: 500 mm (19.7 inches)

Electrical specifications:

- The models with DC/DC power module board (Output 12V): one of the following
  - Dual 12-48V variable DC power source input
  - Up to two 300W (230V/115V) external power adapters
    - NOTE: When one or two 300W external power adapters are installed, keep ambient temperature lower than 40°C, and the following configuration is required:
      - 8 core processor
      - Four memory modules
      - Up to one ThinkSystem NVIDIA A2 16GB PCIe Gen4 Passive GPU
      - Up to two 7mm SATA drives
      - Up to two M.2 NVMe boot drives installed on 1GbE I/O module board
- The models with internal power supply (AC power module board):
  - Single 500W (230V/115V) AC power source input

## Operating environment

Summary of the environmental specifications of server. Depending on the model, some features might not be available, or some specifications might not apply.

Topics in this section:

- [Acoustical noise emissions](#)
- [Acoustical mode](#)
- [Ambient temperature management](#)
- [Environment](#)
- [Shock and vibration](#)
- [Particulate contamination](#)
- [Airflow](#)
- [Dust filter](#)

### Acoustical noise emissions

The server has the following acoustic noise emissions declaration:

- Sound power level ( $L_{WA}$ )
  - Idling:
    - Min: 5.4 Bel
    - Typical: 5.4 Bel
    - Max: 5.5 Bel
  - Operating:
    - Min: 5.7 Bel
    - Typical: 6.1 Bel
    - Max: 7.2 Bel
- Sound pressure level ( $L_{pAm}$ ):
  - Idling:
    - Min: 43.6 dBA
    - Typical: 43.6 dBA
    - Max: 44.5 dBA
  - Operating:
    - Min 45.8 dBA
    - Typical: 50.0 dBA
    - Max: 61.1 dBA

NOTE:

- These sound levels were measured in controlled acoustical environments according to procedures specified by ISO7779 and are reported in accordance with ISO 9296.
- The declared acoustic sound levels are based on the specified configurations, which may change depending on configuration/conditions.
  - Min: 1x 80W CPU, 2x 16GB RDIMMs, 1GbE I/O module board, 1 x NVMe M.2 boot drive , 2x SATA SSDs, 2x NVMe M.2 data drives, DC power module board (PMB), no dust filter, rear-to-front fan direction
  - Typical: 1x 80W CPU, 4x 16GB RDIMMs, 10/25GbE I/O module board, 1 x NVMe M.2 boot drive, 1x NVIDIA A2 GPU, 4x NVMe M.2 data drives, no dust filter, DC power module board (PMB), rear-to-front fan direction
  - Max: 1x 100W CPU, 4x 64GB RDIMMs, 10/25GbE I/O module board, 2 x NVMe M.2 boot drives, 2x NVIDIA A2 GPU, 2x NVMe M.2 data drives, DC power module board (PMB), with dust filter, rear-to-front fan direction
- Government regulations (such as those prescribed by OSHA or European Community Directives) may govern noise level exposure in the workplace and may apply to you and your server installation. The actual sound pressure levels in your installation depend upon a variety of factors, including the number of racks in the installation; the size, materials, and configuration of the room; the noise levels from other equipment; the room ambient temperature, and employee's location in relation to the equipment. Further, compliance with such government regulations depends on a variety of additional factors, including the duration of employees' exposure and whether employees wear hearing protection. Lenovo recommends that you consult with qualified experts in this field to determine whether you are in compliance with the applicable regulations.

### Acoustical mode

ThinkEdge SE360 V2 supports three acoustic modes with different acoustic performance.

- **Disabled:** The server operates at default fan speeds.
- **Mode 1:** The operation of system fans is optimized to lower the overall noise level of the server.
  - Mode 1 supports ambient temperature lower than 35°C.
  - In Mode 1, the server operates with sound pressure level of 50 dBA at 25°C.
  - Performance degradation may occur at heavy workloads.
- **Mode 2:** The operation of system fans is optimized to lower the overall noise level of the server further than Mode 1.
  - Mode 2 supports configurations with 4-core or 8-core processor at ambient temperature lower than 35°C.
  - In Mode 2, the server operates with sound pressure level of 45 dBA at 25°C.
  - Performance degradation may occur at heavy workloads.

To change the acoustic mode, enter the Setup Utility and go to **System settings > Operating Modes > Acoustic mode**.

### Ambient temperature management

- Most of the configurations of SE360 V2 support operating at temperature of 55°C or lower. Specific configuration supports operating at -20°C to



65°C. See Environment for the details of configuration supporting extended operation temperature.

- The following components can operate at temperature of 55°C or lower and require proper ambient temperature to prevent performance degradation:
  - When one of the following components is installed, keep ambient temperature lower than 45°C for proper operation. If the ambient temperature is over 45°C, performance degradation or throttled event might occur.
    - 16 core processor
    - NVMe M.2 drives
    - NVMe U.3 drives
- When one of the following drives is installed in Slot 7 to 10 (M.2 Bay 6 to 9) with heavy workload, keep ambient temperature lower than 40°C for proper operation. If the ambient temperature is over 40°C, performance degradation or throttled event might occur.
  - NVMe M.2 drives
  - NVMe U.3 drives
- When a 300W external power adapter is installed, keep ambient temperature lower than 40°C to prevent performance degradation. If the ambient temperature is over 40°C, performance degradation or throttled event might occur.
- The following components can operate at temperature of 50°C or lower. Keep ambient temperature lower than 45°C to prevent performance degradation:
  - ThinkSystem NVIDIA A2 16GB PCIe Gen4 Passive GPU
  - ThinkSystem NVIDIA L4 PCIe Gen4 Passive GPU
- ThinkSystem Qualcomm Cloud AI 100 can operate at temperature of 45°C or lower.

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 41. Environmental requirements for CTO orders

Feature code	Description
Operational temperature selections	
BW2H	System Operational Temperature 5C to 40C / 41F to 104F
B8ZU	System Operational Temperature 0C to 55C / 32F to 131F

## Environment

ThinkEdge SE360 V2 complies with ASHRAE Class A4 specifications. System performance may be impacted when operating temperature is outside AHSARE A4 specification or fan failed condition with ambient temperature over 25°C

- ThinkEdge SE360 V2 is supported in the following environment:
  - Air temperature:
    - Operating
      - ASHARE Class H1: 5°C to 25°C (41°F to 77°F); the maximum ambient temperature decreases by 1°C for every 500 m (1640 ft) increase in altitude above 900 m (2,953 ft).
      - ASHARE Class A2: 10°C to 35°C (50°F to 95°F); the maximum ambient temperature decreases by 1°C for every 300 m (984 ft) increase in altitude above 900 m (2,953 ft).
      - ASHARE Class A3: 5°C to 40°C (41°F to 104°F); the maximum ambient temperature decreases by 1°C for every 175m (574 ft) increase in altitude above 900 m (2,953 ft).
      - ASHARE Class A4: 5°C to 45°C (41°F to 113°F); the maximum ambient temperature decreases by 1°C for every 125m (410 ft) increase in altitude above 900 m (2,953 ft).
    - Server off: 5°C to 45°C (41°F to 113°F)
      - Extended operation temperature (with limited configuration):
        - Server on: -20°C to 65°C (-4°F to 149°F), to 70°C for 16 hours(158°F)
        - Server off: -20°C to 65°C (-4°F to 149°F)

Notes: The configurations with one of the following PCIe adapters do not comply with **IP3X** standard:

- ThinkSystem Qualcomm Cloud AI 100
- ThinkSystem Intel Flex 140 12GB Gen4 Passive GPU
- ThinkSystem Intel X710-T4L 10GBase-T 4-Port PCIe Ethernet Adapter
- ThinkSystem Intel E810-DA2 10/25GbE SFP28 2-Port PCIe Ethernet Adapter

**Attention:** Airborne particulates and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the server. For information about the limits for particulates and gases, see “[SE360 V2 user guide](#)”.

The following table indicates what environmental conditions (ambient temperature) are supported with supported options, such as: processors, memory, the M.2 drives and GPUs.

Table 42. Drive and GPU support based on environmental selections (ambient temperature)

Part number	Description	0°C to 35°C	36°C to 40°C	41°C to 45°C	46°C to 50°C	51°C to 55°C	56°C to 65°C
<b>Processor on Planar</b>							
CTO only	ThinkEdge SE350 V2/SE360 V2 Planar with Intel Xeon D-2712T 4C 65W 1.9 GHz	Yes	Yes	Yes	Yes	Yes	No
CTO only	ThinkEdge SE350 V2/SE360 V2 Planar with Intel Xeon D-2733NT 8C 80W 2.1 GHz	Yes	Yes	Yes	Yes	Yes	No
CTO only	ThinkEdge SE360 V2 Planar with Intel Xeon D-2752TER 12C 77W 1.8 GHz	Yes	Yes	Yes	Yes	Yes	Yes†

Part number	Description	0°C to 35°C	36°C to 40°C	41°C to 45°C	46°C to 50°C	51°C to 55°C	56°C to 65°C
CTO only	ThinkEdge SE350 V2/SE360 V2 Planar with Intel Xeon D-2775TE 16C 100W 2.0 GHz	Yes	Yes	Yes	Yes†	Yes†	No
<b>Memory</b>							
4X77A08632	ThinkSystem 16GB TruDDR4 3200 MHz (2Rx8 1.2V) RDIMM	Yes	Yes	Yes	Yes	Yes	No
4X77A08633	ThinkSystem 32GB TruDDR4 3200 MHz (2Rx4 1.2V) RDIMM	Yes	Yes	Yes	Yes	Yes	No
4X77A08634	ThinkSystem 32GB TruDDR4 3200 MHz (2Rx8 1.2V) RDIMM	Yes	Yes	Yes	Yes	Yes	No
4X77A08635	ThinkSystem 64GB TruDDR4 3200 MHz (2Rx8 1.2V) RDIMM	Yes	Yes	Yes	Yes	Yes	No
4X77A83361	ThinkSystem 32GB TruDDR4 3200 MHz (2Rx4 1.2V) RDIMM Extended Temperature	Yes	Yes	Yes	Yes	Yes	Yes†
<b>7mm SATA SSD - Intel S4520</b>							
4XB7A17106	ThinkSystem 7mm S4520 240GB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
4XB7A17107	ThinkSystem 7mm S4520 480GB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
4XB7A17108	ThinkSystem 7mm S4520 960GB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
4XB7A78622	ThinkSystem 7mm S4520 1.92TB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
4XB7A78623	ThinkSystem 7mm S4520 3.84TB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
4XB7A78624	ThinkSystem 7mm S4520 7.68TB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
<b>7mm SATA SSD - Micron 5400</b>							
4XB7A82264	ThinkSystem 7mm 5400 PRO 240GB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
4XB7A82265	ThinkSystem 7mm 5400 PRO 480GB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
4XB7A82266	ThinkSystem 7mm 5400 PRO 960GB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
4XB7A82267	ThinkSystem 7mm 5400 PRO 1.92TB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
4XB7A82268	ThinkSystem 7mm 5400 PRO 3.84TB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
4XB7A82269	ThinkSystem 7mm 5400 PRO 7.68TB Read Intensive SATA 6Gb HS SSD	Yes	Yes	Yes	Yes	Yes	No
<b>7mm NVMe SSD - Micron 7450</b>							
4XB7A82851	ThinkSystem 7mm U.3 7450 MAX 800GB Mixed Use NVMe PCIe 4.0 x4 HS SSD	Yes	Yes	Yes	Yes†	Yes†	No
4XB7A82853	ThinkSystem 7mm U.3 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Yes	Yes	Yes	Yes†	Yes†	No
4XB7A82855	ThinkSystem 7mm U.3 7450 PRO 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Yes	Yes	Yes	Yes†	Yes†	No
4XB7A82856	ThinkSystem 7mm U.3 7450 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	Yes	Yes	Yes	Yes†	Yes†	No
<b>M.2 NVMe SSD - Micron 7450 (Data Drive)</b>							
4XB7A82674	ThinkSystem M.2 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Yes	Yes	Yes†	Yes†	Yes†	No
4XB7A82675	ThinkSystem M.2 7450 PRO 1.92TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Yes	Yes	Yes†	Yes†	Yes†	No
4XB7A82676	ThinkSystem M.2 7450 MAX 800GB Mixed Use NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Yes	Yes	Yes†	Yes†	Yes†	No
4XB7A82852	ThinkSystem M.2 7450 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Yes	Yes	Yes†	Yes†	Yes†	No
4XB7A83139	ThinkSystem M.2 7450 PRO 480GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Yes	Yes	Yes†	Yes†	Yes†	No
<b>M.2 NVMe SSD - Micron 7450 (Boot Drive)</b>							
4XB7A82674	ThinkSystem M.2 7450 PRO 960GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Yes	Yes	Yes	Yes	Yes	No
4XB7A82675	ThinkSystem M.2 7450 PRO 1.92TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Yes	Yes	Yes	Yes	Yes	No
4XB7A82676	ThinkSystem M.2 7450 MAX 800GB Mixed Use NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Yes	Yes	Yes	Yes	Yes	No
4XB7A82852	ThinkSystem M.2 7450 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Yes	Yes	Yes	Yes	Yes	No
4XB7A83139	ThinkSystem M.2 7450 PRO 480GB Read Intensive NVMe PCIe 4.0 x4 NHS SSD (with Heatsink)	Yes	Yes	Yes	Yes	Yes	No
<b>GPU</b>							
4X67A81547	ThinkSystem NVIDIA A2 16GB PCIe Gen4 Passive GPU w/o CEC	Yes	Yes	Yes	Yes†	No	No
4X67A84824	ThinkSystem NVIDIA L4 24GB PCIe Gen4 Passive GPU	Yes	Yes	Yes	Yes†	No	No
4X67A84009	ThinkSystem Qualcomm Cloud AI 100	Yes	Yes	Yes	No	No	No
<b>Network adapters</b>							
7ZT7A00535	Lenovo ThinkSystem I350-T4 PCIe 1Gb 4-Port RJ45 Ethernet Adapter By Intel	Yes	Yes	Yes	Yes	Yes	No
4XC7A08295	ThinkSystem Intel E810-DA2 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	Yes	Yes	Yes	Yes	Yes	No

Part number	Description	0°C to 35°C	36°C to 40°C	41°C to 45°C	46°C to 50°C	51°C to 55°C	56°C to 65°C
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4XC7A79699	ThinkSystem Intel X710-T4L 10GBASE-T 4-Port PCIe Ethernet Adapter	Yes	Yes	Yes	Yes	Yes	No
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† Performance might slightly decrease with this temperature region

## Shock and vibration

Table 43. Shock and vibration specifications

Mounting type of ThinkEdge SE360 V2	Shock (when the server is in operation)	Shock (when the server is not in operation, such as in shipping)	Vibration (when the server is in operation)	Vibration (when the server is not in operation, such as in shipping)
Desktop mount (standing alone)	Half-sine wave, 15G 11ms	Trapezoidal wave, 50G 167 inch/sec	5-100 Hz, 0.15 Grms, 30 mins	2-200 Hz, 1.04 Grms, 15 mins
Rack mount (2U2N enclosure)	Half-sine wave, 15G 3ms	Free-fall drop height: 100mm Equivalent shock: 70 inch/sec, 2-3 ms	5-500 Hz, 0.21 Grms, 15mins	2-200Hz, 0.8 Grms, 15mins
DIN-rail mount	Half-sine wave, 15G 11ms	Not applicable	5-100 Hz, 0.15 Grms, 30 mins	Not applicable
Wall mount	Half-sine wave, 40G 6ms  Half-sine wave, 30G 11ms	Not applicable	1.91 Grms, 10-500 Hz, 30 mins  1.04 Grms, 10-500 Hz, 1 hr	Not applicable
Ceiling mount	Not applicable	Not applicable	1.91 Grms, 10-500z, 30 mins  1.04 Grms, 10-500z, 1 hr	Not applicable

## Particulate contamination

- SE360 V2 supports a dust filter installed at rear of the node. The dust filter has a Minimum Efficiency Rating Value (MERV) of 5, per ASHRAE 52.2-2017 / 80% Average Arrestance per ASHRAE 52.1-1992.
- SE360 V2 2U2N Enclosure supports a set of dust filters installed in the front shipping bracket. The dust filter set has a Minimum Efficiency Rating Value (MERV) of 5, per ASHRAE 52.2-2017 / 80% Average Arrestance per ASHRAE 52.1-1992.
- SE360 V2 complies with IP3X Ingress Protection per ANSI/IEC60529-2020 Degrees of Protection Provided by Enclosures (IP Code)
- Note: The configurations with one of the following PCIe adapters do not comply with IP3X standard:
  - ThinkSystem Qualcomm Cloud AI 100
  - ThinkSystem Intel Flex 140 12GB Gen4 Passive GPU
  - ThinkSystem Intel X710-T4L 10GBase-T 4-Port PCIe Ethernet Adapter
  - ThinkSystem Intel E810-DA2 10/25GbE SFP28 2-Port PCIe Ethernet Adapter

**Attention:** Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the device that is described in this document.

Risks that are posed by the presence of excessive particulate levels or concentrations of harmful gases include damage that might cause the device to malfunction or cease functioning altogether. This specification sets forth limits for particulates and gases that are intended to avoid such damage. The limits must not be viewed or used as definitive limits, because numerous other factors, such as temperature or moisture content of the air, can influence the impact of particulates or environmental corrosives and gaseous contaminant transfer. In the absence of specific limits that are set forth in this document, you must implement practices that maintain particulate and gas levels that are consistent with the protection of human health and safety. If Lenovo determines that the levels of particulates or gases in your environment have caused damage to the device, Lenovo may condition provision of repair or replacement of devices or parts on implementation of appropriate remedial measures to mitigate such environmental contamination. Implementation of such remedial measures is a customer responsibility.

Table 44. Limits for particulates and gases.

Contaminant	Limits
Reactive gases	<p>Severity level G1 as per ANSI/ISA 71.04-1985<sup>1</sup>:</p> <ul style="list-style-type: none"> <li>The copper reactivity level shall be less than 200 Angstroms per month (Å/month = 0.0035 µg/cm<sup>2</sup>-hour weight gain).<sup>2</sup></li> <li>The silver reactivity level shall be less than 200 Angstroms per month (Å/month = 0.0035 µg/cm<sup>2</sup>-hour weight gain).<sup>3</sup></li> <li>The reactive monitoring of gaseous corrosivity must be conducted approximately 5 cm (2 in.) in front of the rack on the air inlet side at one-quarter and three-quarter frame height off the floor or where the air velocity is much higher.</li> </ul>
Airborne particulates	<p>Data centers must meet the cleanliness level of ISO 14644-1 class 8.</p> <p>For data centers without airside economizer, the ISO 14644-1 class 8 cleanliness might be met by choosing one of the following filtration methods:</p> <ul style="list-style-type: none"> <li>The room air might be continuously filtered with MERV 8 filters.</li> <li>Air entering a data center might be filtered with MERV 11 or preferably MERV 13 filters.</li> </ul> <p>For data centers with airside economizers, the choice of filters to achieve ISO class 8 cleanliness depends on the specific conditions present at that data center.</p> <ul style="list-style-type: none"> <li>The deliquescent relative humidity of the particulate contamination should be more than 60% RH.<sup>4</sup></li> <li>Data centers must be free of zinc whiskers<sup>5</sup></li> </ul>

Notes:

<sup>1</sup>ANSI/ISA-71.04-1985. *Environmental conditions for process measurement and control systems: Airborne contaminants*. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.

<sup>2</sup>The derivation of the equivalence between the rate of copper corrosion growth in the thickness of the corrosion product in Å/month and the rate of weight gain assumes that Cu<sub>2</sub>S and Cu<sub>2</sub>O grow in equal proportions

<sup>3</sup>The derivation of the equivalence between the rate of silver corrosion growth in the thickness of the corrosion product in Å/month and the rate of weight gain assumes that Ag<sub>2</sub>S is the only corrosion product.

<sup>4</sup>The deliquescent relative humidity of particulate contamination is the relative humidity at which the dust absorbs enough water to become wet and promote ionic conduction.

<sup>5</sup>Surface debris is randomly collected from 10 areas of the data center on a 1.5 cm diameter disk of sticky electrically conductive tape on a metal stub. If examination of the sticky tape in a scanning electron microscope reveals no zinc whiskers, the data center is considered free of zinc whiskers.

## Airflow

The SE360 V2 supports two types of air-flow which can be front to rear (F2R) or rear to front(R2F)

Table 45. Reversible airflow

Feature code	Description
BS5V	ThinkEdge SE360 V2 Fan Assembly (Rear to Front)
BS5W	ThinkEdge SE360 V2 Fan Assembly (Front to Rear)

Rear dust filter and air flow sensor when SE360 V2 server is setup as R2F

Table 46. Air flow sensor

Feature code	Description
BS5T	ThinkEdge SE360 V2 Air Flow Sensor Module

## Dust filter

SE360 V2 supports a dust filter installed at rear of the node. The dust filter has a Minimum Efficiency Rating Value (MERV) of 5, per ASHRAE 52.2-2017 / 80% Average Arrestance per ASHRAE 52.1-1992.

Table 47. Dust filter

Part number	Feature code	Description
4XF7A86287	BS5U	ThinkEdge SE360 V2 Dust Filter Assembly (Rear)

## Warranty and Support

The ThinkEdge SE360 V2 has 3-year warranty based on the machine type of the system:

- 7DAM- 3 year warranty

The ThinkEdge SE360 V2 2U2N Enclosure has the following warranty:

- 7DBN- 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 markets). Bundled with YourDrive YourData.
- **Advanced Service:** 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select markets). Bundled with YourDrive YourData.

- **Managed Services**

Lenovo Managed Services provides continuous 24x7 remote monitoring (plus 24x7 call center availability) and proactive management of 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 spare 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://lenovolocator.com/>

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

- Lenovo Statement of Limited Warranty for Infrastructure Solutions Group (ISG) 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.

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

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.

## Regulatory compliance

The SE360 V2 conforms to the following standards:

- ANSI/UL62368-1
- IEC 62368-1 (CB Certificate and CB Test Report)
- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 7, Class A
- CSA C22.2 No. 62368-1
- CISPR 32, Class A, CISPR 35
- Japan VCCI, Class A
- Taiwan BSMI CNS15936, Class A; CNS15598-1; Section 5 of CNS15663
- CE, UKCA Mark (EN55032 Class A, EN62368-1, EN55024, EN55035, EN61000-3-2, EN61000-3-3, (EU) 617/2013, and EN IEC 63000 (RoHS))
- Korea KN32, Class A, KN35
- Russia, Belorussia and Kazakhstan, TP EAC 037/2016 (for RoHS)
- Russia, Belorussia and Kazakhstan, EAC: TP TC 004/2011 (for Safety); TP TC 020/2011 (for EMC)
- EAC Russia, Belorussia and Kazakhstan, TR CU 020/2011 and TR CU 004/2011
- Australia/New Zealand AS/NZS CISPR 32, Class A; AS/NZS 62368.1
- UL Green Guard, UL2819
- China CCC certificate, GB17625.1; GB4943.1; GB/T9254.1
- China CECP certificate, CQC3135
- China GELP certificate, HJ 2507-2011
- Japanese Energy-Saving Act
- Mexico NOM-019
- TUV-GS (EN62368-1, and EK1-ITB2000)
- India BIS 13252 (Part 1)
- Germany GS
- Brazil INMETRO
- South Africa NRCS LOA
- Ukraine UkrCEPRO
- Morocco CMIM Certification (CM)

## 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 the Asia Pacific market.

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	Feature code	Description	ANZ	ASEAN	Brazil	EET	MEA	RUCIS	WE	HTK	INDIA	JAPAN	LA	NA	PRC
<b>0U Basic PDUs</b>															
00YJ776	ATZY	0U 36 C13/6 C19 24A 1 Phase PDU	N	Y	Y	N	N	N	N	N	N	Y	Y	Y	N
<b>0U Switched and Monitored PDUs</b>															
00YJ783	AU04	0U 12 C13/12 C19 Switched and Monitored 48A 3 Phase PDU	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N
00YJ781	AU03	0U 20 C13/4 C19 Switched and Monitored 24A 1 Phase PDU	N	N	Y	N	Y	N	Y	N	N	Y	Y	Y	N
<b>1U Switched and Monitored PDUs</b>															
4PU7A81117	BNDV	1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - ETL	N	N	N	N	N	N	N	N	N	N	N	Y	N
4PU7A77467	BLC4	1U 18 C19/C13 Switched and Monitored 80A 3P Delta PDU	N	N	N	N	N	N	N	N	N	Y	N	Y	N
4PU7A77469	BLC6	1U 12 C19/C13 switched and monitored 60A 3P Delta PDU	N	N	N	N	N	N	N	N	N	N	N	Y	N
4PU7A77468	BLC5	1U 12 C19/C13 switched and monitored 32A 3P WYE PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
4PU7A81118	BNDW	1U 18 C19/C13 switched and monitored 48A 3P WYE PDU - CE	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y
<b>1U Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)</b>															
71763NU	6051	Ultra Density Enterprise C19/C13 PDU 60A/208V/3PH	N	N	Y	N	N	N	N	N	N	Y	Y	Y	N
71762NX	6091	Ultra Density Enterprise C19/C13 PDU Module	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>1U C13 Enterprise PDUs (12x IEC 320 C13 outlets)</b>															
39Y8941	6010	DPI C13 Enterprise PDU Module (WW)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>1U Front-end PDUs (3x IEC 320 C19 outlets)</b>															
39Y8938	6002	DPI Single-phase 30A/120V Front-end PDU (US)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8939	6003	DPI Single-phase 30A/208V Front-end PDU (US)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8934	6005	DPI Single-phase 32A/230V Front-end PDU (International)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
39Y8940	6004	DPI Single-phase 60A/208V Front-end PDU (US)	Y	N	Y	Y	Y	Y	Y	N	N	Y	Y	Y	N
39Y8935	6006	DPI Single-phase 63A/230V Front-end PDU (International)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>1U NEMA PDUs (6x NEMA 5-15R outlets)</b>															
39Y8905	5900	DPI 100-127V NEMA PDU	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<b>Line cords for 1U PDUs that ship without a line cord</b>															
40K9611	6504	4.3m, 32A/380-415V, EPDU/IEC 309 3P+N+G 3ph wye (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9612	6502	4.3m, 32A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9613	6503	4.3m, 63A/230V, EPDU to IEC 309 P+N+G (non-US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9614	6500	4.3m, 30A/208V, EPDU to NEMA L6-30P (US) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9615	6501	4.3m, 60A/208V, EPDU to IEC 309 2P+G (US) Line Cord	N	N	Y	N	N	N	Y	N	N	Y	Y	Y	N
40K9617	6505	4.3m, 32A/230V, Souriau UTG Female to AS/NZ 3112 (Aus/NZ) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
40K9618	6506	4.3m, 32A/250V, Souriau UTG Female to KSC 8305 (S. Korea) Line Cord	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

For more information, see the Lenovo Press documents in the PDU category:

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



## KVM console options

The following table lists the supported KVM consoles.

Table 50. KVM console

Part number	Description
4XF7A84188	ThinkSystem 18.5" LCD Console (with US English keyboard)

The following table lists the available KVM switches and the options that are supported with them.

Table 52. KVM switches and options

Part number	Description
KVM Console switches	
1754D2X	Global 4x2x32 Console Manager (GCM32)
1754D1X	Global 2x2x16 Console Manager (GCM16)
1754A2X	Local 2x16 Console Manager (LCM16)
1754A1X	Local 1x8 Console Manager (LCM8)
Cables for GCM and LCM Console switches	
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>

## Lenovo Financial Services

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

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

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

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

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

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

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

## Seller training courses

The following sales training courses are offered for employees and partners (login required). Courses are listed in date order.

### 1. Business Problems Addressed with Lenovo Data & Analytics Solutions

2024-01-31 | 20 minutes | Employees and Partners

Data is the quantities, characters, or symbols on which operations are performed by a computer, which is then stored and transmitted in the form of electrical signals and recorded on magnetic, optical, solid state, or mechanical recording media. All different types of organizations rely more and more on their data to gain valuable insights and improve their business. As expected, they will have challenges with gaining this insight. In this course we will discuss those challenges and problems our customers face and describe how Lenovo Data and Analytics Solutions can help customers solve each problem.

After completing this training, you will be able to define the following common problems for databases and big data and describe how Lenovo can help customers solve each problem: scalability, management, performance, protection, security, knowledge/skill, and technology evolution.

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Published: 2024-01-31

Length: 20 minutes

Employee link: [Grow@Lenovo](mailto:Grow@Lenovo)

Partner link: [Lenovo Partner Learning](#)

Course code: DSOLP200

## 2. Family Introduction: Edge Servers

2024-01-22 | 18 minutes | Employees and Partners

This course introduces the concept of edge servers. Edge servers are used at the edge of an IoT environment, where they perform pre-processing of data, and data forwarding to core environments.

Course Objectives:

- Describe the Internet of Things (IoT)
- Define an edge server
- Discuss edge server features

Published: 2024-01-22

Length: 18 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW1105

## 3. Partner Technical Webinar - Tech World 23 Review

2023-12-22 | 60 minutes | Employees and Partners

In this 60-minute replay, Kenny James, Lenovo Channel Sales Engineering Director, joined us to give a Channel CTO's perspective on this year's Tech World 2023 conference where the theme was AI for All.

Published: 2023-12-22

Length: 60 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: 121523

## 4. Basics of the Edge Ecosystem for Sellers

2023-12-15 | 20 minutes | Employees and Partners

The purpose of this learning module is to familiarize Lenovo field sales, inside sales and partners with the Edge ecosystem and how Lenovo fits into the Edge space.

- Explain the basics of an Edge Ecosystem
- Articulate the inherent challenges of Edge Computing
- Present how Lenovo fits in the Edge Ecosystem

Published: 2023-12-15

Length: 20 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DTEF101

## 5. The 10-minute Edge conversation for Lenovo Sellers

2023-12-14 | 20 minutes | Employees and Partners

The purpose of this course is to enable sellers to have a 10 to 15-minute customer conversation addressing the relevancy of Edge solutions to the customer business.

Learning Objectives:

- Prepare for the initial customer conversation
- Hold a 10-minute Edge Operational Technology (OT) conversation
- Take the appropriate steps to progress the sale

Published: 2023-12-14

Length: 20 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DTEF103

## 6. VTT: Lenovo in the Era of the Edge-June 2023

2023-12-04 | 60 minutes | Employees and Partners

Join Richard Jenkins from the Lenovo Edge Computing Business Development group as he discusses how Lenovo fits in the era of the Edge.

Topics covered in this VTT session include:

- customer use cases at the Edge
- the needed consortium to build an Edge Solution
- Lenovo edge portfolio
- The advantages of LOC-A and XClarity at the Edge

Published: 2023-12-04

Length: 60 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DVEDG201

**7. Intro to Edge: 3Ws of Edge Computing for Lenovo Sellers**

2023-09-14 | 13 minutes | Employees and Partners

This course provides fundamental concepts and a learning foundation for those who are new to the data center and to computing at the Edge. It defines where is the Edge, identifies what are the business drivers for edge computing, and discusses why is edge computing important to Lenovo. September 2023

Published: 2023-09-14

Length: 13 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DTEF100

**8. Lenovo Solutions for the Edge - Who Are the Customers?**

2023-09-14 | 25 minutes | Employees and Partners

This course is focused on enabling sellers to identify opportunities for Lenovo Edge and Edge AI Solutions. Topics include a general overview of the Lenovo Edge portfolio and recognizing how edge computing can benefit customers.

Course Objectives:

- Identify Lenovo Edge Opportunities
- Recognize how an Edge solution would benefit your customer
- Provide a general overview of Lenovo solutions at the Edge
- Identify key points for your customer Edge conversation

Published: 2023-09-14

Length: 25 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DTEF102

**9. Family Portfolio - Edge**

2023-09-12 | 15 minutes | Employees and Partners

This course introduces edge environments, and the roles played by Lenovo edge servers and edge clients in those environments. It looks briefly at use cases for these edge devices.

When you have completed this course, you should be able to list the edge solutions in the Lenovo portfolio, describe the features of each solution, and determine which solution is best suited to a specific environment.

Published: 2023-09-12

Length: 15 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW2513r2

**10. Lenovo Data Center Product Portfolio**

2023-07-21 | 15 minutes | Employees and Partners

This course introduces the Lenovo data center portfolio, and covers servers, storage, storage networking, and software-defined infrastructure products. After completing this course about Lenovo data center products, you will be able to identify product types within each data center family, describe Lenovo innovations that this product family or category uses, and recognize when a specific product should be selected.

Published: 2023-07-21

Length: 15 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW1110r6

**11. Partner Technical Webinar - ThinkEdge SE350 V2 & SE360 V2 Update**

2023-07-13 | 60 minutes | Employees and Partners

July 7, 2023 – in this 60-minute replay, Benoit Robert, Director - Edge Server Product Management, reviewed the ThinkEdge portfolio specifically the SE350v2 and SE360v2. Benoit discussed the key differences between the 2 edge servers with a focus on form factors and use cases.

Published: 2023-07-13

Length: 60 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: 070723

**12. FY24Q1 AI Launch**

2023-06-14 | 15 minutes | Employees and Partners

This course covers the exciting announcements that Lenovo is making about its commitment to AI. Not only has Lenovo pledged to invest \$1B in AI over the next three years, and committed \$100M to bolster the Lenovo AI Innovators Program, but there are also some exciting product announcements.

Once you complete this course, you should be able to define intelligence and artificial intelligence, describe a digital twin, and discuss the three key points of the Lenovo AI launch: investment in AI, a new AI-capable data center server, and new AI-capable edge servers.

Published: 2023-06-14

Length: 15 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW2516

13. **Lenovo XClarity Management Hub for Edge Server Devices**

2023-06-08 | 50 minutes | Employees and Partners

This course offers a comprehensive overview and demonstration of the enhanced capability to manage ThinkEdge Server Devices through Lenovo XClarity Management Hub in Lenovo XClarity Orchestrator (LXCO).

Published: 2023-06-08

Length: 50 minutes

Employee link: [Grow@Lenovo](mailto:Grow@Lenovo)

Partner link: [Lenovo Partner Learning](#)

Course code: DXCO201

14. **Lenovo XClarity Management Hub for Edge Client Devices**

2023-06-08 | 50 minutes | Employees and Partners

This course offers a comprehensive overview and demonstration of the enhanced capability to manage ThinkEdge Client Devices through Lenovo XClarity Management Hub in Lenovo XClarity Orchestrator (LXCO).

Published: 2023-06-08

Length: 50 minutes

Employee link: [Grow@Lenovo](mailto:Grow@Lenovo)

Partner link: [Lenovo Partner Learning](#)

Course code: DXCO202

15. **Family Portfolio: Intel Edge Servers**

2023-06-07 | 15 minutes | Employees and Partners

This course introduces two new Lenovo ThinkEdge servers: the ThinkEdge SE350 V2 and ThinkEdge SE360 V2.

After completing this course, you will be able to list the Intel edge servers in the Lenovo portfolio, describe the features of each server and determine which server is best suited to a specific environment.

Published: 2023-06-07

Length: 15 minutes

Employee link: [Grow@Lenovo](mailto:Grow@Lenovo)

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW2510r2

16. **Lenovo FY24Q2 AI Announcement QH**

2023-06-07 | 3 minutes | Employees and Partners

This Quick Hit covers the exciting announcements Lenovo is making about its commitment to AI. Lenovo has pledged to invest \$1B in AI over the next three years, and has committed \$100M to bolster the Lenovo AI Innovators Program to develop AI-Ready solutions faster. Two new servers are being added to the already impressive Lenovo Edge portfolio – the ThinkEdge SE350 V2 and ThinkEdge SE360 V2. These servers offer a wide operating temperature range and the ruggedness to handle shock, vibration, and airborne contaminants. The SE360 V2 supports GPUs, making it ideal for AI at the edge. Both servers support the new time-sensitive networking protocol, TSN, to ensure that response times are low and deterministic.

Note: This course is presented as audio only. There are no slides or video.

Published: 2023-06-07

Length: 3 minutes

Employee link: [Grow@Lenovo](mailto:Grow@Lenovo)

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW2516a

## Related publications and links

For more information, see these resources:

- ThinkSystem SE360 V2 drivers and support  
<https://datacentersupport.lenovo.com/us/en/>
- Lenovo ThinkSystem SE360 V2 product page:  
<https://www.lenovo.com/us/en/p/servers-storage/servers/edge/Lenovo-ThinkEdge-SE360-V2/LEN21TS0019>
- Interactive 3D Tour of the ThinkEdge SE360 V2:  
<https://lenovopress.lenovo.com/lp1752>
- ServerProven hardware compatibility:  
<https://serverproven.lenovo.com/>
- Lenovo Server Options:  
<https://serveroption.lenovo.com/>

## Related product families

Product families related to this document are the following:

- [Edge Computing and Internet of Things \(IoT\)](#)
- [Edge Servers](#)
- [ThinkEdge SE360 V2 Server](#)

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