



ThinkEdge SE360 V2 System Configuration Guide



Machine Types: 7DAM

Note

Before using this information and the product it supports, be sure to read and understand the safety information and the safety instructions, which are available at:

https://pubs.lenovo.com/safety_documentation/

In addition, be sure that you are familiar with the terms and conditions of the Lenovo warranty for your server, which can be found at:

<http://datacentersupport.lenovo.com/warrantylookup>

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Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الأمنية

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 Safety Information（安全信息）。

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας (safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

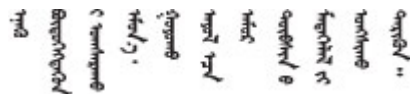
A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.



Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по технике безопасности.

Pred inštaláciou tohto zariadenia si pečítajte Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto, lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

ཐོན་ཁུངས་འདི་བདེ་སྤྱད་མ་བྱས་གོང་། སྐྱོར་གྱི་ཡིད་གཟབ་
བྱ་འདྲ་མིན་ཡིད་པའི་འོད་ཟེར་བལྟ་དགོས།

Bu ürünü kurmadan önce güvenlik bilgilerini okuyun.

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canjbinj soengq cungj vahgangj ancien siusik.

Safety inspection checklist

Use the information in this section to identify potentially unsafe conditions with your server. As each machine was designed and built, required safety items were installed to protect users and service technicians from injury.

Note: This device is not intended for use in the direct field of view at visual display workplaces. To avoid incommoding reflections at visual display workplaces, this device must not be placed in the direct field of view.

CAUTION:

This equipment must be installed or serviced by trained personnel, as defined by the NEC, IEC 62368-1 & IEC 60950-1, the standard for Safety of Electronic Equipment within the Field of Audio/Video, Information Technology and Communication Technology. Lenovo assumes you are qualified in the servicing of equipment and trained in recognizing hazards energy levels in products. Access to the equipment is by the use of a tool, lock and key, or other means of security, and is controlled by the authority responsible for the location.

Important: Electrical grounding of the server is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Use the following checklist to verify that there are no potentially unsafe conditions:

1. Make sure that the power is off and the power cord is disconnected.
2. Check the power cord.
 - Make sure that the third-wire ground connector is in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and the frame ground.
 - Make sure that the power cord is the correct type.

To view the power cords that are available for the server:

- a. Go to:

<http://dcsc.lenovo.com/#/>

- b. Click **Preconfigured Model** or **Configure to order**.
 - c. Enter the machine type and model for your server to display the configurator page.
 - d. Click **Power → Power Cables** to see all line cords.
- Make sure that the insulation is not frayed or worn.
3. Check for any obvious non-Lenovo alterations. Use good judgment as to the safety of any non-Lenovo alterations.
4. Check inside the server for any obvious unsafe conditions, such as metal filings, contamination, water or other liquid, or signs of fire or smoke damage.
5. Check for worn, frayed, or pinched cables.
6. Make sure that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Chapter 1. Introduction

The ThinkEdge SE360 V2 server (Type 7DAM) is a new [edge server](#) offering. It is specifically designed to meet the needs of [edge computing](#), edge AI, hybrid cloud and workloads at the edge locations. ThinkEdge SE360 V2 is a rugged compact sized edge solution with a focus on smart connectivity, business security and manageability for the harsh environment. Built for long life and dependable performance to support your demanding IoT workloads at the Edge. Compact and rugged it is designed for the non-datacenter environment, ideal for remote locations such as retail, manufacturing and factory locations.

The ThinkEdge SE360 V2 2U2N Enclosure (Type 7DBN) is designed to mount the ThinkEdge SE360 V2 in a rack. One enclosure can contain up to two nodes.



Figure 1. ThinkEdge SE360 V2

Features

Performance, ease of use, reliability, and expansion capabilities were key considerations in the design of your server. These design features make it possible for you to customize the system hardware to meet your needs today and provide flexible expansion capabilities for the future.

Your server implements the following features and technologies:

- **Lenovo XClarity Controller (XCC)**

The Lenovo XClarity Controller is the common management controller for Lenovo ThinkEdge server hardware. The Lenovo XClarity Controller consolidates multiple management functions in a single chip on the server system board (system board assembly). Some of the features that are unique to the Lenovo XClarity Controller are enhanced performance, higher-resolution remote video, and expanded security options.

The server supports Lenovo XClarity Controller 2 (XCC2). For additional information about Lenovo XClarity Controller 2 (XCC2), refer to <https://pubs.lenovo.com/lxcc-overview/>.

- **UEFI-compliant server firmware**

Lenovo ThinkEdge firmware is Unified Extensible Firmware Interface (UEFI) compliant. UEFI replaces BIOS and defines a standard interface between the operating system, platform firmware, and external devices.

Lenovo ThinkEdge servers are capable of booting UEFI-compliant operating systems, BIOS-based operating systems, and BIOS-based adapters as well as UEFI-compliant adapters.

Note: The server does not support Disk Operating System (DOS).

- **Large system-memory capacity**

The server supports synchronous dynamic random-access memory (SDRAM) registered dual inline memory modules (DIMMs) with error correcting code (ECC). For more information about the specific types and maximum amount of memory, see [“Specifications” on page 3](#).

- **Large data-storage capacity and hot-swap capability**

The server supports up to two optional 7mm 2.5-inch hot-swap SATA/NVMe drives, and up to eight optional M.2 NVMe drives. With the hot-swap feature, the drives can be added, removed, or replaced without turning off the server.

Note: When SED encryption is enabled, rebooting the system is required after installing a SATA drive; without rebooting, the SATA drive will not be recognized by the host OS.

- **Mobile access to Lenovo Service Information website**

The server provides a QR code on the system service label, which is on the cover of the server, that you can scan using a QR code reader and scanner with a mobile device to get quick access to the Lenovo Service Information website. The Lenovo Service Information website provides additional information for parts installation, replacement videos, and error codes for server support.

- **Active Energy Manager**

Lenovo XClarity Energy Manager is a power and temperature management solution for data centers. You can monitor and manage the power consumption and temperature of Converged, NeXtScale, System x, ThinkServer, ThinkSystem and ThinkEdge servers, and improve energy efficiency using Lenovo XClarity Energy Manager.

- **Redundant networking connection**

The Lenovo XClarity Controller provides failover capability to a redundant Ethernet connection with the applicable application installed. If a problem occurs with the primary Ethernet connection, all Ethernet traffic that is associated with the primary connection is automatically switched to the optional redundant Ethernet connection. If the applicable device drivers are installed, this switching occurs without data loss and without user intervention.

- **Redundant cooling**

The redundant cooling by the fans in the server enables continued operation if one rotor of the fans fails.

- **RAID support**

ThinkEdge SE360 V2 provides software redundant array of independent disks (RAID) to create configurations. The software RAID controller supports RAID levels 0, 1, 5, and 10.

- **Integrated Trusted Platform Module (TPM)**

This integrated security chip performs cryptographic functions and stores private and public secure keys. It provides the hardware support for the Trusted Computing Group (TCG) specification.

- **Lenovo XClarity Controllers System Lockdown Mode**

System lockdown will be enforced under specific circumstances to protect the server from information breach, particularly when the server is transported by non-certified carriers to remote environments. See [“System Lockdown Mode” on page 72](#) for details.

Tech Tips

Lenovo continually updates the support website with the latest tips and techniques that you can use to solve issues that your server might encounter. These Tech Tips (also called retain tips or service bulletins) provide procedures to work around issues or solve problems related to the operation of your server.

To find the Tech Tips available for your server:

1. Go to <http://datacentersupport.lenovo.com> and navigate to the support page for your server.
2. Click on **How To's** from the navigation pane.
3. Click **Article Type → Solution** from the drop-down menu.

Follow the on-screen instructions to choose the category for the problem that you are having.

Security advisories

Lenovo is committed to developing products and services that adhere to the highest security standards in order to protect our customers and their data. When potential vulnerabilities are reported, it is the responsibility of the Lenovo Product Security Incident Response Team (PSIRT) to investigate and provide information to our customers so they may put mitigation plans in place as we work toward providing solutions.

The list of current advisories is available at the following site:

https://datacentersupport.lenovo.com/product_security/home

Specifications

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

Refer to the below table for specifications categories and the content of each category.

Specification category	“Technical specifications” on page 3	“Mechanical specifications” on page 9	“Environmental specifications” on page 10
Content	<ul style="list-style-type: none">• Processor• Memory• M.2 Drive• Storage expansion• Expansion slots• Graphics processing unit (GPU)• Integrated functions and I/O connectors• Network• Storage controller• System fan• Electrical input• Minimal configuration for debugging• Operating systems	<ul style="list-style-type: none">• Dimension• Weight	<ul style="list-style-type: none">• Acoustical noise emissions• Ambient temperature management• Environment

Technical specifications

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

Processor

One multi-core Intel Xeon D-2700 processor in Ball-Grid Array (BGA) package:

- Scalable up to 16 cores
- Supports TDP up to 100W

For a list of supported processors, see: <http://datacentersupport.lenovo.com>.

Memory

See “Memory module installation rules and order” in *User Guide* or *Hardware Maintenance Guide* for detailed information about memory configuration and setup.

- Slots: 4 dual inline memory module (DIMM) connectors
- Memory module types:
 - Double-data-rate 4 (TruDDR4) error correcting code (ECC) 3200 MHz registered DIMM (RDIMM)

Note: Memory operates at up to 2933 MHz, depending on the processor selected.

- Capacity:
 - 16 GB (2Rx8)
 - 32 GB (2Rx4, 2Rx8)
 - 64 GB (2Rx4)
- Total capacity
 - Minimum: 16 GB
 - Maximum: 256 GB

For a list of supported memory modules, see: <https://serverproven.lenovo.com>.

M.2 Drive

M.2 boot drives

- Up to two 80 mm (2280) NVMe M.2 boot drives

M.2 storage drives

- Up to eight NVMe M.2 storage drives of the following drive form factors:
 - 80 mm (2280)
 - 110 mm (22110)

For a list of supported M.2 drives, see: <https://serverproven.lenovo.com>.

Storage expansion

Supported storage expansion varies by model.

- M.2 storage drives
 - Up to eight NVMe M.2 storage drives of the following drive form factors:
 - 80 mm (2280)
 - 110 mm (22110)
- Hot-swap drives
 - Up to two 7mm SATA/NVMe hot-swap drives

Expansion slots

Supported expansion slots vary by model.

- **Slot 1 to 2 (I/O module board):** NVMe Gen3 x1 M.2 boot drives
- **Slot 3 (Left wing of riser assembly)** supports one of the following:
 - One PCIe Gen4 x16 FH/HL adapter
 - One PCIe Gen4 x16 HH/HL adapter
 - One NVMe Gen4 x4 M.2 storage drive
- **Slot 4 to 6 (Left wing of riser assembly):** NVMe Gen4 x4 M.2 storage drives
- **Slot 7 (Right wing of riser assembly)** supports one of the following:
 - One PCIe Gen4 x16 HH/HL adapter
 - One NVMe Gen4 x4 M.2 storage drive
- **Slot 8 to 10 (Right wing of riser assembly):** NVMe Gen4 x4 M.2 storage drives
- **Slot 11 to 12 (Bottom M.2 cabled adapter):** NVMe Gen3 x4 M.2 storage drives

Note: When Slot 3 to 6 support M.2 storage drives, Slot 11 to 12 are disabled.

Graphics processing unit (GPU)

Supports up to two low-profile PCIe GPU adapters

Integrated functions and I/O connectors

- Lenovo XClarity Controller (XCC), which provides service processor control and monitoring functions, video controller, and remote keyboard, video, mouse, and remote drive capabilities.
 - The server supports Lenovo XClarity Controller 2 (XCC2). For additional information about Lenovo XClarity Controller 2 (XCC2), refer to <https://pubs.lenovo.com/xcc-overview/>.

- **Front I/O connectors**

Note: The slot for Bluetooth antenna is on the front of the server. For the models without wireless module, install the Bluetooth antenna filler to the corresponding slot for proper operation. The Bluetooth antenna filler is in the material box. See “[Front view](#)” on [page 21](#) to locate the Bluetooth antenna filler.

- One XCC system management port (10/100/1000 Mbps RJ-45) on the rear to connect to a systems-management network. This RJ-45 connector is dedicated to the Lenovo XClarity Controller functions.
- Two USB 3.2 Gen 1 (5 Gbps) Type-A connectors
- One USB 3.2 Gen 1 (5 Gbps) Type-C connector with display support
- One USB 2.0 Type-C connector with Lenovo XClarity Controller management
- Two 2.5GbE RJ-45 connectors
- Depending on the model, one of the following groups of Ethernet connectors:
 - With 10/25GbE I/O module board installed: four 10/25GbE SFP28 connectors

Note: The transmission speed of SFP28 connectors could be 10 Gbps or 25 Gbps, depending on the processor selected. Processors with at least 16 cores support transmission speed of 25 Gbps.

- With 1GbE I/O module board installed: four 1GbE RJ-45 connectors

- **Rear I/O connector**

- One RJ-45 RS-232 serial console connector for OS/BIOS or XCC

Network

Ethernet connectors

- Two 2.5GbE RJ-45 connectors
- Depending on the model, one of the following groups of Ethernet connectors:
 - With 10/25GbE I/O module board installed: four 10/25GbE SFP28 connectors

Note: The transmission speed of SFP28 connectors could be 10 Gbps or 25 Gbps, depending on the processor selected. Processors with at least 16 cores support transmission speed of 25 Gbps.

- With 1GbE I/O module board installed: four 1GbE RJ-45 connectors

Ethernet adapters

- Up to two low-profile PCIe Ethernet adapters

Wireless module

The models with wireless module support the following:

- One x86 WLAN module (Intel AX210)
 - With the x86 WLAN feature, SE360 V2 is able to connect to wireless network. The WLAN connection established by x86 WLAN can serve as the main or backup network connection of the system. The x86 WLAN connection and the wired network connection can be failover to each other.

Notes:

- The x86 WLAN module (Intel AX210) officially supports Microsoft Windows Server operating system.
 - Some non-Windows operating systems with corresponding inbox driver might be able to support the x86 WLAN module (Intel AX210). For a list of operating systems supporting Intel AX210, see *ThinkEdge SE360 V2 Product Guide* on <https://lenovopress.lenovo.com/>.
- One XCC WLAN and Bluetooth module
 - With XCC WLAN feature, SE360 V2 supports remote management with WLAN connection. Before connecting XCC to WLAN, set the network connection for XCC to access and enable XCC WLAN feature. See “[XCC WLAN configuration](#)” on [page 75](#) for more information.
 - Supporting Bluetooth 5.3
 - Bluetooth connection to the system can be established with ThinkShield Edge Mobile Management App, and be used to complete Mobile App activation procedure. See “[Activate or unlock the system](#)” on [page 69](#) for more information.

Storage controller

Software RAID

- Intel VROC SATA RAID: supports RAID level 0, 1
- Intel VROC NVMe RAID
 - VROC Standard: supports RAID level 0, 1, 10 and requires an activation key.
 - VROC Premium: supports RAID level 0, 1, 5, 10 and requires an activation key.
- With Intel VROC, SE360 V2 supports the following RAID configurations:
 - M.2 boot drives: NVMe RAID (RAID level 0, 1)
 - Storage drives:
 - SATA RAID (RAID level 0, 1) for 7mm SATA storage drives
 - NVMe RAID (RAID level 0, 1, 5, 10) for 7mm NVMe storage drives and M.2 NVMe storage drives

Notes:

- Mixing storage drives and boot drives in one RAID array is not supported.
- The storage drives in the following groups are supported to configure in one RAID array with drives of the same group. Drives in different groups cannot be in the same RAID array.
 - M.2 storage drives on the left wing of riser assembly (Slot 3 to 6)
 - M.2 storage drives on the right wing of riser assembly (Slot 7 to 10)
 - 7mm storage drives (Bay 0, 1) and M.2 storage drives on the bottom M.2 cabled adapter (Slot 11, 12)
- For more information about RAID configuration, see [RAID configuration](#).
- For more information about acquiring and installing the activation key, see <https://fod.lenovo.com/lkms>.

System fan

- Two 80 mm x 80 mm x 56 mm dual-rotor fans, supporting one of the following air flow directions:
 - Front-to-rear air flow direction
 - Rear-to-front air flow direction (supporting dust filter measurement feature)

Notes:

- With air flow sensor board installed, SE360 V2 BMC supports dust filter measurement feature to check the status of the rear dust filter. See “[Set dust filter measurement](#)” on page 77 for more information.
- Specific mounting options of SE360 V2 require specific fan air flow direction. See “Configuration guide” in *User Guide* or *Hardware Maintenance Guide* for more information.

Electrical input

The models with DC/DC power module board (Output 12V): one of the following

Note: If applicable, before connecting DC power source to the server, remove the header from the corresponding power connector. See [“Rear view” on page 25](#) to locate the power connector and remove the header.

- Dual 12-48V variable DC power source input

Note: To connect DC power source with ThinkEdge SE360 V2 DC Terminal Block Cable, see [“DC terminal block cable” on page 53](#) for more information.

- Up to two 300W (230V/115V) external power adapters

Notes: When one or two 300W external power adapters are installed, keep ambient temperature lower than 40°C, and the following configuration is required:

- Mounting option: Desktop mount
- One of the following riser assembly:
 - PCIe riser + 7mm backplane riser assembly with the following configuration:
 - 8 core processor
 - 1GbE I/O module board
 - Up to two 7mm SATA drives
 - Bottom M.2 adapter is not supported
 - Wireless module is not supported
 - M.2 riser + M.2 adapter riser assembly
 - M.2 riser + 7mm backplane riser assembly

The models with internal power supply (AC power module board):

- Single 500W (230V/115V) AC power source input

Supported external power adapters:

As required by COMMISSION REGULATION (EU) 2019/1782 of 1 October 2019 laying down ecodesign requirements for external power supplies pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EC) No 278/2009 (ErP Lot7) for the external power supply of the product.

ThinkEdge 300W 230V/115V External Power Supply

Information published	Value and precision	Unit
Manufacturer's name	Lenovo	-
Model identifier	ADL300SDC3A	-
Input voltage	100-240	V
Input AC frequency	50-60	Hz
Output voltage	20.0	V
Output current	15.0	A
Output power	300.0	W
Average active efficiency	90.00	%
Efficiency at low load (10 %)	88.07	%
No-load power consumption	0.15	W

Minimal configuration for debugging

- One DRAM memory module in DIMM slot 1
- Depending on the model, one of the following power source:
 - One 300W external power adapter
 - AC power source input
 - DC power source input
- One 2280 NVMe M.2 drive in Slot 1 on the I/O module board
- Two system fans

Operating systems

Supported and certified operating systems:

- Microsoft Windows Server
- VMware ESXi
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server

Notes:

- The x86 WLAN module (Intel AX210) officially supports Microsoft Windows Server operating system.
- Some non-Windows operating systems with corresponding inbox driver might be able to support the x86 WLAN module (Intel AX210). For a list of operating systems supporting Intel AX210, see *ThinkEdge SE360 V2 Product Guide* on <https://lenovopress.lenovo.com/>.

References:

- Complete list of available operating systems: <https://lenovopress.lenovo.com/osig>.
- OS deployment instructions, see “Deploy the operating system” on page 81.

Mechanical specifications

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

Dimension

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)

Enclosure

- Height: 87 mm (3.43 inches)
- Width: 482.1 mm (18.98 inches)
- Depth: 466 mm (18.35 inches)

Weight
Node <ul style="list-style-type: none"> Maximum: 6.5 kg (14.33 lbs) Node with node sleeve <ul style="list-style-type: none"> Maximum: 9.54 kg (21.03 lbs) Enclosure <ul style="list-style-type: none"> Maximum (with two nodes installed): 16.66 kg (36.73 lbs)

Environmental specifications

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

Acoustical noise emissions

The server has the following acoustic noise emissions declaration:

- Sound power level (L_{WAd})
 - 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: 43.5 dBA
 - Max: 44.5 dBA
 - Operating:
 - Min: 45.8 dBA
 - Typical: 50.0 dBA
 - Max: 61.1 dBA

Notes:

- These sound levels were measured in controlled acoustical environments according to procedures specified by ISO7779 and are reported in accordance with ISO 9296. The operating profile is represented by 80% CPU TDP or 70%/30% storage read/write or 100% GPU workload.
- 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), no 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.

Acoustic modes

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. When ambient temperature is over 35°C, system will operate at default fan speed.
 - 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, 8-core or 12-core processor at ambient temperature lower than 35°C. When ambient temperature is over 35°C, system will operate at default fan speed.
 - 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” on page](#) 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
- The following components can operate at temperature of 45°C or lower:
 - ThinkSystem Qualcomm Cloud AI 100
 - ThinkSystem Intel Flex 140 GPU

Environment

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

- Air temperature:
 - Operating
 - ASHRAE 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).
 - ASHRAE 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).
 - ASHRAE 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).
 - ASHRAE 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 support extended operation temperature require:

- 12 core processor
- Fans with rear-to-front air flow direction
- One of the following electrical input:
 - Dual 12-48V variable DC power source input
 - Single 500W (230V/115V) AC power source input
- All installed DIMMs are RDIMM Extended Temperature
- All installed M.2 drives are M.2 SSD (Industrial)
- No GPU adapter or Ethernet adapter installed
- Shipment/storage: -40°C to 65°C (-40°F to 140°F)
- Maximum altitude: 3050 m (10,000 ft)
- Relative Humidity (non-condensing):
 - Operating: 8% to 90%, maximum dew point: 24°C (75.2°F)
 - Shipment/storage: 8% to 90%, maximum dew point : 27°C (80.6°F)
 - Non-operating (unpacked) storage can pass the following condition: 5% to 95% at 38.7°C (101.7°F) maximum dry-bulb temperature for 48 hrs.
- 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)

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 [“Particulate contamination” on page 14](#).

Shock and vibration specifications

The following information is a summary of the shock and vibration specifications of the server. Depending on the model, some features might not be available, or some specifications might not apply.

Table 1. 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 (in 2U2N enclosure)	Half-sine wave, 15G 3ms	Free-fall drop height: 100mm Equivalent shock: 152 inch/sec, 2-3 ms	5-500 Hz, 0.21 Grms, 15mins	2-200 Hz, 0.8 Grms, 15 mins
DIN-rail mount	Half-sine wave, 15G 11ms	Not applicable	5-100 Hz, 0.15 Grms, 30 mins	Not applicable
Wall mount	<ul style="list-style-type: none">Half-sine wave, 40G 6msHalf-sine wave, 30G 11ms	Not applicable	<ul style="list-style-type: none">1.91 Grms, 10-500z, 30 mins1.04 Grms, 10-500z, 1 hr	Not applicable
Ceiling mount	Not applicable	Not applicable	<ul style="list-style-type: none">1.91 Grms, 10-500z, 30 mins1.04 Grms, 10-500z, 1 hr	Not applicable

Particulate contamination

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 2. Limits for particulates and gases

Contaminant	Limits
Reactive gases	<p>Severity level G1 as per ANSI/ISA 71.04-1985¹:</p> <ul style="list-style-type: none"> The copper reactivity level shall be less than 200 Angstroms per month ($\text{\AA}/\text{month} \approx 0.0035 \mu\text{g}/\text{cm}^2\text{-hour weight gain}$).² The silver reactivity level shall be less than 200 Angstroms per month ($\text{\AA}/\text{month} \approx 0.0035 \mu\text{g}/\text{cm}^2\text{-hour weight gain}$).³ 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.
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"> The room air might be continuously filtered with MERV 8 filters. Air entering a data center might be filtered with MERV 11 or preferably MERV 13 filters. <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"> The deliquescent relative humidity of the particulate contamination should be more than 60% RH.⁴ Data centers must be free of zinc whiskers.⁵
<p>¹ ANSI/ISA-71.04-1985. <i>Environmental conditions for process measurement and control systems: Airborne contaminants</i>. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.</p> <p>² The derivation of the equivalence between the rate of copper corrosion growth in the thickness of the corrosion product in $\text{\AA}/\text{month}$ and the rate of weight gain assumes that Cu_2S and Cu_2O grow in equal proportions.</p> <p>³ The derivation of the equivalence between the rate of silver corrosion growth in the thickness of the corrosion product in $\text{\AA}/\text{month}$ and the rate of weight gain assumes that Ag_2S is the only corrosion product.</p> <p>⁴ 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.</p> <p>⁵ 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.</p>	

Marine certificated models

Information of SE360 V2 marine certificated models.

ThinkEdge SE360 V2 has been issued with EU RO MR (European Union Recognized Organization Mutual Recognition) type approval certificate by Det Norske Veritas® (DNV®). The certification only applies to specific preconfigured models of SE360 V2. See *ThinkEdge SE360 V2 Product Guide* on <https://lenovopress.lenovo.com/> for more information of preconfigured models.

- “Environmental specifications” on page 15
- “Technical specifications” on page 16
- “Mounting option” on page 17

Environmental specifications

- Extended operation temperature (with limited configuration supported by marine certificated models):
 - Server on: -20°C to 65°C (-4°F to 149°F), to 70°C for 16 hours (158°F)

- Shock and vibration specifications:
 - Shock: 5G/15ms, 20 times shock in each axis with 3 axes
 - Vibration: Q-factor<5; Amplification<10; 90 mins in each resonance frequency

Technical specifications

Table 3. Technical specifications of marine certificated models

Parts	Specifications
Processor	One-socket Intel® Xeon® D-2752TER with 12 cores
Memory	Up to 4x 32GB TruDDR4 3200 MHz (2Rx4 1.2V) RDIMM Extended Temperature
M.2 Drives	<ul style="list-style-type: none"> • M.2 boot drives: Up to two NVMe M.2 Extended Temperature drives • M.2 storage drives: Up to eight NVMe M.2 Extended Temperature drives
Integrated functions and I/O connectors	<ul style="list-style-type: none"> • Lenovo XClarity Controller (XCC), which provides service processor control and monitoring functions, video controller, and remote keyboard, video, mouse, and remote drive capabilities. <ul style="list-style-type: none"> – The server supports Lenovo XClarity Controller 2 (XCC2). For additional information about Lenovo XClarity Controller 2 (XCC2), refer to https://pubs.lenovo.com/lxcc-overview/. • Front I/O connectors <p>Note: For the models without wireless module, install the Bluetooth antenna filler to the corresponding slot for proper operation. The Bluetooth antenna filler is in the material box. See “Front view” on page 21 to locate the Bluetooth antenna filler.</p> <ul style="list-style-type: none"> – One XCC system management port (10/100/1000 Mbps RJ-45) on the rear to connect to a systems-management network. This RJ-45 connector is dedicated to the Lenovo XClarity Controller functions. – Two USB 3.2 Gen 1 (5 Gbps) Type-A connectors – One USB 3.2 Gen 1 (5 Gbps) Type-C connector with display support – One USB 2.0 Type-C connector with Lenovo XClarity Controller management – Two 2.5GbE RJ-45 connectors – Depending on the model, one of the following groups of Ethernet connectors: <ul style="list-style-type: none"> – With 10/25GbE I/O module board installed: four 10/25GbE SFP28 connectors <p>Note: The transmission speed of SFP28 connectors could be 10 Gbps or 25 Gbps, depending on the processor selected. Processors with at least 16 cores support transmission speed of 25 Gbps.</p> <ul style="list-style-type: none"> – With 1GbE I/O module board installed: four 1GbE RJ-45 connectors • Rear I/O connector <ul style="list-style-type: none"> – One RJ-45 RS-232 serial console connector for OS/BIOS or XCC
Storage controller	Intel VROC NVMe RAID
System fan	Two 80 mm x 80 mm x 56 mm dual-rotor fans with rear-to-front air flow direction
Electrical input	Single 500W (230V/115V) AC power source input

Table 3. Technical specifications of marine certificated models (continued)

Parts	Specifications
Minimal configuration for debugging	<ul style="list-style-type: none"> • One DRAM memory module in DIMM slot 1 • AC power source input • One 2280 NVMe M.2 drive in Slot 1 on the I/O module board • Two system fans
Operating systems	<ul style="list-style-type: none"> • Microsoft Windows Server 2019 or higher • Microsoft Azure Local • VMware ESXi 7.0 U3 or higher • Red Hat Enterprise Linux 8.6 or higher • SUSE Linux Enterprise Server 15 SP4 or higher • Ubuntu Server 20.04 LTS 64-bit or higher <p>References:</p> <ul style="list-style-type: none"> • Complete list of available operating systems: https://lenovopress.lenovo.com/osig.

Mounting option

The mounting option supported by marine certificated models is wall mount only.

The reinforced cover of wall mount configuration is designed for marine certificated models.

To install the reinforced cover, see “Install a node to the wall or the ceiling” in *User Guide* or *Hardware Maintenance Guide*.

Management options

The XClarity portfolio and other system management options described in this section are available to help you manage the servers more conveniently and efficiently.

Overview

Options	Description
Lenovo XClarity Controller	<p>Baseboard management controller (BMC)</p> <p>Consolidates the service processor functionality, Super I/O, video controller, and remote presence capabilities into a single chip on the server system board (system board assembly).</p> <p>Interface</p> <ul style="list-style-type: none"> • CLI application • Web GUI interface • Mobile application • Redfish API <p>Usage and downloads</p> <p>https://pubs.lenovo.com/lxcc-overview/</p>
Lenovo XCC Logger Utility	<p>Application that reports the XCC events to local OS system log.</p> <p>Interface</p> <ul style="list-style-type: none"> • CLI application <p>Usage and downloads</p> <ul style="list-style-type: none"> • https://pubs.lenovo.com/lxcc-logger-linux/ • https://pubs.lenovo.com/lxcc-logger-windows/
Lenovo XClarity Administrator	<p>Centralized interface for multi-server management.</p> <p>Interface</p> <ul style="list-style-type: none"> • Web GUI interface • Mobile application • REST API <p>Usage and downloads</p> <p>https://pubs.lenovo.com/lxca/</p>
Lenovo XClarity Essentials toolset	<p>Portable and light toolset for server configuration, data collection, and firmware updates. Suitable both for single-server or multi-server management contexts.</p> <p>Interface</p> <ul style="list-style-type: none"> • OneCLI: CLI application • Bootable Media Creator: CLI application, GUI application • UpdateXpress: GUI application <p>Usage and downloads</p> <p>https://pubs.lenovo.com/lxce-overview/</p>

Options	Description
Lenovo XClarity Provisioning Manager	<p>UEFI-based embedded GUI tool on a single server that can simplify management tasks.</p> <p>Interface</p> <ul style="list-style-type: none"> • Web interface (BMC remote access) • GUI application <p>Usage and downloads</p> <p>https://pubs.lenovo.com/lxpm-overview/</p> <p>Important: Lenovo XClarity Provisioning Manager (LXPM) supported version varies by product. All versions of Lenovo XClarity Provisioning Manager are referred to as Lenovo XClarity Provisioning Manager and LXPM in this document, unless specified otherwise. To see the LXPM version supported by your server, go to https://pubs.lenovo.com/lxpm-overview/.</p>
Lenovo XClarity Integrator	<p>Series of applications that integrate the management and monitoring functionalities of the Lenovo physical servers with the software used in a certain deployment infrastructure, such as VMware vCenter, Microsoft Admin Center, or Microsoft System Center while delivering additional workload resiliency.</p> <p>Interface</p> <ul style="list-style-type: none"> • GUI application <p>Usage and downloads</p> <p>https://pubs.lenovo.com/lxci-overview/</p>
Lenovo XClarity Energy Manager	<p>Application that can manage and monitor server power and temperature.</p> <p>Interface</p> <ul style="list-style-type: none"> • Web GUI Interface <p>Usage and downloads</p> <p>https://datacentersupport.lenovo.com/solutions/Invo-lxem</p>
Lenovo Capacity Planner	<p>Application that supports power consumption planning for a server or rack.</p> <p>Interface</p> <ul style="list-style-type: none"> • Web GUI Interface <p>Usage and downloads</p> <p>https://datacentersupport.lenovo.com/solutions/Invo-lcp</p>

Functions

Options		Functions						
		Multi-system mgmt	OS deployment	System configuration	Firmware updates ¹	Events/alert monitoring	Inventory/logs	Power mgmt
Lenovo XClarity Controller				√	√ ²	√	√ ⁴	
Lenovo XCC Logger Utility						√		
Lenovo XClarity Administrator		√	√	√	√ ²	√	√ ⁴	
Lenovo XClarity Essentials toolset	OneCLI	√		√	√ ²	√	√	
	Bootable Media Creator			√	√ ²		√ ⁴	
	UpdateXpress			√	√ ²			
Lenovo XClarity Provisioning Manager			√	√	√ ³		√ ⁵	
Lenovo XClarity Integrator		√		√	√	√	√	√ ⁶
Lenovo XClarity Energy Manager		√				√		√
Lenovo Capacity Planner								√ ⁷

Notes:

1. Most options can be updated through the Lenovo tools. Some options, such as GPU firmware or Omni-Path firmware require the use of supplier tools.
2. The server UEFI settings for option ROM must be set to **Auto** or **UEFI** to update firmware using Lenovo XClarity Administrator, Lenovo XClarity Essentials, or Lenovo XClarity Controller.
3. Firmware updates are limited to Lenovo XClarity Provisioning Manager, Lenovo XClarity Controller, and UEFI updates only. Firmware updates for optional devices, such as adapters, are not supported.
4. The server UEFI settings for option ROM must be set to **Auto** or **UEFI** for detailed adapter card information, such as model name and firmware levels, to be displayed in Lenovo XClarity Administrator, Lenovo XClarity Controller, or Lenovo XClarity Essentials.
5. Limited inventory.
6. Power management function is supported only by Lenovo XClarity Integrator for VMware vCenter.
7. It is highly recommended that you check the power summary data for your server using Lenovo Capacity Planner before purchasing any new parts.

Chapter 2. Server components

This section contains information about each of the components associated with the server.

Front view

This section contains information about the controls, LEDs, and connectors on the front of the server.

The front view of ThinkEdge SE360 V2 varies by model. Refer to the following information for front view identification:

- “Front view with 1GbE I/O module” on page 21
- “Front view with 10/25GbE I/O module” on page 22
- “Front I/O fillers” on page 24

Note: All the connector numbers in this topic are listed from left to right.

Front view with 1GbE I/O module

Note: Depending on the model, your server might look slightly different from the illustration.

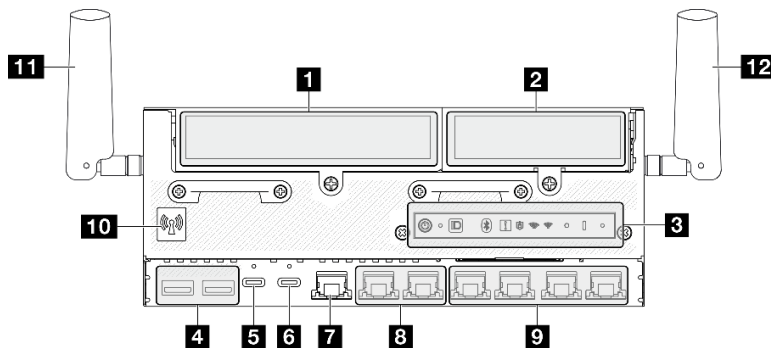


Figure 2. Front view with 1GbE I/O module

Table 4. Components on the front view with 1GbE I/O module

1 “Left wing of riser assembly” on page 22	7 “XCC system management port (10/100/1000 Mbps RJ-45)” on page 23
2 “Right wing of riser assembly” on page 22	8 “2.5GbE RJ-45 connectors (LAN 1 and 2)” on page 23
3 “Front operator panel” on page 23	9 “1GbE RJ-45 connectors (LAN 3 to 6)” on page 23 LAN 6 with shared-NIC feature for Lenovo XClarity Controller
4 “USB 3.2 Gen 1 (5 Gbps) Type-A connectors (USB 1 and 2)” on page 23	10 “Bluetooth antenna or Bluetooth antenna filler” on page 23 For the models without wireless module, install the Bluetooth antenna filler to the corresponding slot for proper operation.
5 “USB 3.2 Gen 1 (5 Gbps) Type-C connector with display support (USB 3)” on page 23	11 “XCC WLAN antennas” on page 24
6 “USB 2.0 Type-C connector with Lenovo XClarity Controller management (USB 4)” on page 23	12 “x86 WLAN antennas” on page 24

Front view with 10/25GbE I/O module

Note: Depending on the model, your server might look slightly different from the illustration.

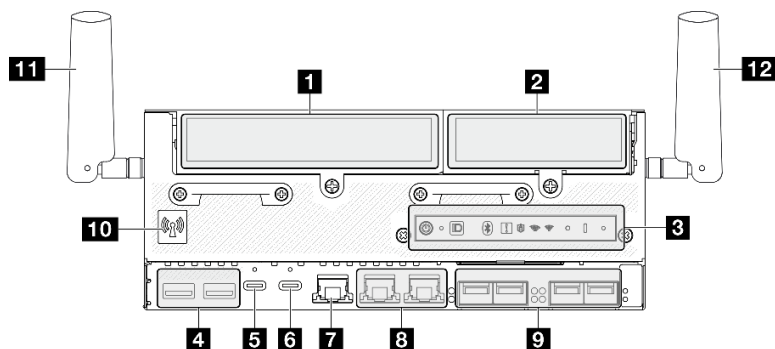


Figure 3. Front view with 10/25GbE I/O module

Table 5. Components on the front view with 10/25GbE I/O module

1 “Left wing of riser assembly” on page 22	7 “XCC system management port (10/100/1000 Mbps RJ-45)” on page 23
2 “Right wing of riser assembly” on page 22	8 “2.5GbE RJ-45 connectors (LAN 1 and 2)” on page 23
3 “Front operator panel” on page 23	9 “10/25GbE SFP28 connectors (LAN 3 to 6)” on page 23 LAN 6 with shared-NIC feature for Lenovo XClarity Controller
4 “USB 3.2 Gen 1 (5 Gbps) Type-A connectors (USB 1 and 2)” on page 23	10 “Bluetooth antenna or Bluetooth antenna filler” on page 23 For the models without wireless module, install the Bluetooth antenna filler to the corresponding slot for proper operation.
5 “USB 3.2 Gen 1 (5 Gbps) Type-C connector with display support (USB 3)” on page 23	11 “XCC WLAN antennas” on page 24
6 “USB 2.0 Type-C connector with Lenovo XClarity Controller management (USB 4)” on page 23	12 “x86 WLAN antennas” on page 24

1 2 Riser assembly

Depending on the model, the riser assembly supports one of the following configurations:

1 Left wing of riser assembly	2 Right wing of riser assembly
One PCIe Gen4 x16 FH/HL adapter	Four NVMe Gen4 x4 M.2 storage drives
Two 7mm hot-swap SATA/NVMe drives	Four NVMe Gen4 x4 M.2 storage drives
Four NVMe Gen4 x4 M.2 storage drives	Four NVMe Gen4 x4 M.2 storage drives
One PCIe Gen4 x16 FH/HL adapter	One PCIe Gen4 x16 HH/HL adapter
Two 7mm hot-swap SATA/NVMe drives	One PCIe Gen4 x16 HH/HL adapter
One PCIe Gen4 x16 HH/HL adapter + geotracking module	One PCIe Gen4 x16 HH/HL adapter
One PCIe Gen4 x16 HH/HL adapter + geotracking module	Four NVMe Gen4 x4 M.2 storage drives

See [“Slot and drive bay numbering” on page 33](#) to identify the slot and drive bay numbering of riser assembly.

3 Front operator panel

See *Front operator panel LEDs* in *User Guide* or *Hardware Maintenance Guide* for more information.

4 USB 3.2 Gen 1 (5 Gbps) Type-A connectors (USB 1 and 2)

Connect a USB device, such as a mouse, keyboard, or other devices, to either of these connectors.

5 USB 3.2 Gen 1 (5 Gbps) Type-C connector with display support (USB 3)

Connect a USB device, such as a mouse, keyboard, monitor, or other devices, to either of this connector. This connector supports display.

6 USB 2.0 Type-C connector with Lenovo XClarity Controller management (USB 4)

Connection to Lenovo XClarity Controller is primarily intended for users with a mobile device running the Lenovo XClarity Controller mobile application. When a mobile device is connected to this USB port, an Ethernet over USB connection is established between the mobile application running on the device and the Lenovo XClarity Controller.

Only one mode is supported:

- **BMC only mode**

In this mode, the USB port is always solely connected to Lenovo XClarity Controller.

7 XCC system management port (10/100/1000 Mbps RJ-45)

The server has a 1GbE RJ-45 connector dedicated to Lenovo XClarity Controller (XCC) functions. Through the system management port, you can access the Lenovo XClarity Controller directly by connecting your laptop to the management port using an Ethernet cable. Make sure that you modify the IP settings on the laptop so that it is on the same network as the server default settings. A dedicated management network provides additional security by physically separating the management network traffic from the production network.

See the following for more information:

- [“Set the network connection for the Lenovo XClarity Controller” on page 61](#)
- [“XCC system management port \(10/100/1000 Mbps RJ-45\) and LAN port LEDs” on page 44](#)

8 9 LAN ports (LAN 1 to 6)

Connect an Ethernet cable to either of these connectors for LAN connection. See [“XCC system management port \(10/100/1000 Mbps RJ-45\) and LAN port LEDs” on page 44](#) for more information.

LAN 6 supports shared-NIC feature for Lenovo XClarity Controller. This connector can be used both for operating system networking and for remote management.

Note: The transmission speed of SFP28 connectors could be 10 Gbps or 25 Gbps, depending on the processor selected. Processors with at least 16 cores support transmission speed of 25 Gbps.

10 Bluetooth antenna or Bluetooth antenna filler

Bluetooth antenna is an optional part, available for the models with wireless module. For the models without wireless module, install the Bluetooth antenna filler for proper operation.

11 XCC WLAN antennas

WLAN antennas are optional parts, available for the models with wireless module. Two antennas for XCC WLAN can be installed in ThinkEdge SE360 V2. The models without wireless module come with SMA fillers.

12 x86 WLAN antennas

WLAN antennas are optional parts, available for the models with wireless module. Two antennas for x86 WLAN can be installed in ThinkEdge SE360 V2. The models without wireless module come with SMA fillers.

Front I/O fillers

Install the I/O fillers when the connectors are not used. The connectors could be damaged without proper protection of the fillers.

Note: Depending on the model, your server might look slightly different from the illustration.

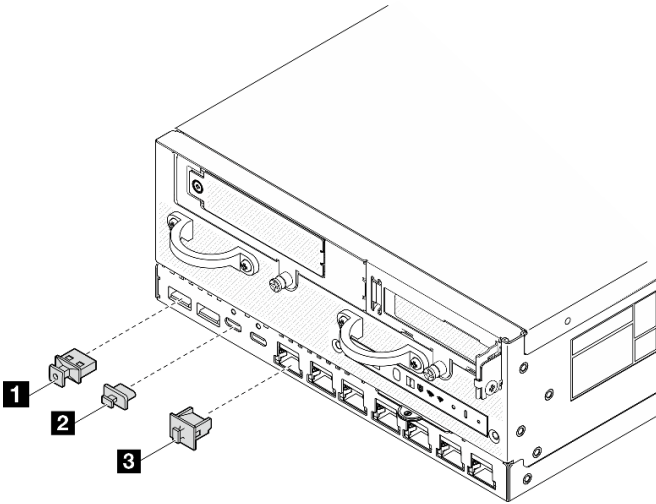


Figure 4. Front I/O fillers for 1GbE I/O module

1 USB Type-A filler (x2)	3 RJ-45 filler (x7)
2 USB Type-C filler (x2)	

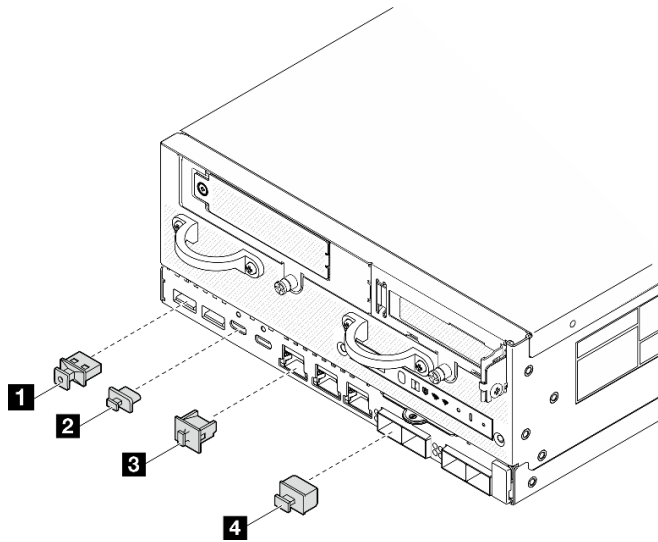


Figure 5. Front I/O fillers for 10/25GbE I/O module

1 USB Type-A filler (x2)	3 RJ-45 filler (x3)
2 USB Type-C filler (x2)	4 SFP28 filler (x4)

Rear view

This section contains information about the LEDs and connectors on the rear of the server.

Note: Depending on the model, your server might look slightly different from the illustration.

- [“Rear view with DC PIB module” on page 25](#)
- [“Rear view with AC PIB module” on page 27](#)
- [“Rear I/O filler” on page 28](#)

Rear view with DC PIB module

Components

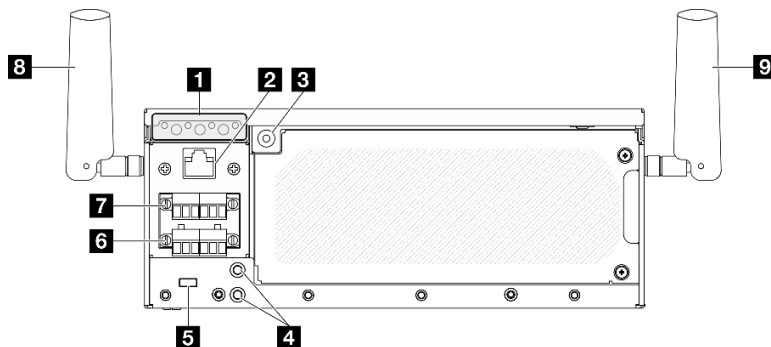


Figure 6. Rear view with DC PIB module

Table 6. Components on the rear view

1 "Rear operator panel" on page 26	6 "Power connector 1" on page 26
2 "RJ-45 RS-232 serial console connector for OS/BIOS or XCC" on page 26	7 "Power connector 2" on page 26
3 "PMB status LED" on page 26	8 "x86 WLAN antennas" on page 27
4 "Threaded studs for grounding" on page 26	9 "XCC WLAN antennas" on page 27
5 "Lock hole for Kensington lock" on page 26	

1 Rear operator panel

See *Rear operator panel LEDs* in *User Guide* or *Hardware Maintenance Guide* for more information.

2 RJ-45 RS-232 serial console connector for OS/BIOS or XCC

Connect an external RJ-45 serial COMM console cable to this RS-232 serial console with RJ-45 connector.

3 PMB status LED

See *PMB status LED* in *User Guide* or *Hardware Maintenance Guide* for more information.

4 Threaded studs for grounding

Connect the grounding wires to these lugs.

5 Lock hole for Kensington lock

Install Kensington lock in this lock hole to secure the server.

6 7 Power connectors

Connect DC power source to these connectors. Make sure the power source is connected properly.

To connect DC power source with ThinkEdge SE360 V2 DC Terminal Block Cable, see ["DC terminal block cable" on page 53](#) for more information.

If applicable, before connecting DC power source to the server, remove the header from the corresponding power connector.

1. Loosen the two captive screws that secure the header; then, remove the header from the power connector.

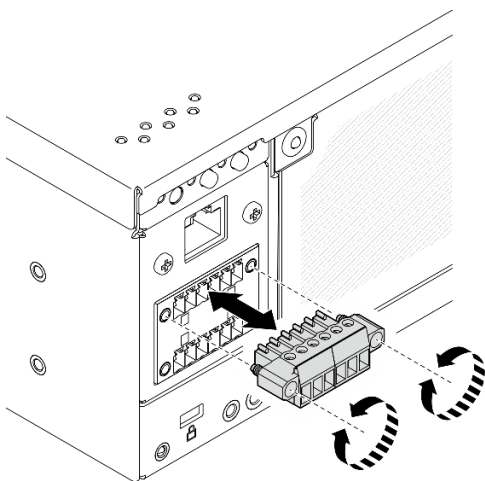


Figure 7. Removing the header

2. Store the header for future use.

Note: Install the header when the power connector is not used. The connector could be damaged without proper protection.

8 x86 WLAN antennas

WLAN antennas are optional parts, available for the models with wireless module. Two antennas for x86 WLAN can be installed in ThinkEdge SE360 V2. The models without wireless module come with SMA fillers.

9 XCC WLAN antennas

WLAN antennas are optional parts, available for the models with wireless module. Two antennas for XCC WLAN can be installed in ThinkEdge SE360 V2. The models without wireless module come with SMA fillers.

Rear view with AC PIB module

Components

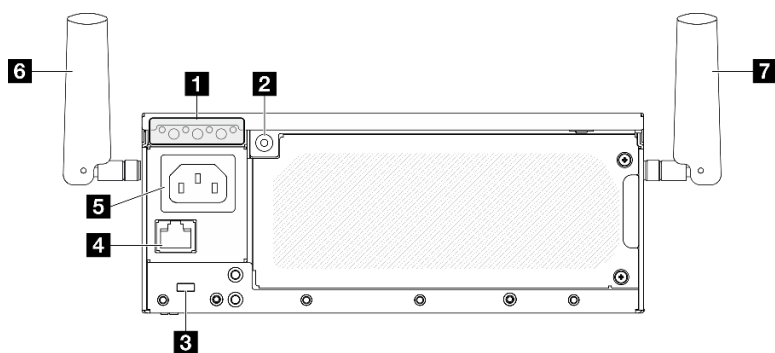


Figure 8. Rear view with AC PIB module

Table 7. Components on the rear view

1 "Rear operator panel" on page 28	5 "Power connector" on page 28
2 "PMB status LED" on page 28	6 "x86 WLAN antennas" on page 28

Table 7. Components on the rear view (continued)

3 “Lock hole for Kensington lock” on page 28	7 “XCC WLAN antennas” on page 28
4 “RJ-45 RS-232 serial console connector for OS/BIOS or XCC” on page 28	

1 Rear operator panel

See *Rear operator panel LEDs* in *User Guide* or *Hardware Maintenance Guide* for more information.

2 PMB status LED

See *PMB status LED* in *User Guide* or *Hardware Maintenance Guide* for more information.

3 Lock hole for Kensington lock

Install Kensington lock in this lock hole to secure the server.

4 RJ-45 RS-232 serial console connector for OS/BIOS or XCC

Connect an external RJ-45 serial COMM console cable to this RS-232 serial console with RJ-45 connector.

5 Power connector

Connect AC power source to this connector. Make sure the power source is connected properly.

6 x86 WLAN antennas

WLAN antennas are optional parts, available for the models with wireless module. Two antennas for x86 WLAN can be installed in ThinkEdge SE360 V2. The models without wireless module come with SMA fillers.

7 XCC WLAN antennas

WLAN antennas are optional parts, available for the models with wireless module. Two antennas for XCC WLAN can be installed in ThinkEdge SE360 V2. The models without wireless module come with SMA fillers.

Rear I/O filler

Install the I/O fillers when the connectors are not used. The connectors could be damaged without proper protection of the fillers.

Note: Depending on the model, your server might look slightly different from the illustration.

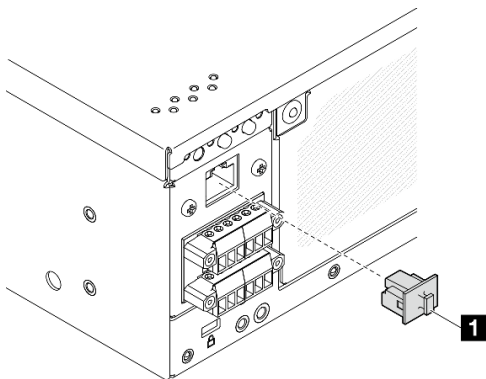


Figure 9. Rear I/O filler for DC PIB module

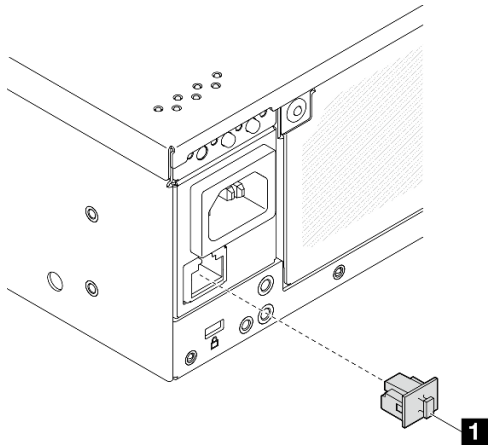


Figure 10. Rear I/O filler for AC PIB module

1 RJ-45 filler (x1)

Top view

This section contains the components visible from the top of the server.

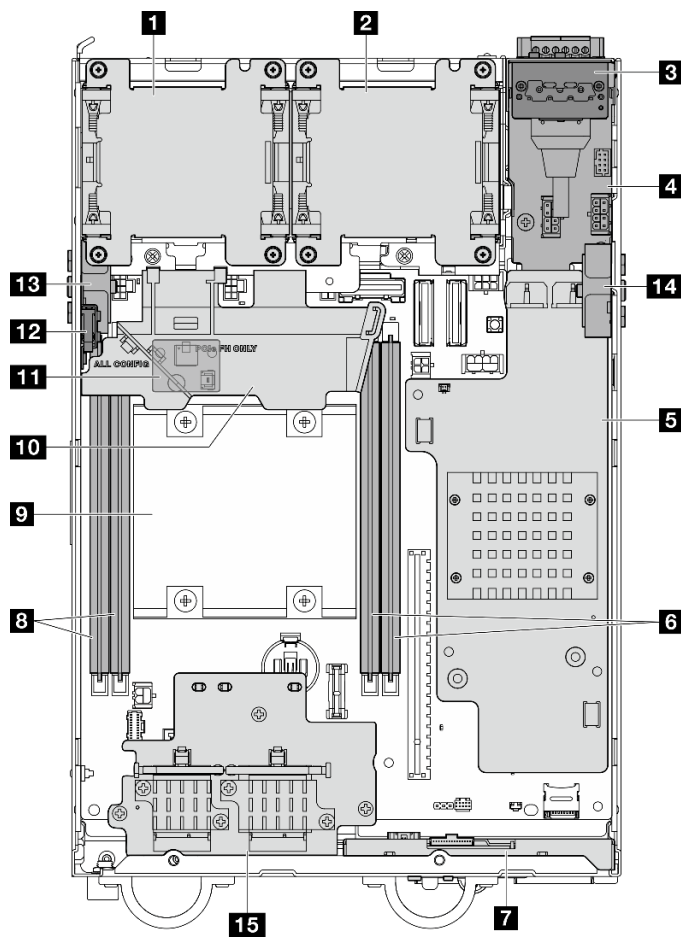


Figure 11. Top view

Note: Depending on the model, your server might look slightly different from the illustration.

Table 8. Components visible from the top view

1 Fan 1	9 Processor
2 Fan 2	10 Processor air baffle
3 Rear operator panel	11 Air flow sensor board (on the bottom side of processor air baffle) (Optional)
4 Power input board (PIB) module	12 Top intrusion switch
5 DC power module board (DC PMB) or internal power supply unit (AC PMB)	13 Processor side SMA assembly or SMA filler
6 DIMM slot 3 and 4	14 PMB side SMA assembly or SMA filler
7 Front operator panel	15 Wireless adapter (Optional)
8 DIMM slot 1 and 2	

Bottom view

This section contains the components visible from the bottom of the server.

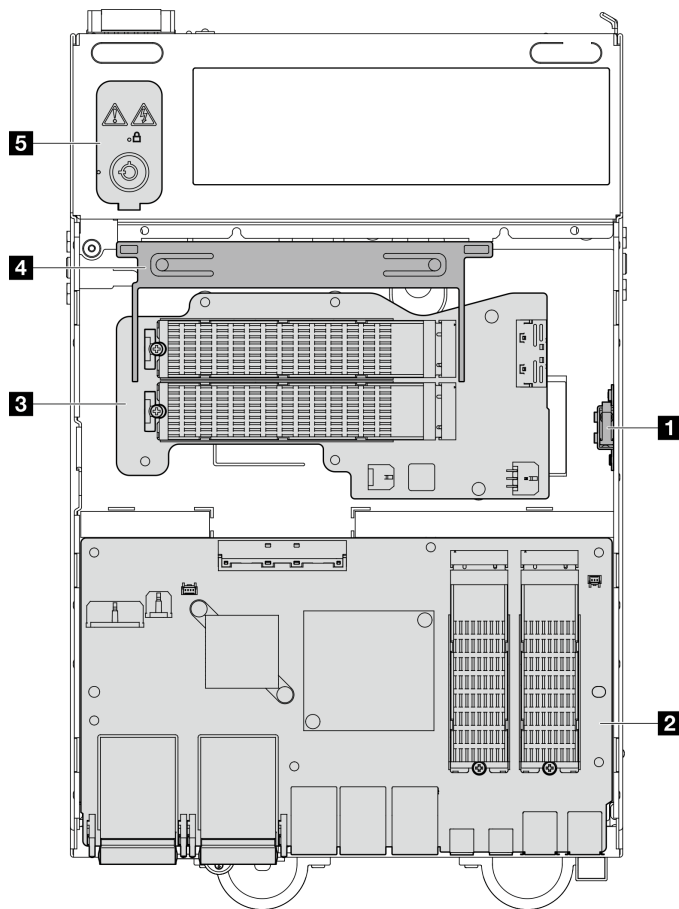


Figure 12. Bottom view

Note: Depending on the model, your server might look slightly different from the illustration.

Table 9. Components visible from the bottom view

1 Bottom intrusion switch	4 Bottom air baffle
2 I/O module board	5 System security keylock
3 Bottom M.2 cabled adapter (Optional)	

System-board layout

The illustrations in this section provide information about the connectors, switches, and jumpers that are available on the system board.

For more information about the LEDs that are available on the system board, see [“System-board LEDs” on page 42](#).

System-board connectors

The following illustration shows the internal connectors on the system board.

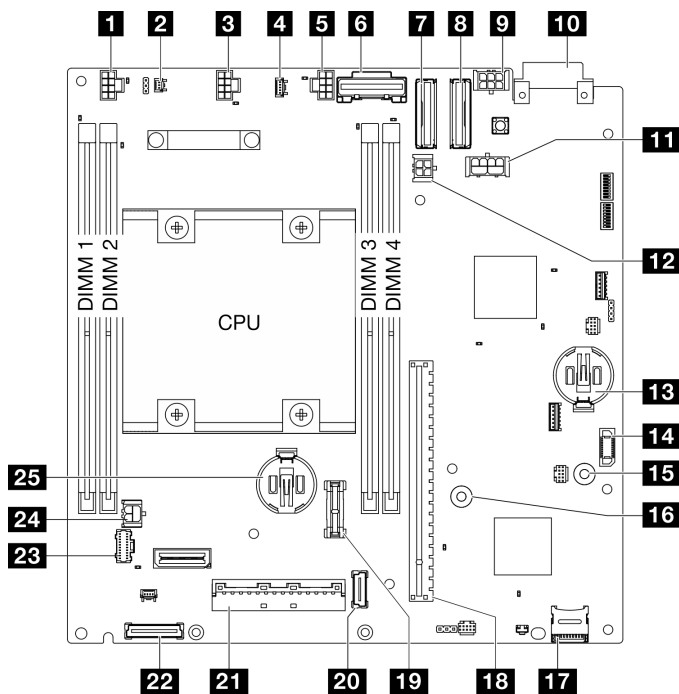


Figure 13. System-board connectors

Table 10. System-board connectors

1 Air flow switch connector	14 Power module board (PMB) connector
2 Intrusion switch connector	15 GND busbar for PMB
3 Fan 1 connector	16 P12V busbar for PMB
4 Air flow sensor board connector	17 MicroSD socket
5 Fan 2 connector	18 Riser slot
6 PCIe Gen 3 / SATA connector	19 TCM connector

Table 10. System-board connectors (continued)

7 PCIe Gen 4 MCIO 1 connector	20 Wireless adapter connector 1
8 PCIe Gen 4 MCIO 2 connector	21 I/O module board signal connector
9 M.2 cabled adapter / PCIe cabled riser card power connector	22 Wireless adapter connector 2
10 PIB connector	23 Operator panel connector
11 GPU power connector	24 I/O module board power connector
12 M.2 cabled adapter power connector	25 3V security battery (CR2032)
13 3V system battery (CR2032)	

System-board switches

The following illustration shows the location of the switches on the system board.

Note: If there is a clear protective sticker on the top of the switch blocks, you must remove and discard it to access the switches.

Important:

- Before you change any switch settings or move any jumpers, turn off the server; then, disconnect all power cords and external cables. Review the following information:
 - https://pubs.lenovo.com/safety_documentation/
 - “Installation Guidelines”, “Handling static sensitive devices”, and “Power off the server ” in *User Guide* or *Hardware Maintenance Guide*.
- Any system-board switch or jumper block that is not shown in the illustrations in this document are reserved.

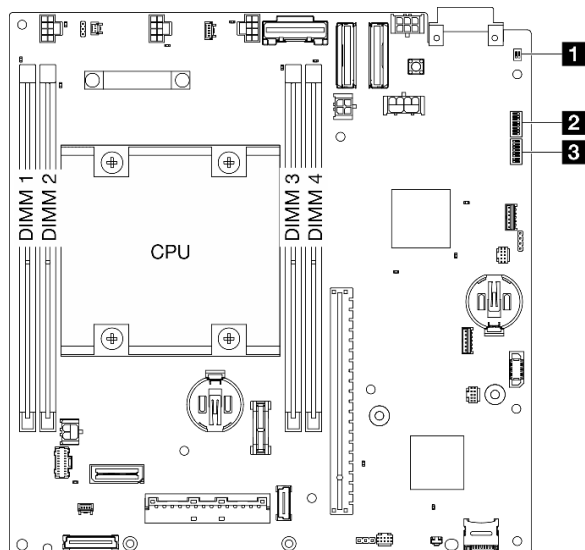


Figure 14. System-board switches

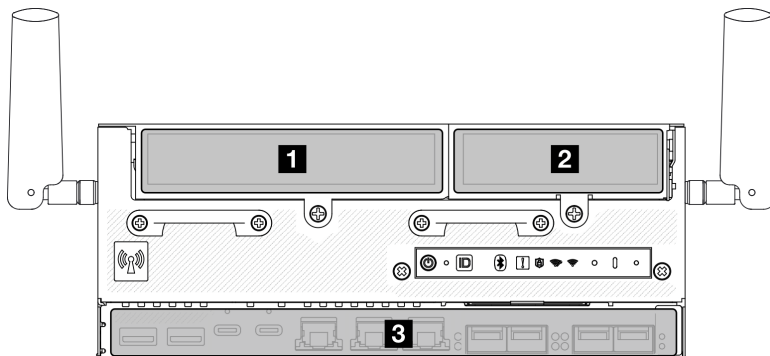
The following table describes the functions of the switches on the system board.

Table 11. System-board switches

Switches block	Switch number	Switch name	Usage description	
			On	Off
1 SW22	1	Serial function selection	Accesses XCC via the serial console connector.	Normal (default)
	2	(Reserved)	(Reserved)	Normal (default)
2 SW1	1	XClarity Controller boot backup	The node boots by using a backup of the XCC firmware	Normal (default)
	2	CMOS clear	Clears the real-time clock (RTC) registry	Normal (default)
	3	Password override	Overrides the power-on password	Normal (default)
	4	(Reserved)	(Reserved)	Normal (default)
	5	(Reserved)	(Reserved)	Normal (default)
	6	Machine Engine (ME) recovery override	ME boots to recovery	Normal (default)
	7	(Reserved)	(Reserved)	Normal (default)
	8	(Reserved)	(Reserved)	Normal (default)
3 SW18	1	Machine Engine (ME) firmware security override	Enables ME update mode	Normal (default)
	2	XCC force update	Enables XCC force update	Normal (default)
	3	FPGA power permission override	Ignores Power Permission and allows system to power-on	Normal (default)
	4	Force XCC reset	Forces XCC to reset	Normal (default)
	5	Force XCC CPU reset	Forces XCC and CPU to reset	Normal (default)
	6	(Reserved)	(Reserved)	Normal (default)
	7	Force FPGA reset	Forces FPGA to reset	Normal (default)
	8	(Reserved)	(Reserved)	Normal (default)

Slot and drive bay numbering

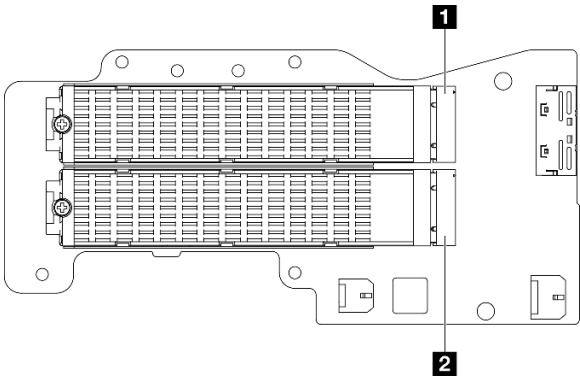
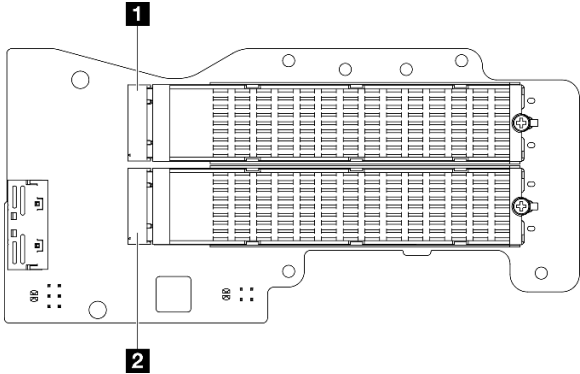
This section contains slot and drive bay numbering information of SE360 V2.



Slot and drive bay numbering

1 Left wing of riser assembly	2 Right wing of riser assembly
Supports one of the following: <ul style="list-style-type: none"> • PCIe Slot 3 • “Slot 3 to 6 / M.2 Bay 2 to 5” on page 34 • “Bay 0, 1” on page 34 	Supports one of the following: <ul style="list-style-type: none"> • PCIe Slot 7 • “Slot 7 to 10 / M.2 Bay 6 to 9” on page 35
3 Bottom layer of the node	
(Optional) “Bottom M.2 cabled adapter: Slot 11, 12 / M.2 Bay 10, 11” on page 36	
“I/O module board: Slot 1, 2 / M.2 Bay 0, 1” on page 36	

Slot 3 to 6 / M.2 Bay 2 to 5 on M.2 cabled adapter

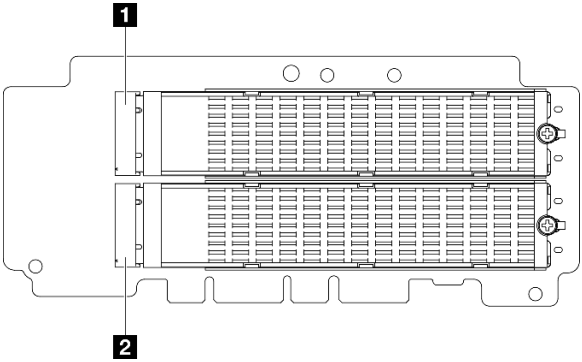
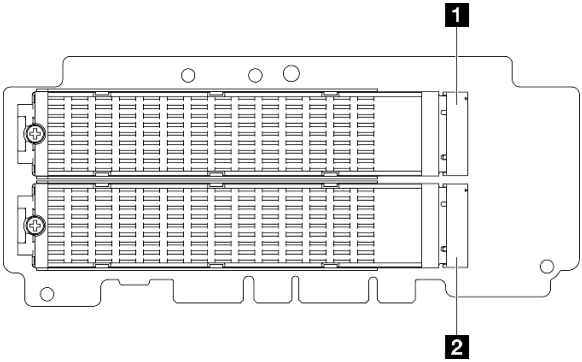
Top side of M.2 cabled adapter	
	
1 Slot 3 / M.2 Bay 2	
2 Slot 5 / M.2 Bay 4	
Bottom side of M.2 cabled adapter	
	
1 Slot 4 / M.2 Bay 3	
2 Slot 6 / M.2 Bay 5	

Bay 0, 1

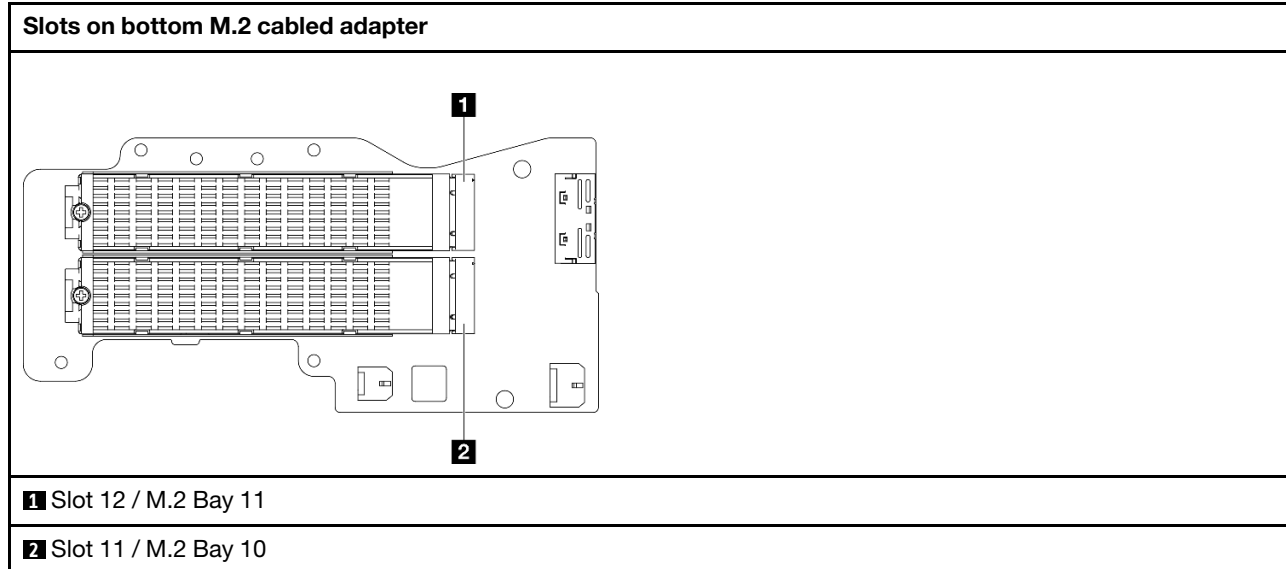
- 7mm drive Bay 0 and 1

- The upper bay: Bay 0
- The lower bay: Bay 1

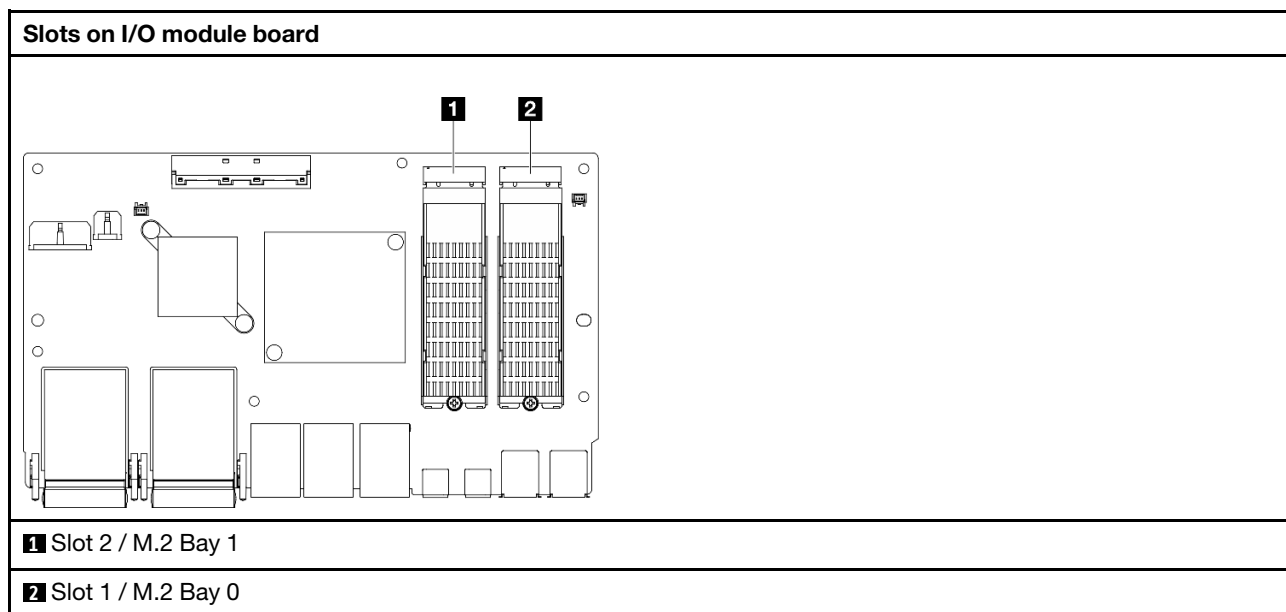
Slot 7 to 10 / M.2 Bay 6 to 9 on M.2 adapter

Top side of M.2 adapter	
	
1	Slot 9 / M.2 Bay 8
2	Slot 7 / M.2 Bay 6
Bottom side of M.2 adapter	
	
1	Slot 10 / M.2 Bay 9
2	Slot 8 / M.2 Bay 7

Slot 11, 12 / M.2 Bay 10, 11 on bottom M.2 cabled adapter



Slot 1, 2 / M.2 Bay 0, 1 on I/O module board



System LEDs

See the following section for information on available system LEDs.

For more information, refer to [“Troubleshooting by system LEDs” on page 36](#).

Troubleshooting by system LEDs

See the following section for information on available system LEDs.

Drive LEDs

This topic provides information on drive LEDs.

The following table describes the problems that are indicated by drive activity LED and drive status LED.

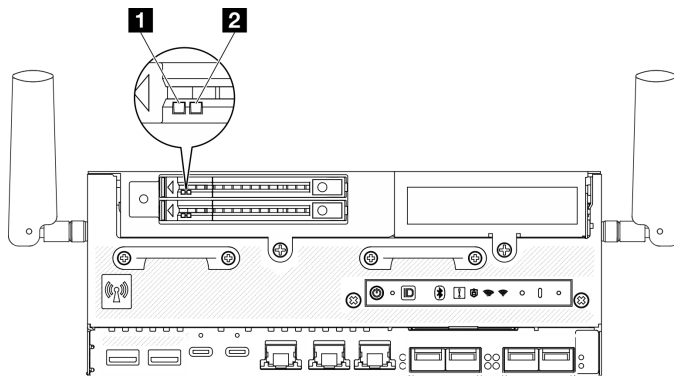


Figure 15. Drive LEDs

LED	Description
1 Drive activity LED (green)	Each hot-swap drive comes with an activity LED. When this LED is flashing, it indicates that the drive is in use.
2 Drive status LED (yellow)	The drive status LED indicates the following status: <ul style="list-style-type: none"> The LED is lit: the drive has failed. The LED is flashing slowly (once per second): the drive is being rebuilt. The LED is flashing rapidly (three times per second): the drive is being identified.

Front operator panel LEDs

The front operator panel of the server provides controls and LEDs.

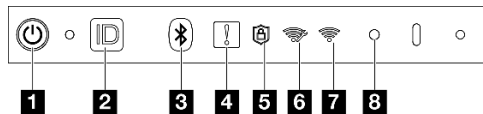


Figure 16. Front operator panel LEDs

Table 12. Front operator panel LEDs

1 “Power button with power status LED (green)” on page 37	5 “Security LED (green)” on page 38
2 “System ID button with system ID LED (blue)” on page 38	6 “XCC WLAN activity LED (green)” on page 39
3 “Bluetooth button with LED (blue)” on page 38	7 “x86 WLAN activity LED (green)” on page 39
4 “System Error LED (yellow)” on page 38	8 “NMI button” on page 39

1 Power button with power status LED (green)

You can press the power button to power on the server when you finish setting up the server. You also can hold the power button for several seconds to power off the server if you cannot shut down the server from the operating system. The states of the power LED are as follows:

Status	Color	Description
Off	None	No power supply is properly installed, or the LED itself has failed.
Flashing rapidly (four times per second)	Green	The server is turned off and is not ready to be turned on. The power button is disabled. This will last approximately 5 to 10 seconds.
Flashing slowly (once per second)	Green	The server is turned off and is ready to be turned on. You can press the power button to turn on the server.
Lit	Green	The server is turned on.

2 System ID button with system ID LED (blue)

Use the system ID button and the blue system ID LED to visually locate the server. Each time you press the system ID button, the state of the system ID LED changes. The LED can be changed to on, blinking, or off. You can also use the Lenovo XClarity Controller or a remote management program to change the state of the system ID LED to assist in visually locating the server among other servers.

3 Bluetooth button with LED (blue)

Press the Bluetooth button to enable Bluetooth. After the Bluetooth button is pressed, if SE360 V2 does not pair with any Bluetooth devices within 10 minutes, Bluetooth will be disabled automatically. Identify the status of Bluetooth with the Bluetooth LED.

Status	Color	Description
On	Blue	Bluetooth is enabled.
Off	None	Bluetooth is disabled, or the server does not come with Bluetooth.

4 System Error LED (yellow)

The system error LED helps you to determine if there are any system errors.

Status	Color	Description	Action
On	Yellow	<p>An error has been detected on the server. Causes might include one or more of the following errors:</p> <ul style="list-style-type: none"> The temperature of the server reached the non-critical temperature threshold. The voltage of the server reached the non-critical voltage threshold. A fan has been detected to be running at low speed. The power supply has a critical error. The power supply is not connected to the power. 	Check the Event log to determine the exact cause of the error.
Off	None	The server is off or the server is on and is working correctly.	None.

5 Security LED (green)

The states of security LED are as following:

Solid on: The server is operating with security feature enabled.

Blinking: The server is in System Lockdown Mode. Activate or unlock the system for operation. See [“Activate or unlock the system” on page 69](#).

Off: No security feature is enabled on the server.

6 XCC WLAN activity LED (green)

The WLAN activity LED helps you identify the status of WLAN connection.

Status	Color	Description
On	Green	There is XCC WLAN connection.
Off	None	There is no XCC WLAN connection, or the server does not come with wireless module.

7 x86 WLAN activity LED (green)

The WLAN activity LED helps you identify the status of WLAN connection.

Status	Color	Description
On	Green	The x86 WLAN is operating properly.
Off	None	The x86 WLAN RF is turned off, or the x86 WLAN is not operating properly, or the server does not come with wireless module.

8 NMI button

Press this button to force a nonmaskable interrupt to the processor. You might have to use a pen or the end of a straightened paper clip to press the button. You can also use it to force a blue-screen memory dump. Use this button only when you are directed to do so by Lenovo Support.

PMB status LED

This topic provides information about the PMB status LED and corresponding action suggestions.

Note: Depending on the model, your server might look slightly different from the illustration.

The following minimal configuration is required for the server to start:

- One DRAM memory module in DIMM slot 1
- Depending on the model, one of the following power source:
 - One 300W external power adapter
 - AC power source input
 - DC power source input
- One 2280 NVMe M.2 drive in Slot 1 on the I/O module board
- Two system fans

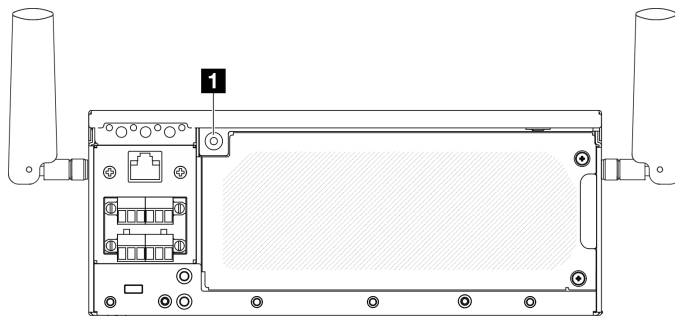


Figure 17. PMB status LED

1 PMB status LED

Status	Color	Description	Action
On	Green	The source power is delivered to the system board normally. The server is or is ready to be powered on.	None.
Off	None	The source power is not delivered to the system board normally: <ul style="list-style-type: none"> The power source may not be connected or working properly. 	<ul style="list-style-type: none"> Check if the external power cords are correctly connected to the server and to a functioning power source. Check to see if the connection of the cables between the power module board (PMB) and the power input board (PIB) module is stable. Replace the PMB or the PIB module.

Rear operator panel LEDs

The rear operator panel of the server provides controls and LEDs.

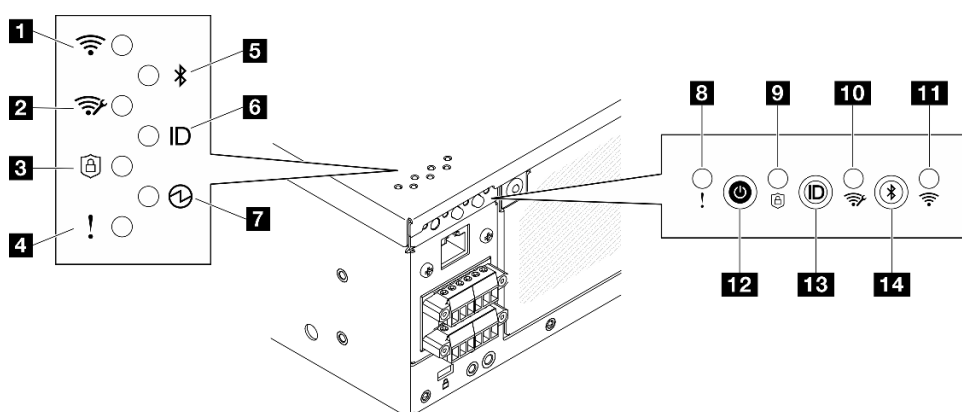


Figure 18. Rear operator panel LEDs

Table 13. Rear operator panel LEDs

1 "x86 WLAN activity LED (green)" on page 40	8 "System Error LED (yellow)" on page 41
2 "XCC WLAN activity LED (green)" on page 41	9 "Security LED (green)" on page 41
3 "Security LED (green)" on page 41	10 "XCC WLAN activity LED (green)" on page 41
4 "System Error LED (yellow)" on page 41	11 "x86 WLAN activity LED (green)" on page 40
5 "Bluetooth LED (blue)" on page 41	12 "Power button with power status LED (green)" on page 42
6 "System ID LED (blue)" on page 42	13 "System ID button with system ID LED (blue)" on page 42
7 "Power status LED (green)" on page 42	14 "Bluetooth button with LED (blue)" on page 41

1 11 x86 WLAN activity LED (green)

The WLAN activity LED helps you identify the status of WLAN connection.

Status	Color	Description
On	Green	The x86 WLAN is operating properly.
Off	None	The x86 WLAN RF is turned off, or the x86 WLAN is not operating properly, or the server does not come with wireless module.

2 10 XCC WLAN activity LED (green)

The WLAN activity LED helps you identify the status of WLAN connection.

Status	Color	Description
On	Green	There is XCC WLAN connection.
Off	None	The is no XCC WLAN connection, or the server does not come with wireless module.

3 9 Security LED (green)

The states of security LED are as following:

Solid on: The server is operating with security feature enabled.

Blinking: The server is in System Lockdown Mode. Activate or unlock the system for operation. See [“Activate or unlock the system” on page 69](#).

Off: No security feature is enabled on the server.

4 8 System Error LED (yellow)

The system error LED helps you to determine if there are any system errors.

Status	Color	Description	Action
On	Yellow	<p>An error has been detected on the server. Causes might include one or more of the following errors:</p> <ul style="list-style-type: none"> • The temperature of the server reached the non-critical temperature threshold. • The voltage of the server reached the non-critical voltage threshold. • A fan has been detected to be running at low speed. • The power supply has a critical error. • The power supply is not connected to the power. 	Check the Event log to determine the exact cause of the error.
Off	None	The server is off or the server is on and is working correctly.	None.

5 Bluetooth LED (blue) 14 Bluetooth button with LED (blue)

Press the Bluetooth button to enable Bluetooth. After the Bluetooth button is pressed, if SE360 V2 does not pair with any Bluetooth devices within 10 minutes, Bluetooth will be disabled automatically. Identify the status of Bluetooth with the Bluetooth LED.

Status	Color	Description
On	Blue	Bluetooth is enabled.
Off	None	Bluetooth is disabled, or the server does not come with Bluetooth.

6 System ID LED (blue) 13 System ID button with system ID LED (blue)

Use the system ID button and the blue system ID LED to visually locate the server. Each time you press the system ID button, the state of the system ID LED changes. The LED can be changed to on, blinking, or off. You can also use the Lenovo XClarity Controller or a remote management program to change the state of the system ID LED to assist in visually locating the server among other servers.

7 Power status LED (green) 12 Power button with power status LED (green)

You can press the power button to power on the server when you finish setting up the server. You also can hold the power button for several seconds to power off the server if you cannot shut down the server from the operating system. The states of the power LED are as follows:

Status	Color	Description
Off	None	No power supply is properly installed, or the LED itself has failed.
Flashing rapidly (four times per second)	Green	The server is turned off and is not ready to be turned on. The power button is disabled. This will last approximately 5 to 10 seconds.
Flashing slowly (once per second)	Green	The server is turned off and is ready to be turned on. You can press the power button to turn on the server.
Lit	Green	The server is turned on.

System-board LEDs

The following illustrations show the light-emitting diodes (LEDs) on the system board.

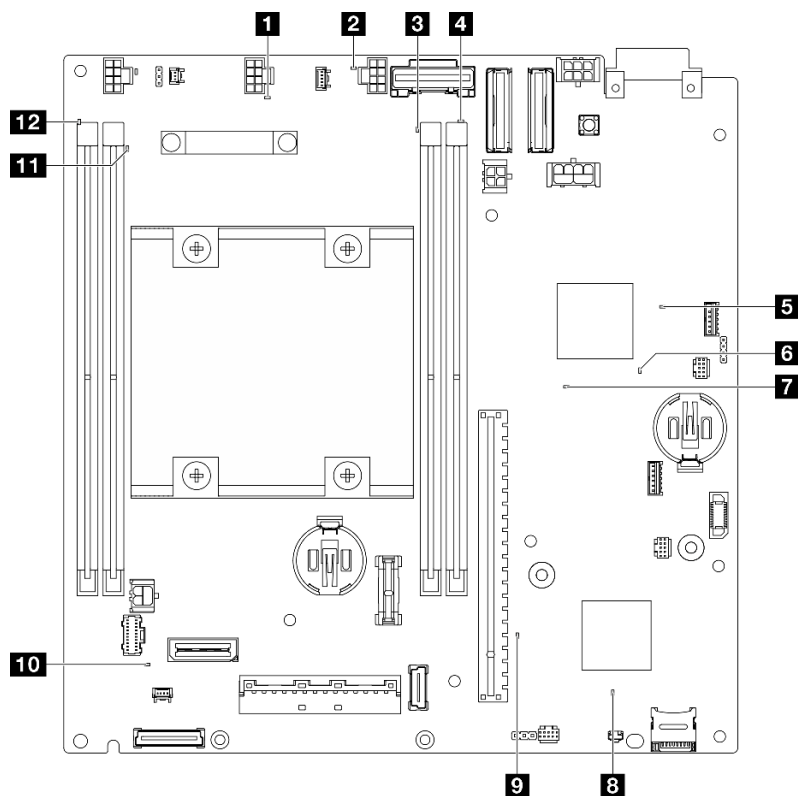


Figure 19. System-board LEDs

Table 14. System board LEDs description and actions

LED	Description and actions
1 Fan 1 error LED	LED on: an error has occurred to the fan the LED represents.
2 Fan 2 error LED	
3 DIMM 3 error LED	LED on: an error has occurred to the DIMM the LED represents.
4 DIMM 4 error LED	
5 FPGA power status LED (green)	<p>The FPGA power LED helps to identify different FPGA errors.</p> <ul style="list-style-type: none"> LED blinking rapidly (four times per second): The FPGA permission is delayed. LED blinking slowly (once per second): The FPGA is ready to power on. LED on: The FPGA power is on.
6 FPGA heartbeat LED (green)	<p>This LED indicates power-on and power-off sequencing.</p> <ul style="list-style-type: none"> LED blinking: the system is functioning properly, and no action is necessary. LED not blinking: replace the system board (trained technician only). See “System board replacement” in <i>User Guide</i> or <i>Hardware Maintenance Guide</i>.

Table 14. System board LEDs description and actions (continued)

LED	Description and actions
7 System power LED	<p>The states of the system power LED are as follows:</p> <ul style="list-style-type: none"> • Off: No power supply is properly installed, or the LED itself has failed. • Flashing rapidly (four times per second): The server is turned off and is not ready to be turned on. The power-control button is disabled. This will last approximately 5 to 10 seconds. • Flashing slowly (once per second): The server is turned off and is ready to be turned on. Press the power-control button to turn on the server. • On: The server is turned on.
8 XCC status LED	<p>The states of the XCC status LED are as follows:</p> <ul style="list-style-type: none"> • On: XCC is alive. • Off: XCC is not ready or not alive. The LED is in this state when the server is first connected to the power source. It does not turn on until the SSP (Synchronous Serial Port) is ready.
9 XCC heartbeat LED (green)	<p>This LED indicates the XCC heartbeat and boot process:</p> <ul style="list-style-type: none"> • LED blinking rapidly: XCC code is in the loading process. • LED going off momentarily and then starts blinking slowly: XCC is fully operational. You can now press the power-control button to power on the server.
10 System error LED (yellow)	<p>LED on: an error has occurred. Complete the following steps:</p> <ul style="list-style-type: none"> • Check the identification LED and check log LED and follow the instructions. • Check the Lenovo XClarity Controller event log and the system error log for information about the error. • Save the log if necessary, and clear the log afterwards.
11 DIMM 2 error LED 12 DIMM 1 error LED	<p>LED on: an error has occurred to the DIMM the LED represents.</p>

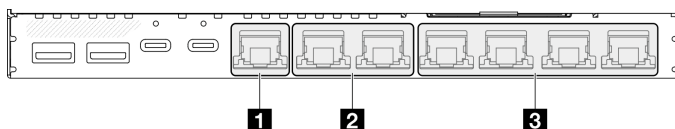
XCC system management port (10/100/1000 Mbps RJ-45) and LAN port LEDs

This topic provides information on LEDs of XCC system management port (10/100/1000 Mbps RJ-45) and LAN ports.

The LAN ports of ThinkEdge SE360 V2 varies by model. Refer to the following information to identify XCC system management port (10/100/1000 Mbps RJ-45) and LAN port LEDs:

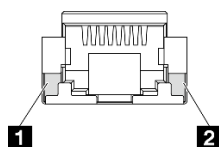
- [“LAN port LEDs of 1GbE I/O module board” on page 44](#)
- [“LAN port LEDs of 10/25GbE I/O module board” on page 46](#)

LAN port LEDs of 1GbE I/O module board



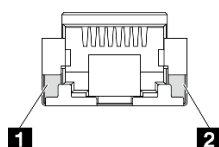
1 “XCC system management port (10/100/1000 Mbps RJ-45) LEDs” on page 45	3 “1GbE RJ-45 LAN port link and activity LED” on page 46 (LAN 3 to 6)
2 “2.5GbE RJ-45 LAN port link and activity LED” on page 45 (LAN 1 and 2)	

1 XCC system management port (10/100/1000 Mbps RJ-45) LEDs



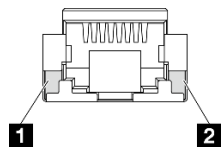
LED	Description
1 XCC system management port (10/100/1000 Mbps RJ-45) activity LED	Use this green LED to distinguish the network activity status: <ul style="list-style-type: none"> • Off: The server is disconnected from a LAN. • Green: The network is connected and active.
2 XCC system management port (10/100/1000 Mbps RJ-45) link LED	Use this green LED to distinguish the network connectivity status: <ul style="list-style-type: none"> • Off: The network link is disconnected. • Green: The network link is established.

2 2.5GbE RJ-45 LAN port link and activity LED



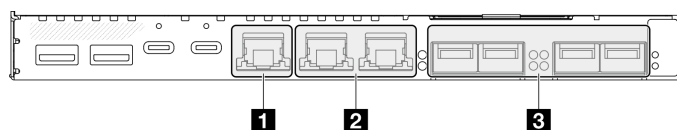
LED	Description
1 Network activity LED (green)	Blinking: The network is connected and active.
2 Network link LED (green)	<ul style="list-style-type: none"> • Off: One of the following status: <ul style="list-style-type: none"> – The network link is disconnected. – The network link is connected with LAN speed of 100Mbps. • On: The network link is connected with LAN speed of 2.5G/1Gbps.

3 1GbE RJ-45 LAN port link and activity LED



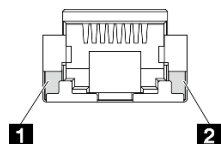
LED	Description
1 Network activity LED (green)	Blinking: The network is connected and active.
2 Network link LED (green)	<ul style="list-style-type: none"> Off: The network link is disconnected. On: The network link is connected.

LAN port LEDs of 10/25GbE I/O module board



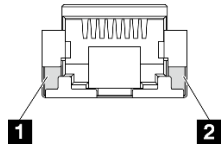
1 “XCC system management port (10/100/1000 Mbps RJ-45) LEDs” on page 46	3 “25GbE/10GbE SFP28 LAN port link and activity LED” on page 47 (LAN 3 to 6)
2 “2.5GbE RJ-45 LAN port link and activity LED” on page 47 (LAN 1 and 2)	

1 XCC system management port (10/100/1000 Mbps RJ-45) LEDs



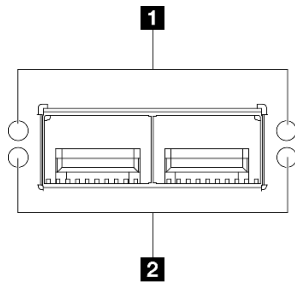
LED	Description
1 XCC system management port (10/100/1000 Mbps RJ-45) activity LED	Use this green LED to distinguish the network activity status: <ul style="list-style-type: none"> Off: The server is disconnected from a LAN. Green: The network is connected and active.
2 XCC system management port (10/100/1000 Mbps RJ-45) link LED	Use this green LED to distinguish the network connectivity status: <ul style="list-style-type: none"> Off: The network link is disconnected. Green: The network link is established.

2 2.5GbE RJ-45 LAN port link and activity LED



LED	Description
1 Network activity LED (green)	Blinking: The network is connected and active.
2 Network link LED (green)	<ul style="list-style-type: none">• Off: One of the following status:<ul style="list-style-type: none">– The network link is disconnected.– The network link is connected with LAN speed of 100Mbps.• On: The network link is connected with LAN speed of 2.5G/1Gbps.

3 25GbE/10GbE SFP28 LAN port link and activity LED



LED	Color	Description
1 Network activity LED	Green	Blinking: The network is connected and active.
2 Network link LED	The color of the LED indicates the LAN speed. <ul style="list-style-type: none">• Yellow: 25G• Green: 10G	<ul style="list-style-type: none">• Off: The network link is disconnected.• On: The network link is connected.

Chapter 3. Parts list

Identify each of the components that is available for your server with the parts list.

For more information about ordering parts:

1. Go to <http://datacentersupport.lenovo.com> and navigate to the support page for your server.
2. Click **Parts**.
3. Enter the serial number to view a listing of parts for your server.

It is highly recommended that you check the power summary data for your server using Lenovo Capacity Planner before purchasing any new parts.

Note: Depending on the model, your server might look slightly different from the illustration.

The parts listed in the following table are identified as one of the following:

- **T1:** Tier 1 customer replaceable unit (CRU). Replacement of Tier 1 CRUs is your responsibility. If Lenovo installs a Tier 1 CRU at your request with no service agreement, you will be charged for the installation.
- **T2:** Tier 2 customer replaceable unit (CRU). You may install a Tier 2 CRU yourself or request Lenovo to install it, at no additional charge, under the type of warranty service that is designated for your server.
- **F:** Field replaceable unit (FRU). FRUs must be installed only by trained service technicians.
- **C:** Consumable and Structural parts. Purchase and replacement of consumable and structural parts (components, such as a filler or bezel) is your responsibility. If Lenovo acquires or installs a structural component at your request, you will be charged for the service.

Enclosure components

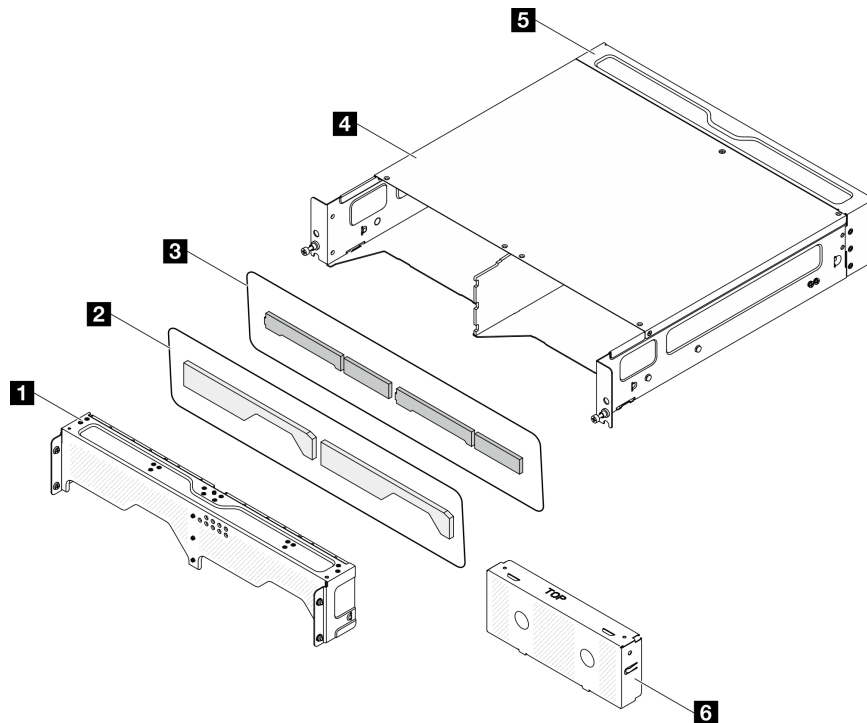


Figure 20. Enclosure components

Table 15. Enclosure parts list

Description	Type
<p>For more information about ordering parts:</p> <ol style="list-style-type: none"> 1. Go to http://datacentersupport.lenovo.com and navigate to the support page for your server. 2. Click Parts. 3. Enter the serial number to view a listing of parts for your server. 	
1 Front shipping bracket	T1
2 Networking dust filter	T1
3 Rack dust filter	T1
4 2U2N enclosure	F
5 Rear shipping bracket	T1
6 Node filler	C

Node components

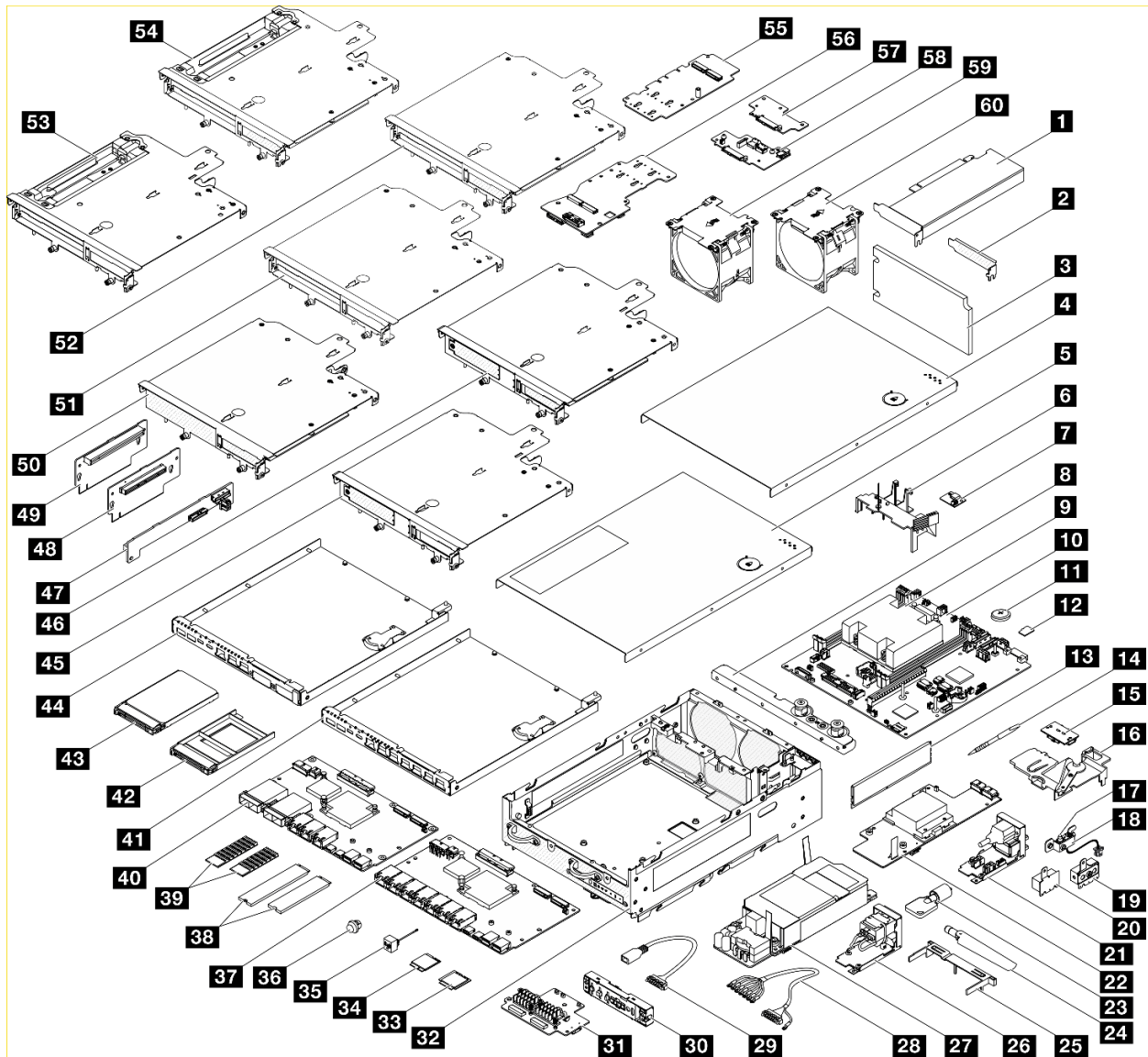


Figure 21. Node components

Table 16. Node parts list

Description	Type	Description	Type
For more information about ordering parts:			
1. Go to http://datacentersupport.lenovo.com and navigate to the support page for your server.			
2. Click Parts .			
3. Enter the serial number to view a listing of parts for your server.			
1 PCIe adapter	F	31 Wireless adapter	F
2 PCIe low-profile filler	C	32 Chassis	F
3 Rear dust filter	T1	33 x86 WLAN module	F
4 Top cover	T1	34 XCC WLAN and Bluetooth module	F

Table 16. Node parts list (continued)

Description	Type	Description	Type
5 Top cover (supporting geotracking)	T1	35 Bluetooth antenna with cable	F
6 Processor air baffle	F	36 Bluetooth antenna filler	C
7 Air flow sensor board	F	37 1GbE I/O module board	F
8 Enclosure bracket	T1	38 M.2 drive	T2
9 Processor heat sink	F	39 M.2 drive heat sink	F
10 System board	F	40 10/25GbE I/O module board	F
11 CMOS battery (CR2032)	C	41 Bottom cover for 1GbE I/O module	T1
12 MicroSD card	T1	42 7mm drive filler	C
13 Memory module	T2	43 7mm hot-swap drive	T1
14 Memory module tool	T1	44 Bottom cover for 10/25GbE I/O module	T1
15 Rear operator panel	F	45 Riser cage (PCIe+7mm drive)	F
16 PMB air baffle	T1	46 Riser cage (M.2+7mm drive)	F
17 Intrusion switch with cable	T2	47 PCIe cabled riser card	F
18 Intrusion switch bracket	T1	48 M.2 riser card	F
19 SMA bracket	F	49 PCIe riser card	F
20 SMA filler	C	50 Riser cage (M.2+M.2)	F
21 DC power input board (PIB) module	F	51 Riser cage (PCIe+PCIe)	F
22 DC power module board (PMB)	F	52 Riser cage (M.2+PCIe)	F
23 Kensington lock	T1	53 Riser cage (PCIe+PCIe+geotracking)	F
24 WLAN antenna	T2	54 Riser cage (M.2+PCIe+geotracking)	F
25 Bottom air baffle	T1	55 M.2 adapter	F
26 AC power input board (PIB) module	F	56 M.2 cabled adapter	F
27 Internal power supply unit (AC PMB)	F	57 7mm drive backplane 2	F
28 External DC terminal block cable	T1	58 7mm drive backplane 1	F
29 External 300W bridge cable	T1	59 Fan (rear-to-front airflow)	T2
30 Front operator panel	F	60 Fan (front-to-rear airflow)	T2

Power cords

Several power cords are available, depending on the country and region where the server is installed.

To view the power cords that are available for the server:

1. Go to:
<http://dcsc.lenovo.com/#/>
2. Click **Preconfigured Model** or **Configure to order**.
3. Enter the machine type and model for your server to display the configurator page.

4. Click **Power** → **Power Cables** to see all line cords.

Notes:

- For your safety, a power cord with a grounded attachment plug is provided to use with this product. To avoid electrical shock, always use the power cord and plug with a properly grounded outlet.
- Power cords for this product that are used in the United States and Canada are listed by Underwriter's Laboratories (UL) and certified by the Canadian Standards Association (CSA).
- For units intended to be operated at 115 volts: Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15 amperes, 125 volts.
- For units intended to be operated at 230 volts (U.S. use): Use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, Type SVT or SJT, three-conductor cord, a maximum of 15 feet in length and a tandem blade, grounding-type attachment plug rated 15 amperes, 250 volts.
- For units intended to be operated at 230 volts (outside the U.S.): Use a cord set with a grounding-type attachment plug. The cord set should have the appropriate safety approvals for the country in which the equipment will be installed.
- Power cords for a specific country or region are usually available only in that country or region.

DC terminal block cable

Connect the SE360 V2 node to DC power source with ThinkEdge SE360 V2 DC Terminal Block Cable.

- For more information of ThinkEdge SE360 V2 DC Terminal Block Cable, see <https://serverproven.lenovo.com>.
- Connect the terminal block cable to the power connector and threaded stud at the rear of node. See “[Rear view](#)” on page 25 to locate the power connector and threaded stud.
- For proper connection between DC power source and the terminal block cable, refer to the following information:

Table 17. ThinkEdge SE360 V2 DC Terminal Block Cable pin assignment

From	Label	Wire type	Wire color
Power connector	1	Positive	Red
Power connector	2	Positive	Red
Power connector	3	Positive	Red
Power connector	4	Negative	Black
Power connector	5	Negative	Black
Power connector	6	Negative	Black
Threaded stud	N/A	Grounding	Yellow/Green

Chapter 4. Unboxing and setup

Information in this section assists you on unboxing and setting up the server. When unboxing the server, check if the items in the package are correct, and learn where to find information of server serial number and Lenovo XClarity Controller access. Make sure to follow the instructions in [“Server setup checklist” on page 58](#) when setting up the server.

Server package contents

When you receive your server, verify that the shipment contains everything that you expected to receive.

The server package includes the following items:

- Server
- Rail installation kit*. Installation guide is provided in the package.
- Material box, including items such as power cords*, accessory kit, and printed documents.

Notes:

- Some of the items listed are available on select models only.
- Items marked with asterisk(*) are optional.

If any item is missing or damaged, contact your place of purchase. Ensure that you retain your proof of purchase and packing material. They might be required to receive warranty service.

Identify the server and access the Lenovo XClarity Controller

This section contains instruction on how to identify your server and where to find the Lenovo XClarity Controller access information.

Identifying your server

When you contact Lenovo for help, the machine type, model, and serial number information help support technicians to identify your server and provide faster service.

The illustration below shows the location of the ID label which contains the model number, machine type, and serial number of the server. You can also add other system information labels to the front of the server in the customer label spaces.

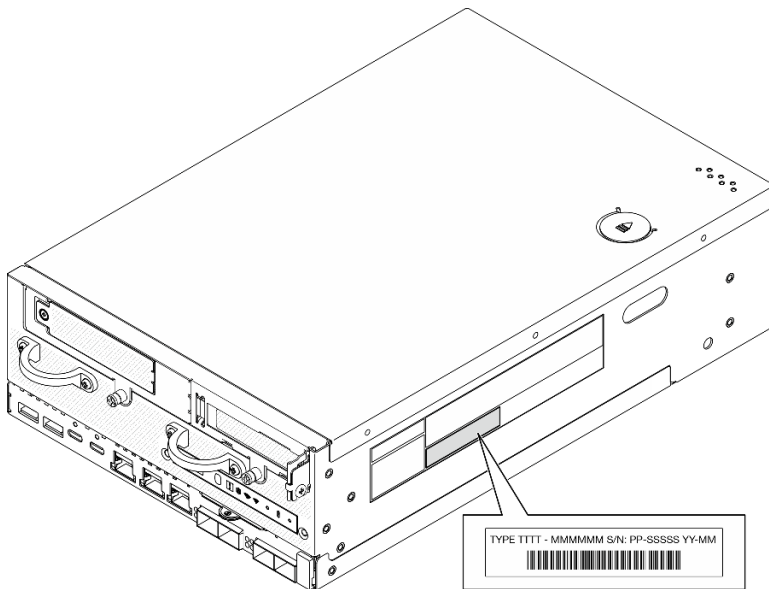


Figure 22. Location of the ID label

FCC ID and IC Certification information

For the models with wireless module, the FCC and IC Certification information is identified by a label located on the edge server as shown in the following illustration.

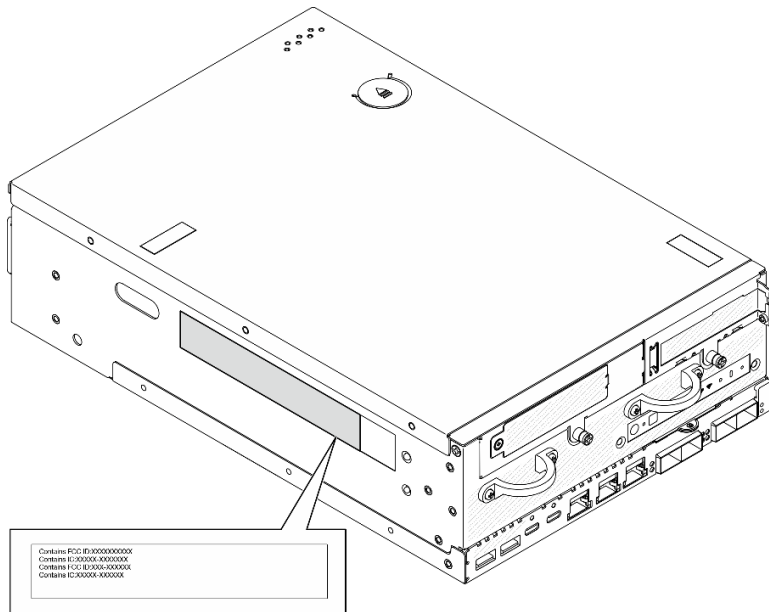


Figure 23. Location of the FCC ID and IC Certification label

Lenovo XClarity Controller network access label

In addition, the Lenovo XClarity Controller network access label is attached to the pull-out information tab located near the lower right corner in the front of the chassis, with MAC address and secure activation code accessible with a pull.

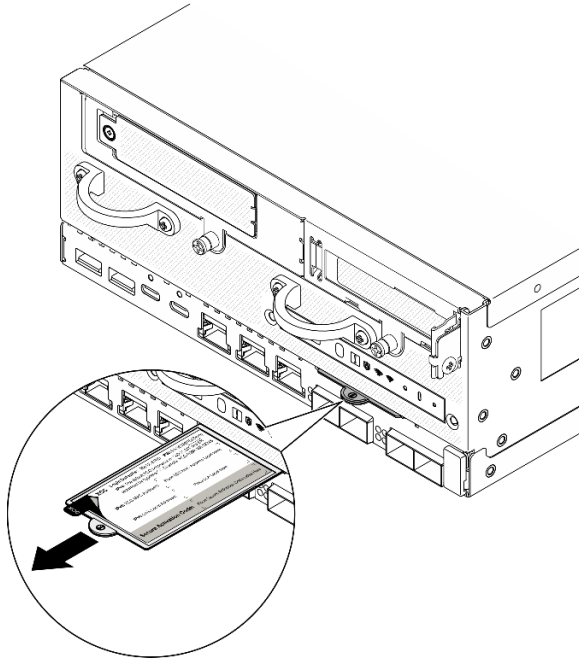


Figure 24. Lenovo XClarity Controller network access label on the pull-out information tab

Service information QR code

On the inside surface of the top cover, there is a quick response (QR) code that provides mobile access to service information. You can scan the QR code with a mobile device using a QR code reader application and get quick access to the Service Information web page. The Service Information web page provides additional information for parts installation and replacement videos, and error codes for solution support.

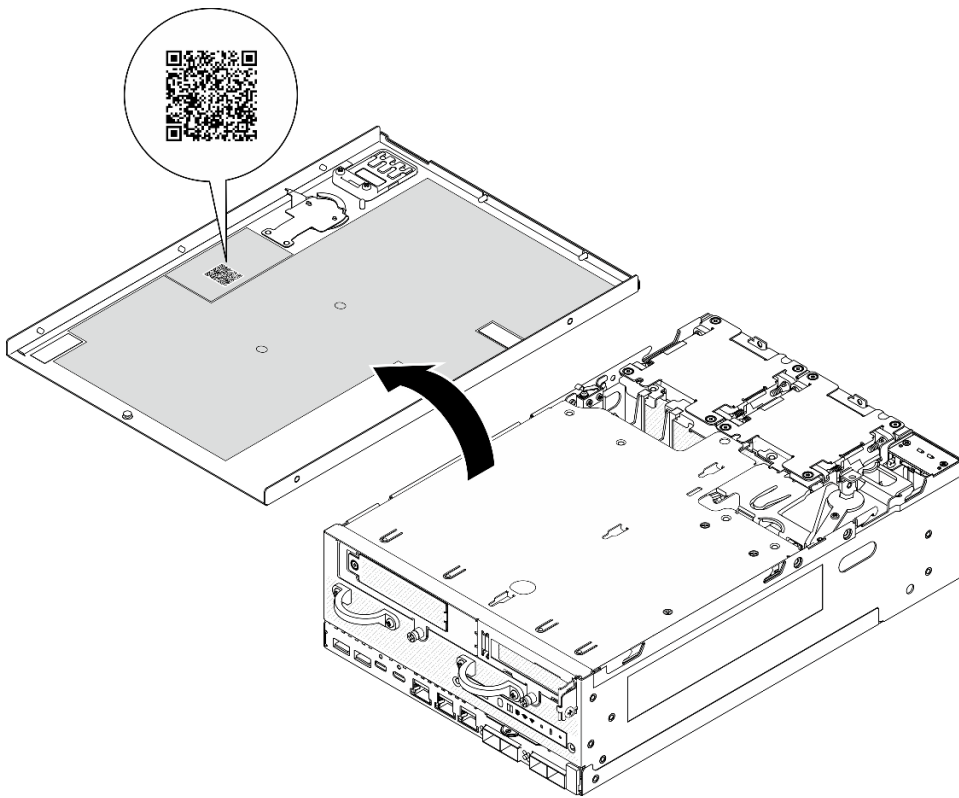


Figure 25. Service information QR code

Server setup checklist

Use the node setup checklist to ensure that you have performed all tasks that are required to set up your node.

The server setup procedure varies depending on the configuration of the server when it was delivered. In some cases, the server is fully configured and you just need to connect the server to the network and a power source, and then you can power on the server. In other cases, the server needs to have hardware options installed, requires hardware and firmware configuration, and requires an operating system to be installed.

The following steps describe the general procedure for setting up a server.

Setup the server hardware

Complete the following procedures to setup the server hardware.

1. Unpack the server package. See [“Server package contents” on page 55](#).
2. Install any required hardware or server options. See the related topics in “Hardware replacement procedures” in *User Guide* or *Hardware Maintenance Guide*.
3. If necessary, install the rail to a standard rack cabinet. Follow the instruction in *Rail Installation Guide* that comes with the rail installation kit.
4. If necessary, mount the server or install the server to an enclosure. See “Configuration guide” in *User Guide* or *Hardware Maintenance Guide*.
5. Connect all external cables to the server. See [Chapter 2 “Server components” on page 21](#) for connectors locations.

Typically, you will need to connect the following cables:

- Connect server to the power source

Note: If applicable, before connecting DC power source to the server, remove the header from the corresponding power connector. See “[Rear view](#)” on page 25 to locate the power connector and remove the header.

- Connect server to the data network
 - Connect the server to the storage device
 - Connect the server to the management network
6. For the models without wireless module, install the Bluetooth antenna filler to the corresponding slot for proper operation. The Bluetooth antenna filler is in the material box. See “[Front view](#)” on page 21 to locate the Bluetooth antenna filler.
 7. Install the I/O fillers when the connectors are not used. The connectors could be damaged without proper protection of the fillers. The I/O fillers are in the material box. See “[Front I/O fillers](#)” on page 24 and “[Rear I/O filler](#)” on page 28 to distinguish the I/O fillers.
 8. If the security LED of the server is blinking, the server is in System Lockdown Mode. Activate or unlock the system for operation. See “[Activate or unlock the system](#)” on page 69.
 9. Power on the server.

The server can be turned on (power LED on) in any of the following ways:

- You can press the power button.
- The server can restart automatically after a power interruption.
- The server can respond to remote power-on requests sent to the Lenovo XClarity Controller.

Note: You can access the management processor interface to configure the system without powering on the server. Whenever the server is connected to power, the management processor interface is available. For details about accessing the management server processor, see “Opening and Using the XClarity Controller Web Interface” section in the XCC documentation compatible with your server at <https://pubs.lenovo.com/lxcc-overview/>.

10. Validate the server. Make sure that the power LED, Ethernet connector LED, and network LED are lit with green light, which means the server hardware was set up successfully.

See “[System LEDs](#)” on page 36 for more information on the LED indications.

Configure the system

Complete the following procedures to configure the system. For detailed instructions, refer to [Chapter 5 “System configuration”](#) on page 61.

1. Set the network connection for the Lenovo XClarity Controller to the management network.
2. Update the firmware for the server, if necessary.
3. Configure the firmware for the server.

The following information is available for RAID configuration:

- <https://lenovopress.lenovo.com/lp0578-lenovo-raid-introduction>
- <https://lenovopress.lenovo.com/lp0579-lenovo-raid-management-tools-and-resources>

4. Install the operating system.
5. Back up the server configuration.
6. Install the applications and programs for which the server is intended to be used.

7. Configure ThinkEdge security features. See [“Activate/unlock the system and configure ThinkEdge security features” on page 68](#).

Chapter 5. System configuration

Complete these procedures to configure your system.

Set the network connection for the Lenovo XClarity Controller

Before you can access the Lenovo XClarity Controller over your network, you need to specify how Lenovo XClarity Controller will connect to the network. Depending on how the network connection is implemented, you might need to specify a static IP address as well.

The following methods are available to set the network connection for the Lenovo XClarity Controller if you are not using DHCP:

- If a monitor is attached to the server, you can use Lenovo XClarity Provisioning Manager to set the network connection.

Complete the following steps to connect the Lenovo XClarity Controller to the network using the Lenovo XClarity Provisioning Manager.

1. Start the server.
2. Press the key specified in the on-screen instructions to display the Lenovo XClarity Provisioning Manager interface. (For more information, see the “Startup” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.)
3. Go to **LXPM → UEFI Setup → BMC Settings** to specify how the Lenovo XClarity Controller will connect to the network.
 - If you choose a static IP connection, make sure that you specify an IPv4 or IPv6 address that is available on the network.
 - If you choose a DHCP connection, make sure that the MAC address for the server has been configured in the DHCP server.
4. Click **OK** to apply the setting and wait for two to three minutes.
5. Use an IPv4 or IPv6 address to connect Lenovo XClarity Controller.

Important: The Lenovo XClarity Controller is set initially with a user name of USERID and password of PASSW0RD (with a zero, not the letter O). This default user setting has Supervisor access. It is required to change this user name and password during your initial configuration for enhanced security.

Update the firmware

Several options are available to update the firmware for the server.

You can use the tools listed here to update the most current firmware for your server and the devices that are installed in the server.

Note: To install or update the driver of x86 WLAN module, see *Update the driver for x86 WLAN module* in *User Guide* or *Hardware Maintenance Guide*.

- Best practices related to updating firmware is available at the following site:
 - <https://lenovopress.lenovo.com/lp0656-lenovo-thinksystem-firmware-and-driver-update-best-practices>
- The latest firmware can be found at the following site:
 - <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam/downloads/driver-list/>

- You can subscribe to product notification to stay up to date on firmware updates:
 - <https://datacentersupport.lenovo.com/solutions/ht509500>

Update Bundles (Service Packs)

Lenovo typically releases firmware in bundles called Update Bundles (Service Packs). To ensure that all of the firmware updates are compatible, you should update all firmware at the same time. If you are updating firmware for both the Lenovo XClarity Controller and UEFI, update the firmware for Lenovo XClarity Controller first.

Update method terminology

- **In-band update.** The installation or update is performed using a tool or application within an operating system that is executing on the server's core CPU.
- **Out-of-band update.** The installation or update is performed by the Lenovo XClarity Controller collecting the update and then directing the update to the target subsystem or device. Out-of-band updates have no dependency on an operating system executing on the core CPU. However, most out-of-band operations do require the server to be in the S0 (Working) power state.
- **On-Target update.** The installation or update is initiated from an installed operating system executing on the target server itself.
- **Off-Target update.** The installation or update is initiated from a computing device interacting directly with the server's Lenovo XClarity Controller.
- **Update Bundles (Service Packs).** Update Bundles (Service Packs) are bundled updates designed and tested to provide the interdependent level of functionality, performance, and compatibility. Update Bundles (Service Packs) are server machine-type specific and are built (with firmware and device driver updates) to support specific Windows Server, Red Hat Enterprise Linux (RHEL) and SUSE Linux Enterprise Server (SLES) operating system distributions. Machine-type-specific firmware-only Update Bundles (Service Packs) are also available.

Firmware updating tools

See the following table to determine the best Lenovo tool to use for installing and setting up the firmware:

Tool	Update Methods Supported	Core System Firmware Updates	I/O Devices Firmware Updates	Drive Firmware Updates	Graphical user interface	Command line interface	Supports Update Bundles (Service Packs)
Lenovo XClarity Provisioning Manager (LXPM)	In-band ² On-Target	✓			✓		
Lenovo XClarity Controller (XCC)	In-band ⁴ Out-of-band Off-Target	✓	Selected I/O devices	✓ ³	✓		✓

Tool	Update Methods Supported	Core System Firmware Updates	I/O Devices Firmware Updates	Drive Firmware Updates	Graphical user interface	Command line interface	Supports Update Bundles (Service Packs)
Lenovo XClarity Essentials OneCLI (OneCLI)	In-band Out-of-band On-Target Off-Target	✓	All I/O devices	✓ ³		✓	✓
Lenovo XClarity Essentials UpdateXpress (LXCE)	In-band Out-of-band On-Target Off-Target	✓	All I/O devices		✓		✓
Lenovo XClarity Essentials Bootable Media Creator (BoMC)	In-band Out-of-band Off-Target	✓	All I/O devices		✓ (BoMC application)	✓ (BoMC application)	✓
Lenovo XClarity Administrator (LXCA)	In-band ¹ Out-of-band ² Off-Target	✓	All I/O devices		✓		✓
Lenovo XClarity Integrator (LXCI) for VMware vCenter	Out-of-band Off-Target	✓	Selected I/O devices		✓		
Lenovo XClarity Integrator (LXCI) for Microsoft Windows Admin Center	In-band Out-of-band On-Target Off-Target	✓	All I/O devices		✓		✓

Tool	Update Methods Supported	Core System Firmware Updates	I/O Devices Firmware Updates	Drive Firmware Updates	Graphical user interface	Command line interface	Supports Update Bundles (Service Packs)
Lenovo XClarity Integrator (LXCI) for Microsoft System Center Configuration Manager	In-band On-Target	✓	All I/O devices		✓		✓

Notes:

1. For I/O firmware updates.
2. For BMC and UEFI firmware updates.
3. Drive firmware update is only supported by the tools and methods below:
 - XCC Bare Metal Update (BMU): In-band, and requires system reboot.
 - Lenovo XClarity Essentials OneCLI:
 - For OneCLI version earlier than 5.0.0:
 - For drives supported by ThinkSystem V2 and V3 products (legacy drives): In-band, and does not require system reboot.
 - For drives supported only by ThinkSystem V3 products (new drives): Staging to XCC and complete the update with XCC BMU (In-band, and requires system reboot.).
 - For OneCLI 5.0.0 and later versions: In-band, and does not require system reboot.
4. Bare Metal Update (BMU) only.

• **Lenovo XClarity Provisioning Manager**

From Lenovo XClarity Provisioning Manager, you can update the Lenovo XClarity Controller firmware, the UEFI firmware, and the Lenovo XClarity Provisioning Manager software.

Note: By default, the Lenovo XClarity Provisioning Manager Graphical User Interface is displayed when you start the server and press the key specified in the on-screen instructions. If you have changed that default to be the text-based system setup, you can bring up the Graphical User Interface from the text-based system setup interface.

For additional information about using Lenovo XClarity Provisioning Manager to update firmware, see:

“Firmware Update” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>

• **Lenovo XClarity Controller**

If you need to install a specific update, you can use the Lenovo XClarity Controller interface for a specific server.

Notes:

- To perform an in-band update through Windows or Linux, the operating system driver must be installed and the Ethernet-over-USB (sometimes called LAN over USB) interface must be enabled.

For additional information about configuring Ethernet over USB, see:

“Configuring Ethernet over USB” section in the XCC documentation version compatible with your server at <https://pubs.lenovo.com/lxcc-overview/>

- If you update firmware through the Lenovo XClarity Controller, make sure that you have downloaded and installed the latest device drivers for the operating system that is running on the server.

For additional information about using Lenovo XClarity Controller to update firmware, see:

“Updating Server Firmware” section in the XCC documentation compatible with your server at <https://pubs.lenovo.com/lxcc-overview/>

- **Lenovo XClarity Essentials OneCLI**

Lenovo XClarity Essentials OneCLI is a collection of command line applications that can be used to manage Lenovo servers. Its update application can be used to update firmware and device drivers for your servers. The update can be performed within the host operating system of the server (in-band) or remotely through the BMC of the server (out-of-band).

For additional information about using Lenovo XClarity Essentials OneCLI to update firmware, see:

https://pubs.lenovo.com/lxce-onecli/onecli_c_update

- **Lenovo XClarity Essentials UpdateXpress**

Lenovo XClarity Essentials UpdateXpress provides most of OneCLI update functions through a graphical user interface (GUI). It can be used to acquire and deploy Update Bundles (Service Packs) update packages and individual updates. Update Bundles (Service Packs) contain firmware and device driver updates for Microsoft Windows and for Linux.

You can obtain Lenovo XClarity Essentials UpdateXpress from the following location:

<https://datacentersupport.lenovo.com/solutions/Invo-xpress>

- **Lenovo XClarity Essentials Bootable Media Creator**

You can use Lenovo XClarity Essentials Bootable Media Creator to create bootable media that is suitable for firmware updates, VPD updates, inventory and FFDC collection, advanced system configuration, FoD Keys management, secure erase, RAID configuration, and diagnostics on supported servers.

You can obtain Lenovo XClarity Essentials BoMC from the following location:

<https://datacentersupport.lenovo.com/solutions/Invo-bomc>

- **Lenovo XClarity Administrator**

If you are managing multiple servers using the Lenovo XClarity Administrator, you can update firmware for all managed servers through that interface. Firmware management is simplified by assigning firmware-compliance policies to managed endpoints. When you create and assign a compliance policy to managed endpoints, Lenovo XClarity Administrator monitors changes to the inventory for those endpoints and flags any endpoints that are out of compliance.

For additional information about using Lenovo XClarity Administrator to update firmware, see:

https://pubs.lenovo.com/lxca/update_fw

- **Lenovo XClarity Integrator offerings**

Lenovo XClarity Integrator offerings can integrate management features of Lenovo XClarity Administrator and your server with software used in a certain deployment infrastructure, such as VMware vCenter, Microsoft Admin Center, or Microsoft System Center.

For additional information about using Lenovo XClarity Integrator to update firmware, see:

<https://pubs.lenovo.com/lxci-overview/>

Install and update the driver for x86 WLAN module (Intel AX210)

Use the following information to install the driver, check the driver version and update the driver for x86 WLAN module (Intel AX210).

Note: The x86 WLAN module (Intel AX210) officially supports Microsoft Windows Server operating system.

- “Install the driver” on page 66
- “Check the driver version” on page 66
- “Update the driver” on page 67

Install the driver

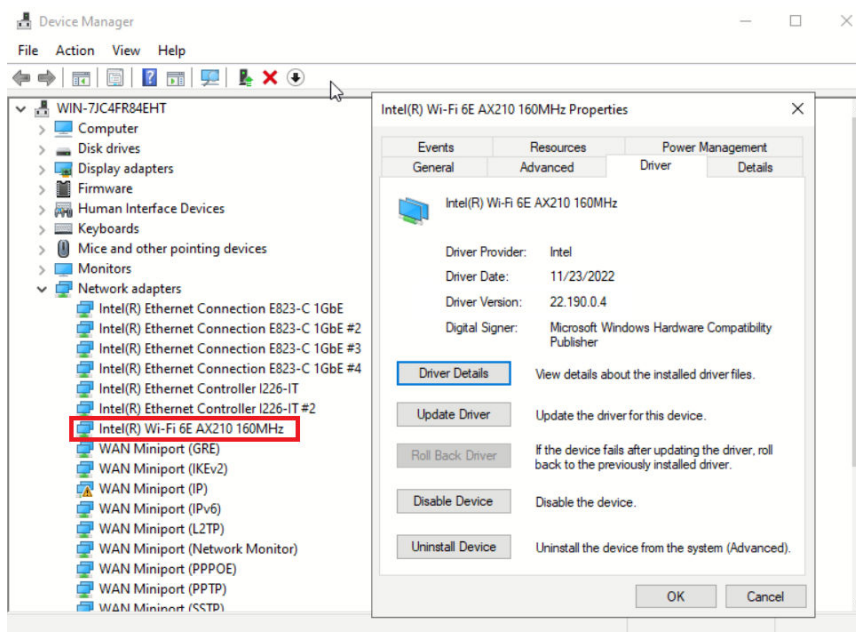
Complete the following procedure to install the driver for the x86 WLAN module (Intel AX210) on the server.

- Step 1. Go to <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam/downloads/driver-list/> and download the latest driver of **Intel Motherboard Chipset Devices** and **Intel AX210**.
- Step 2. Install the driver for **Intel Motherboard Chipset Devices** with the downloaded file.
- Step 3. Use one of the following method to run Windows Powershell as administrator:
 - On the **Start** screen, right click **Windows Powershell**, and click **Run as administrator**.
 - Right click **Windows Powershell** in the task bar, and click **Run as administrator**.
- Step 4. Implement the following command: `Add-WindowsFeature -Name Wireless-Networking`
- Step 5. Install the driver for **Intel AX210** with the downloaded file.
- Step 6. To enable Microsoft WLAN AutoConfig service, run Windows Powershell as administrator, and implement the following command: `net start WlanSvc` After the service is enabled, the WLAN icon will be shown in the taskbar notification area.
- Step 7. Restart the server.

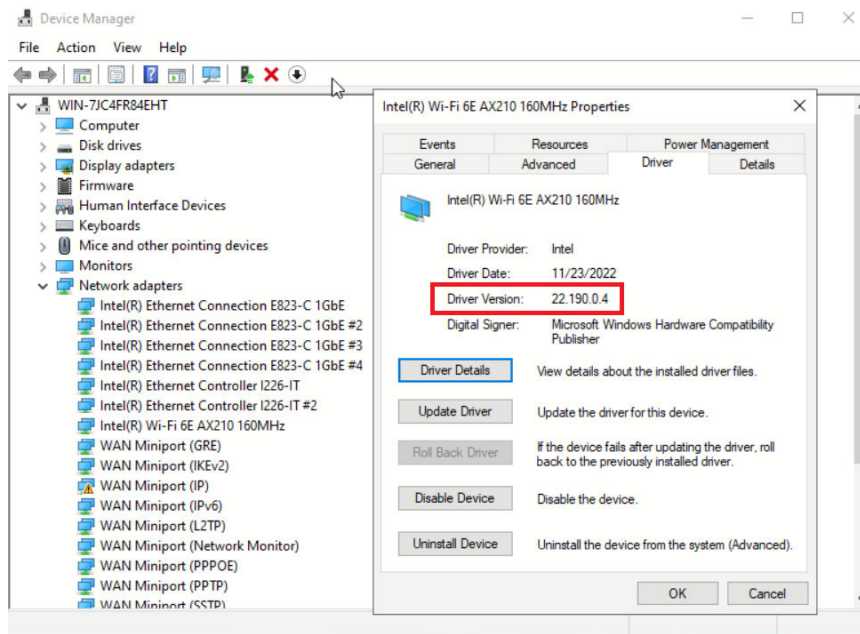
Check the driver version

Complete the following procedure to check the driver version of the x86 WLAN module (Intel AX210) on the server.

- Step 1. Use one of the following method to open Device Manager:
 - Search for **Device Manager** from the search bar.
 - Go to **WIN+X → Device Manager**.
- Step 2. Go to **Network adapters** and locate Intel AX210.



Step 3. Go to **Driver** tag and check the driver version which is displayed.



Update the driver

Complete the following procedure to update the driver for the x86 WLAN module (Intel AX210) on the server.

Step 1. Use one of the following method to run Windows Powershell as administrator:

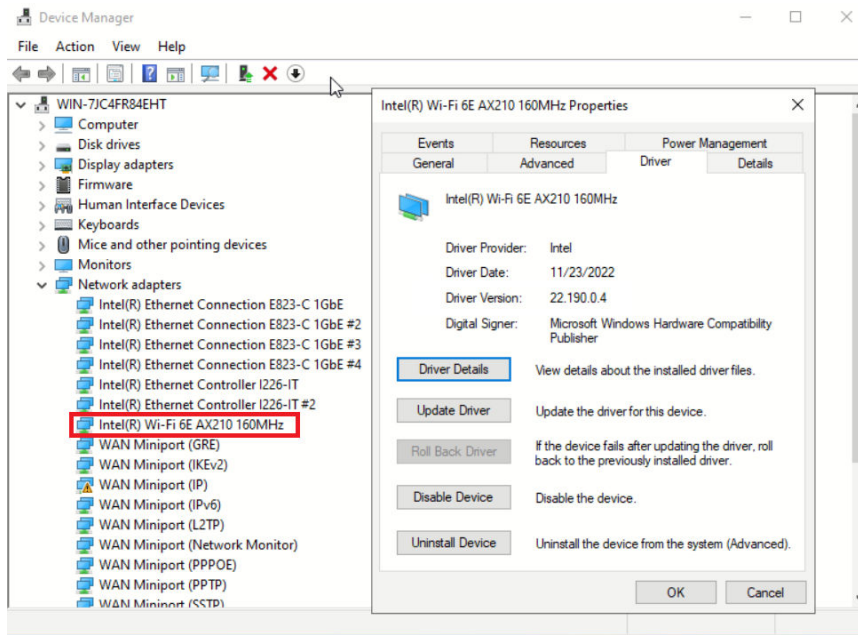
- On the **Start** screen, right click **Windows Powershell**, and click **Run as administrator**.
- Right click **Windows Powershell** in the task bar, and click **Run as administrator**.

Step 2. Implement the following command: `Add-WindowsFeature -Name Wireless-Networking`

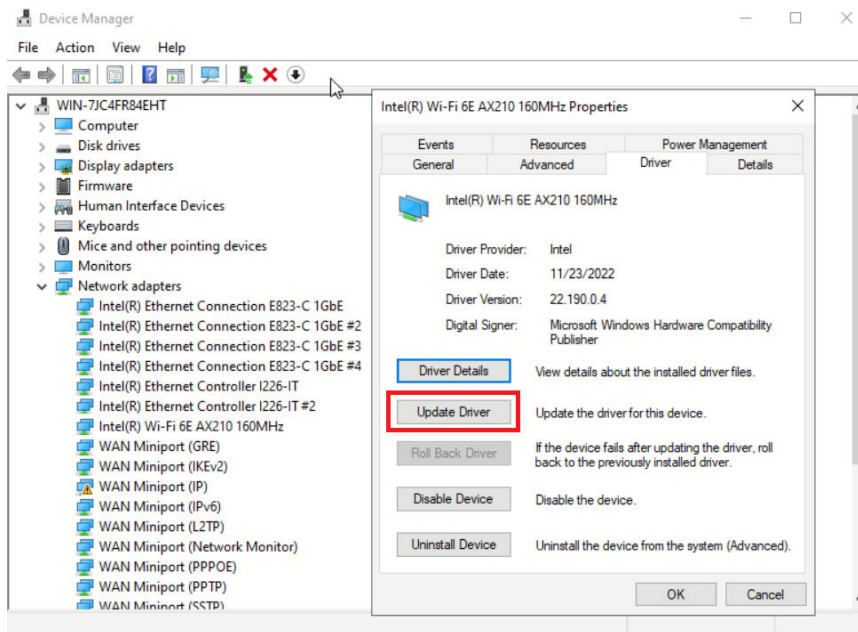
Step 3. Use one of the following method to open Device Manager:

- Search for **Device Manager** from the search bar.
- Go to **WIN+X → Device Manager**.

Step 4. Go to **Network adapters** and locate Intel AX210.



Step 5. Go to **Driver** tag and click **Update Driver** to update the driver.



Step 6. Restart the server.

Activate/unlock the system and configure ThinkEdge security features

ThinkEdge SE360 V2 supports ThinkEdge unique security features. With the security features enabled, the system will enter System Lockdown Mode when tamper events occur, and encrypted data can not be accessed before the system is activated or unlocked. The status of ThinkEdge unique security features can be changed in Lenovo XClarity Controller.

Important: If Lenovo XClarity Controller web interface of the server is different from the information in this section, update the firmware for the server.

Setup the security features

Complete the following steps to setup the security features:

1. If the security LED of the server is blinking, the server is in System Lockdown Mode. Activate or unlock the system for operation. See [“Activate or unlock the system” on page 69](#).
2. Maintain backup of SED AK. See [“Manage the Self Encryption Drive Authentication Key \(SED AK\) ” on page 73](#).
3. Configure the security features in Lenovo XClarity Controller. See [“System Lockdown Mode” on page 72](#) to change the status of security features.

Note: The following sections contain the procedure of configuring ThinkEdge security features in Lenovo XClarity Controller web interface. For more information, see <https://lenovopress.lenovo.com/lp1725-thinkedge-security>.

Customer's responsibility:

- Keep the Secure Activation Code (provided in flyer).
- To use ThinkShield Edge Mobile Management App, prepare proper USB cable for mobile phone if necessary.
- Maintain backup of SED AK. See [“Manage the Self Encryption Drive Authentication Key \(SED AK\) ” on page 73](#).
 - Set and remember the password of SED AK backup file to restore SED AK in the future.
- Engage IT department so they can help to claim or activate device when required.
- Confirm if the SE360 V2 system is claimed by your organization. If not, work with IT department to claim the device.
- Confirm the wireless (network) connectivity is working. Service technician cannot help examine the network connection of the device.
- Move SE360 V2 system to a safe working place for service.
- Place SE360 V2 system back to the working place after service.

Activate or unlock the system

Being shipped or encountering tamper events, the server would be in System Lockdown Mode for security. Before operation, the server needs to be activated or unlocked to be able to boot up and go fully functional. Complete the steps in this topic to activate or unlock the system.

If the security LED of the server is blinking, the server is in System Lockdown Mode. Activate or unlock the system for operation. See [Front operator panel LEDs](#) and [Rear operator panel LEDs](#) to locate the security LED.

System Lockdown Mode Control

To distinguish whether the system needs to be activated or unlocked, see **System Lockdown Mode Control** status on the home page of Lenovo XClarity Controller web interface. System Lockdown Mode Control status would be one of the following:

- **ThinkShield Portal:** The system can be activated through ThinkShield Key Vault Portal. See [“Activate the system” on page 70](#) to activate the system.
- **XClarity Controller:** The system can be unlocked through Lenovo XClarity Controller. See [“Unlock the system” on page 72](#) to unlock the system.

Important:

- When System Lockdown Mode Control status is XClarity Controller, if XClarity Controller is reset to defaults, the default credentials can be used to login to XClarity Controller and unlock the system. It is important to use security controls such as an UEFI PAP to prevent unauthorized users from executing an XClarity Controller reset to defaults. For the highest level of security, it is recommended to set System Lockdown Mode Control to ThinkShield Portal.
- Once the System Lockdown Mode Control status is changed to ThinkShield Portal, it cannot be changed back to XClarity Controller.
- To set System Lockdown Mode Control to ThinkShield Portal, use Lenovo XClarity Essentials UpdateXpress. See “Upgrading lockdown control mode” section in <https://pubs.lenovo.com/lxce-ux/> for the details.

Activate the system

Complete the following steps to activate the system through ThinkShield Key Vault Portal.

Have a Lenovo ID with proper permission

Before activating a system for the first time, make sure to have a Lenovo ID with proper permission to log in to the ThinkShield Key Vault Portal web interface or ThinkShield mobile app.

Note: The role of Lenovo ID should be **Organization Admin**, **Maintenance User** or **Edge User** to activate the system.

- For Lenovo ID setup, see <https://passport.lenovo.com>.
- To log in to the Lenovo ThinkShield Key Vault Portal, see <https://portal.thinkshield.lenovo.com>.

Activation methods

There are different methods to activate the system through ThinkShield Key Vault Portal. Depending on the environment of the server, decide the most suitable way to activate the system.

• Mobile App activation

For Mobile App activation method, you will need an Android or iOS based smart phone with cellular data connection. Follow one of the following procedures to complete Mobile App activation:

- [Connection with the USB cable that came with the smart phone](#)
- [Connection with Bluetooth](#)

Connection with the USB cable that came with the smart phone

1. Connect the power cable to your ThinkEdge SE360 V2.
2. Download the ThinkShield Edge Mobile Management App from Google Play Store or Apple App Store to your Android or iOS based smart phone (search term: “ThinkShield Edge”).
3. Log-in to the ThinkShield Edge Mobile Management App using your Organization registered ID.
4. When App instructs to do so, connect USB cable with USB mobile phone charging cable to the ThinkEdge SE360 V2.

Note: When the smart phone prompts for the USB connection purpose, choose data transfer.

5. Follow the “Activate Device” on-screen instructions to complete secure activation of the system.
6. When activated successfully, ThinkShield Edge Mobile Management App will provide “Device Activated” screen.

Note: For the detailed steps, see *ThinkShield Edge Mobile Management Application User Guide* in <https://lenovopress.lenovo.com/lp1725-thinkedge-security>.

Connection with Bluetooth

Note: SE360 V2 comes with two Bluetooth buttons with LED, one on the front and one on the rear of the node. To locate the Bluetooth buttons, see “[Front operator panel LEDs](#)” on page 37 and “[Rear operator panel LEDs](#)” on page 40.

1. Connect the power cable to your ThinkEdge SE360 V2.
2. Download the ThinkShield Edge Mobile Management App from Google Play Store or Apple App Store to your Android or iOS based smart phone (search term: “ThinkShield Edge”).
3. Make sure to turn on Bluetooth on your smart phone.
4. Press one of the Bluetooth buttons to enable Bluetooth.

Note: After the Bluetooth button is pressed, if SE360 V2 does not pair with any Bluetooth devices within 10 minutes, Bluetooth will be disabled automatically. If necessary, press the Bluetooth button again to enable Bluetooth.

5. Log-in to the ThinkShield Edge Mobile Management App using your Organization registered ID.
6. Follow the “Activate Device” on-screen instructions to complete secure activation of the system.

Note: For the detailed steps, see *ThinkShield Edge Mobile Management Application User Guide* in <https://lenovopress.lenovo.com/lp1725-thinkedge-security>.

7. When activated successfully, ThinkShield Edge Mobile Management App will provide “Device Activated” screen.
8. After the system is activated successfully, disable the Bluetooth buttons.
 - a. Go to Lenovo XClarity Controller web interface, and click **BMC Configuration → Security**.
 - b. Click **Bluetooth Button on Panel** to disable the Bluetooth buttons.

- **Portal automatic activation**

Note: To activate the system through ThinkShield Key Vault Portal web interface for the first time, the system should be claimed by your organization. **Machine Type**, **Serial Number**, and **Activation Code** are required to claim a device. For more information of claiming the device, see <https://lenovopress.lenovo.com/lp1725-thinkedge-security>.

1. Connect the power cable to your ThinkEdge SE360 V2.
2. Connect the XClarity Controller Management Ethernet port to a network that has access to the internet.

Note: Outbound TCP port 443 (HTTPS) must be open for activation to occur.

3. Log in to the ThinkShield Key Vault Portal with your Organization registered ID.
4. If the server is not claimed by your organization, claim the server. Add the device by clicking the **Claim device** button in **Device Manager**. Enter machine type, serial number, and secure activation code in the corresponding fields.
5. From the **Device Manager**, select the server you plan to activate and click **activate**. The status of the server will change to Ready.
6. Server will be activated within 15 minutes and power on automatically. After successful activation, the status of the server will change to Active on the ThinkShield Key Vault Portal.

Notes:

- If the server activation is not initiated within 2 hours after the power cable plug in, perform a disconnect then re-connect of the power cable to your ThinkEdge SE360 V2.
- For the detailed steps, see *ThinkShield Key Vault Portal Web Application User Guide* in <https://lenovopress.lenovo.com/lp1725-thinkedge-security>.

Unlock the system

Important:

- When System Lockdown Mode Control status is XClarity Controller, if XClarity Controller is reset to defaults, the default credentials can be used to login to XClarity Controller and unlock the system. It is important to use security controls such as an UEFI PAP to prevent unauthorized users from executing an XClarity Controller reset to defaults. For the highest level of security, it is recommended to set System Lockdown Mode Control to ThinkShield Portal. See [“System Lockdown Mode Control” on page 69](#) for the details.

Complete the following steps to unlock the system in Lenovo XClarity Controller web interface

Notes: To unlock the system, the role of XCC user should be one of the following:

- Administrator
 - Administrator+
1. Log in to Lenovo XClarity Controller web interface, and go to **BMC Configuration → Security → System Lockdown Mode**.
 2. Press **Active** button, and then press **Apply** button. When the status of System Lockdown Mode switches to Inactive, the system is unlocked.

System Lockdown Mode

See this topic to learn about System Lockdown Mode and related features in Lenovo XClarity Controller.

When System Lockdown Mode is active, the system can not be booted up, and the access to SED AK is not allowed.

Log in to Lenovo XClarity Controller web interface, and go to **BMC Configuration → Security → System Lockdown Mode** to configure the security features.

Note: When the **System Lockdown Mode Control** status on the home page of Lenovo XClarity Controller web interface is XClarity Controller, the status of System Lockdown Mode can be changed in XCC. See [“Unlock the system” on page 72](#) for more information.

Motion Detection

When Motion Detection is enabled, the system detects physical movements and enters System Lockdown Mode automatically when the system is moved unexpectedly.

Note: Motion Detection would be **Disabled** automatically when the system enters System Lockdown Mode.

Select one of the following options for Motion Detection to control the feature:

- **Disabled:** The feature is disabled.

Note: Enable Motion Detection feature after the system locates at the final operating location. When Motion Detection is enabled, the security battery would be consumed, and the system enters System Lockdown Mode if the security battery is exhausted.

- **Step Counter:** The system detects the movement and counts the steps. When the counted steps reach the threshold, the system enters System Lockdown Mode. To reset the step counter, click the **Reset Step Counter** button.
- **Significant Motion:** The system detects the significant motion that indicates the system being unexpectedly moved from the operating location. When a significant motion is detected, the system enters System Lockdown Mode.

Chassis Intrusion Detection

When Chassis Intrusion Detection is **Enabled**, the system detects physical movements of the node covers. If one of the node covers is opened unexpectedly, the system enters System Lockdown Mode automatically.

Manage the Self Encryption Drive Authentication Key (SED AK)

For ThinkEdge SE360 V2 with self-encrypted drives (SED) installed, the SED AK can be managed in Lenovo XClarity Controller. After setting up the server or making changes to the configuration, backing up the SED AK is essential to prevent data loss in the hardware failure case.

SED Authentication Key (AK) Manager

Log in to Lenovo XClarity Controller web interface, and go to **BMC Configuration → Security → SED Authentication Key (AK) Manager** to manage the SED AK.

Notes: The operation of SED AK Manager is not allowed in the following conditions:

- System Lockdown Mode is in **Active** state. SED AK is locked until the system is activated or unlocked. See [“Activate or unlock the system” on page 69](#) to activate or unlock the system.
- Current user does not have the authority to manage SED AK.
 - To generate, backup, and recover the SED AK with passphrase or backup file, the role of XCC user should be **Administrator**.
 - To recover the SED AK from automatic backup, the role of XCC user should be **Administrator+**.

SED encryption

The status of SED encryption can be changed from Disabled to Enabled. Complete the following process to enable SED encryption.

1. Press **Enabled** button.
2. Select the SED AK generation method:
 - **Generate key using Passphrase:** Set the password and re-enter it for the confirmation.
 - **Generate key randomly:** A Random SED AK will be generated.
3. Press **Apply** button.

Attention:

- Once SED encryption is Enabled, it cannot be changed back to Disabled.
- When SED encryption is enabled, rebooting the system is required after installing a SATA drive; without rebooting, the SATA drive will not be recognized by the host OS.
- When SED encryption is enabled, if emergency XCC password reset is performed, the SED AK stored in the server will be cleared as the default action. Data stored on the SED will no longer be accessible unless the SED AK is restored. Backing up the SED AK is strongly advised to reduce the risk of data loss. See [“Emergency XCC Password Reset” on page 74](#) for more information.

Change the SED AK

- **Generate key using Passphrase:** Set the password and re-enter it for the confirmation. Click **Re-generate** to get the new SED AK.
- **Generate key randomly:** Click **Re-generate** to get a Random SED AK.

Backup the SED AK

Set the password and re-enter it for the confirmation. Click **Start Backup** to backup the SED AK; then, download the SED AK file and store it safely for future use.

Note: If you use the backup SED AK file to restore a configuration, the system will ask for the password that you set here.

Recover the SED AK

- **Recover SED AK using Passphrase:** Use the password that was set in **Generate key using Passphrase** to recover the SED AK.
- **Recover SED AK from Backup file:** Upload the backup file generated in **Backup the SED AK** mode and enter the corresponding backup file password to recover the SED AK.
- **Recover SED AK from Automatic backup:** After system board replacement, use automatic backup to recover the SED AK for the installed SED.

Note: To recover the SED AK from automatic backup, the role of XCC user should be **Administrator+**.

Emergency XCC Password Reset

When emergency XCC password reset is performed, the SED AK stored in the server will be cleared at default for security. Check the emergency XCC password reset settings to enhance data security and prevent data loss.

Log in to Lenovo XClarity Controller web interface, and go to **BMC Configuration → Security → Emergency XCC Password Reset** to see the settings.

Emergency XCC password reset

If both XCC and UEFI password are lost, emergency XCC password reset feature allows the user to regain the access by resetting XCC password. Emergency XCC password reset feature does not include the normal XCC password reset methods, which can be performed with authorized access to tools like XCC, UEFI, BoMC, OneCLI, etc. See the following information to learn the capability of emergency XCC password reset feature.

For ThinkEdge SE360 V2, emergency XCC password reset can be performed with ThinkShield Edge Mobile Management App.

When the server's System Lockdown Control status is ThinkShield Portal, users with proper permission can perform emergency XCC password reset through mobile app.

See [“Activate or unlock the system” on page 69](#) for the details of System Lockdown Mode and mobile app settings.

For *ThinkShield Edge Mobile Management Application User Guide*, see <https://lenovopress.lenovo.com/lp1725-thinkedge-security>.

Clear SED AK as part of Emergency XCC Password Reset

When SED encryption is enabled, if emergency XCC password reset is performed, the SED AK stored in the server will be cleared as the default action. Data stored on the SED will no longer be accessible unless the SED AK is restored. Backing up the SED AK is strongly advised to reduce the risk of data loss. See [“Manage the Self Encryption Drive Authentication Key \(SED AK\)” on page 73](#) for more information.

The clearing SED AK action can be changed in XCC.

- Clear SED AK as part of Emergency XCC Password Reset
 - The default status is **Enabled**. Press the button to change the status to **Disabled**.

Important: When the server's System Lockdown Mode status is XClarity Controller and Clear SED AK is disabled, the data in SED might be accessed by login with default credentials after password reset. To prevent security risk, it is recommended to keep Clear SED AK as **Enabled**.

Note: If users reset XCC password not by emergency XCC password reset but by tools like XCC, UEFI, BoMC, OneCLI, etc., the SED AK stored in the server will not be cleared.

XCC WLAN configuration

Use the following information to configure XCC WLAN.

SE360 V2 with wireless module supports XCC WLAN. XCC WLAN works in STA mode and the features can be configured in Lenovo XClarity Controller.

Log in to Lenovo XClarity Controller web interface, and go to **BMC Configuration → Network → WLAN** to configure XCC WLAN.

Notes:

- Before connecting XCC to WLAN, set the network connection for XCC to access and enable XCC WLAN feature. See [Set the network connection for the Lenovo XClarity Controller](#).
- The supported security type of WLAN varies by security mode. A warning window will be shown for attempts on establishing WLAN connection with unsupported security type. For more information of security mode, see https://pubs.lenovo.com/xcc2/NN1ia_c_securitymode.

Enable XCC WLAN

XCC WLAN is disabled by default. Click **Disabled** in the WLAN section to enable XCC WLAN.

After the status changing to **Enabled**, the available WLAN will be scanned and listed.

Country / Region

To comply with local regulations, make sure that the value is consistent with the location.

Connect to WLAN

Connect to available WLAN in the list

1. Select the WLAN in the list and click it.

Note: The **Auto connect** checkbox is checked by default. If the WLAN connection is successfully established with the checkbox checked, the connected WLAN will be saved; XCC WLAN will connect to the saved WLAN automatically. See [“Manage auto-connect” on page 76](#) to manage the list of saved WLAN.

2. Select **Security type**. The field below might change according to the selected security type.

Note: Make sure to select the correct security type that is supported by the WLAN.

3. Enter **User** and **Password** for the WLAN if applicable.

Note: When XCC is already connected to WLAN, to change the connection to another WLAN, make sure to select and input the accurate information. Once XCC attempts to establish a new WLAN connection but fails because of incorrect information, XCC will lose WLAN connection and need LAN connection to enable WLAN again.

4. Click **Connect** to connect to the WLAN. Once the connection is successfully established, the interface shows **Status** and **Disconnect** buttons for the WLAN.

Connect to WLAN by adding wireless network manually

1. Click **Add Wireless Network** and enter the required information.
 - a. Enter **SSID**.
 - b. Select **Security type**. The field below might change according to the selected security type.

Note: Make sure to select the correct security type that is supported by the WLAN.

- c. Enter **User** and **Password** for the WLAN if applicable.

Notes:

- When XCC is already connected to WLAN, to change the connection to another WLAN, make sure to select and input the accurate information. Once XCC attempts to establish a new WLAN connection but fails because of incorrect information, XCC will lose WLAN connection and need LAN connection to enable WLAN again.
 - The **Auto connect** checkbox is checked by default. If the WLAN connection is successfully established with the checkbox checked, the connected WLAN will be saved; XCC WLAN will connect to the saved WLAN automatically. See [“Manage auto-connect” on page 76](#) to manage the list of saved WLAN.
- d. Click **Connect** to connect to the WLAN. Once the connection is successfully established, the interface shows **Status** and **Disconnect** buttons for the WLAN.

Check the WLAN connection status

Click **Status** button to check the WLAN connection status.

The status window provides the following information:

- SSID
- Security type
- IPv4
- Netmask
- DNS
- Network band
- Network channel
- Link speed (Receive/Transmit)

Disconnect from WLAN

Click **Disconnect** button to disconnect XCC from WLAN.

Manage auto-connect

1. Click **Manage Known Wireless Network**. The list of saved WLAN connection will be shown.
2. Click **Forget** to delete a WLAN connection from the list.
3. To exit the list, click **Return**.

IPv4 setting

If necessary, select one of the following methods and adjust the settings accordingly.

- Obtain IP from DHCP
- Use static IP address
- DHCP, then static IP address

Set dust filter measurement

With air flow sensor board installed, SE360 V2 BMC supports dust filter measurement feature to check the status of the rear dust filter.

Log in to Lenovo XClarity Controller web interface, and go to **Utilization** → **Fan Speed (RPM)** → **Dust Filter Measurement** to take the measurement by selecting **Run immediately (once)**, or by setting a regular schedule.

Note: When taking the measurement, the fans will operate at full fan speed for about 30 seconds.

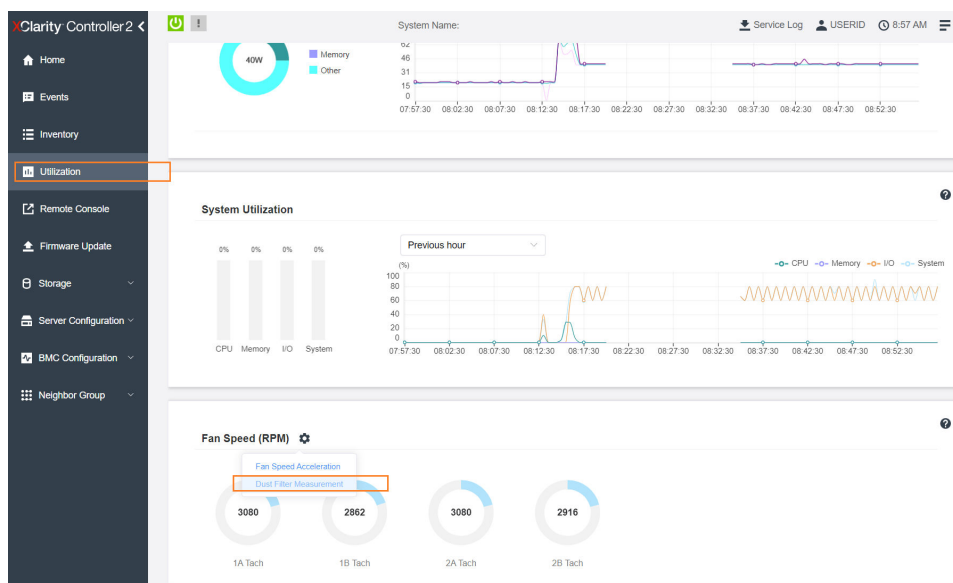


Figure 26. Dust filter measurement

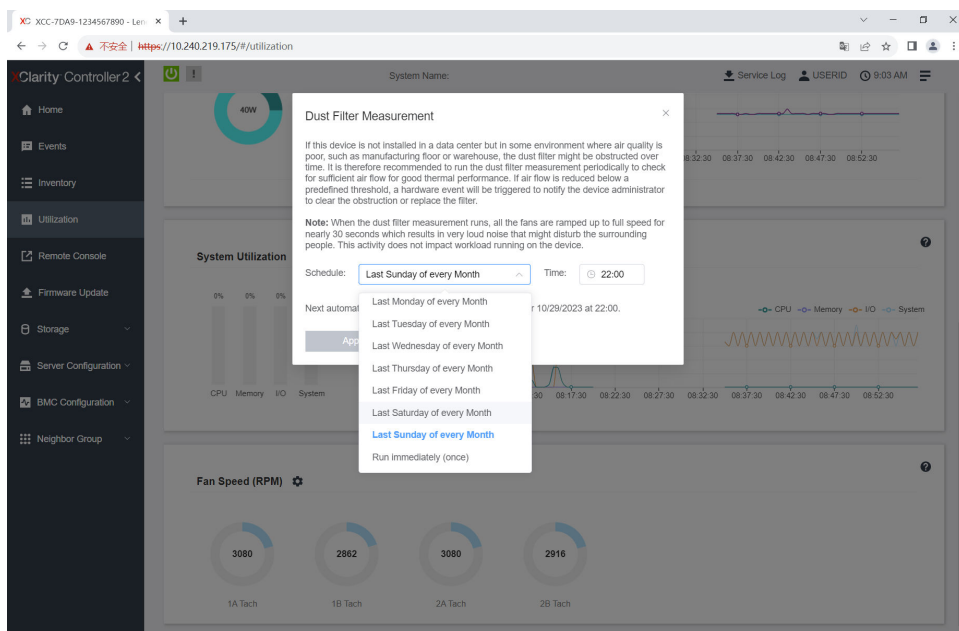


Figure 27. Dust filter measurement settings

After taking the measurement, see Lenovo XClarity Controller Event Log for the status of rear dust filter. For proper operation, replace the rear dust filter according to the action suggestions in the generated event.

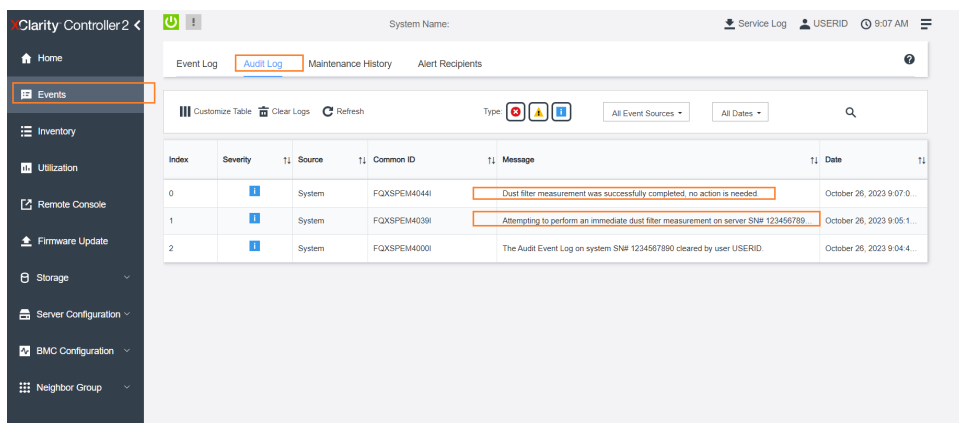


Figure 28. Dust filter measurement events

Index	Severity	Source	Common ID	Message	Date
0	Warning	System	FQXSPEN4040I	Dust filter measurement is completed. The airflow pathway is obstructed, check and rep...	October 27, 2023 8:06:2...
1	Info	System	FQXSPEN4039I	Attempting to perform an immediate dust filter measurement on server SN# 123456789...	October 27, 2023 8:04:3...
2	Info	System	FQXSPEN4000I	The Audit Event Log on system SN# 1234567890 cleared by user USERID.	October 27, 2023 8:04:0...

Figure 29. Dust filter measurement events

Configure the firmware

Several options are available to install and set up the firmware for the server.

Note: UEFI Legacy Mode is not supported by ThinkSystem V4 products.

- **Lenovo XClarity Provisioning Manager (LXPM)**

From Lenovo XClarity Provisioning Manager, you can configure the UEFI settings for your server.

Notes: The Lenovo XClarity Provisioning Manager provides a Graphical User Interface to configure a server. The text-based interface to system configuration (the Setup Utility) is also available. From Lenovo XClarity Provisioning Manager, you can choose to restart the server and access the text-based interface. In addition, you can choose to make the text-based interface the default interface that is displayed when you start LXPM. To do this, go to **Lenovo XClarity Provisioning Manager → UEFI Setup → System Settings → <F1>Start Control → Text Setup**. To start the server with Graphic User Interface, select **Auto** or **Tool Suite**.

See the following documentations for more information:

- Search for the LXPM documentation version compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>
- UEFI User Guide at <https://pubs.lenovo.com/uefi-overview/>

- **Lenovo XClarity Essentials OneCLI**

You can use the config application and commands to view the current system configuration settings and make changes to Lenovo XClarity Controller and UEFI. The saved configuration information can be used to replicate or restore other systems.

For information about configuring the server using Lenovo XClarity Essentials OneCLI, see:

https://pubs.lenovo.com/lxce-onecli/onecli_c_settings_info_commands

- **Lenovo XClarity Administrator**

You can quickly provision and pre-provision all of your servers using a consistent configuration. Configuration settings (such as local storage, I/O adapters, boot settings, firmware, ports, and Lenovo XClarity Controller and UEFI settings) are saved as a server pattern that can be applied to one or more managed servers. When the server patterns are updated, the changes are automatically deployed to the applied servers.

Specific details about configuring the server using Lenovo XClarity Administrator are available at:

https://pubs.lenovo.com/lxca/server_configuring

- **Lenovo XClarity Controller**

You can configure the management processor for the server through the Lenovo XClarity Controller Web interface, the command-line interface, or Redfish API.

For information about configuring the server using Lenovo XClarity Controller, see:

“Configuring the Server” section in the XCC documentation compatible with your server at <https://pubs.lenovo.com/lxcc-overview/>

Memory module configuration

Memory performance depends on several variables, such as memory mode, memory speed, memory ranks, memory population and processor.

Information about optimizing memory performance and configuring memory is available at the Lenovo Press website:

<https://lenovopress.lenovo.com/servers/options/memory>

In addition, you can take advantage of a memory configurator, which is available at the following site:

https://dcsc.lenovo.com/#/memory_configuration

Enable Software Guard Extensions (SGX)

Intel® Software Guard Extensions (Intel® SGX) operates under the assumption that the security perimeter includes only the internals of the CPU package, and leaves the DRAM untrusted.

Complete the following steps to enable SGX.

- Step 1. **Make sure** to refer to “Memory module installation rules and order” section in the *User Guide* or *Hardware Maintenance Guide*, which specifies whether your server supports SGX and lists the memory module population sequence for SGX configuration. (DIMM configuration must be 4 DIMMs to support SGX.)
- Step 2. Restart the system. Before the operating system starts up, press the key specified in the on-screen instructions to enter the Setup Utility. (For more information, see the “Startup” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.)
- Step 3. Go to **System settings → Processors → Total Memory Encryption (TME)** and **enable** the option.
- Step 4. Go to **System settings → Devices and I/O Ports → Intel VT for Directed I/O (VT-d)** and **disable** the option.
- Step 5. For LCC and HCC processors, go to **System settings → Memory → Patrol Scrub** and **disable** the option.
- Step 6. Save the changes, then go to **System settings → Processors → SW Guard Extension (SGX)** and **enable** the option.

RAID configuration

Using a Redundant Array of Independent Disks (RAID) to store data remains one of the most common and cost-efficient methods to increase server's storage performance, availability, and capacity.

RAID increases performance by allowing multiple drives to process I/O requests simultaneously. RAID can also prevent data loss in case of a drive failure by reconstructing (or rebuilding) the missing data from the failed drive using the data from the remaining drives.

RAID array (also known as RAID drive group) is a group of multiple physical drives that uses a certain common method to distribute data across the drives. A virtual drive (also known as virtual disk or logical drive) is a partition in the drive group that is made up of contiguous data segments on the drives. Virtual drive is presented up to the host operating system as a physical disk that can be partitioned to create OS logical drives or volumes.

An introduction to RAID is available at the following Lenovo Press website:

<https://lenovopress.lenovo.com/lp0578-lenovo-raid-introduction>

Detailed information about RAID management tools and resources is available at the following Lenovo Press website:

<https://lenovopress.lenovo.com/lp0579-lenovo-raid-management-tools-and-resources>

Intel VROC

Enabling Intel VROC

Before setting up RAID for NVMe drives, follow the below steps to enable VROC:

1. Restart the system. Before the operating system starts up, press the key specified in the on-screen instructions to enter the Setup Utility. (For more information, see the “Startup” section in the LXPm documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>.)
2. Go to **System settings → Devices and I/O Ports → Intel® VMD technology → Enable/Disable Intel® VMD** and enable the option.
3. Save the changes and reboot the system.

Notes:

- Supported RAID levels varies by model. For the RAID level supported by SE360 V2, see [Technical specifications](#).
- For more information about acquiring and installing the activation key, see <https://fod.lenovo.com/lkms>.

Deploy the operating system

Several options are available to deploy an operating system on the server.

Available operating systems

- Microsoft Windows Server
- VMware ESXi
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server

Complete list of available operating systems: <https://lenovopress.lenovo.com/osig>.

Tool-based deployment

- **Multi-server**

Available tools:

- Lenovo XClarity Administrator

https://pubs.lenovo.com/lxca/compute_node_image_deployment

- Lenovo XClarity Essentials OneCLI

https://pubs.lenovo.com/lxce-onecli/onecli_r_uxspi_proxy_tool

- **Single-server**

Available tools:

- Lenovo XClarity Provisioning Manager

“OS Installation” section in the LXPM documentation compatible with your server at <https://pubs.lenovo.com/lxpm-overview/>

- Lenovo XClarity Essentials OneCLI

https://pubs.lenovo.com/lxce-onecli/onecli_r_uxspi_proxy_tool

Manual deployment

If you cannot access the above tools, follow the instructions below, download the corresponding OS *Installation Guide*, and deploy the operating system manually by referring to the guide.

1. Go to <https://datacentersupport.lenovo.com/solutions/server-os>.
2. Select an operating system from the navigation pane and click **Resources**.
3. Locate the “OS Install Guides” area and click the installation instructions. Then, follow the instructions to complete the operation system deployment task.

Back up the server configuration

After setting up the server or making changes to the configuration, it is a good practice to make a complete backup of the server configuration.

Make sure that you create backups for the following server components:

- **Management processor**

You can back up the management processor configuration through the Lenovo XClarity Controller interface. For details about backing up the management processor configuration, see:

“Backing up the BMC configuration” section in the XCC documentation compatible with your server at <https://pubs.lenovo.com/lxcc-overview/>.

Alternatively, you can use the `save` command from Lenovo XClarity Essentials OneCLI to create a backup of all configuration settings. For more information about the `save` command, see:

https://pubs.lenovo.com/lxce-onecli/onecli_r_save_command

- **Operating system**

Use your backup methods to back up the operating system and user data for the server.

Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about Lenovo products, you will find a wide variety of sources available from Lenovo to assist you.

On the World Wide Web, up-to-date information about Lenovo systems, optional devices, services, and support are available at:

<http://datacentersupport.lenovo.com>

Note: IBM is Lenovo's preferred service provider for ThinkSystem.

Before you call

Before you call, there are several steps that you can take to try and solve the problem yourself. If you decide that you do need to call for assistance, gather the information that will be needed by the service technician to more quickly resolve your problem.

Attempt to resolve the problem yourself

You can solve many problems without outside assistance by following the troubleshooting procedures that Lenovo provides in the online help or in the Lenovo product documentation. The online help also describes the diagnostic tests that you can perform. The documentation for most systems, operating systems, and programs contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

You can find the product documentation for your ThinkSystem products at the following location:

<https://pubs.lenovo.com/>

You can take these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Check for updated software, firmware, and operating-system device drivers for your Lenovo product. (See the following links) The Lenovo Warranty terms and conditions state that you, the owner of the Lenovo product, are responsible for maintaining and updating all software and firmware for the product (unless it is covered by an additional maintenance contract). Your service technician will request that you upgrade your software and firmware if the problem has a documented solution within a software upgrade.
 - Drivers and software downloads
 - <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam/downloads/driver-list/>
 - Operating system support center
 - <https://datacentersupport.lenovo.com/solutions/server-os>
 - Operating system installing instructions
 - <https://pubs.lenovo.com/thinkedge#os-installation>
- If you have installed new hardware or software in your environment, check <https://serverproven.lenovo.com> to make sure that the hardware and software are supported by your product.
- Refer to “Problem Determination” in *User Guide* or *Hardware Maintenance Guide* for instructions on isolating and solving issues.

- Go to <http://datacentersupport.lenovo.com> and check for information to help you solve the problem.

To find the Tech Tips available for your server:

1. Go to <http://datacentersupport.lenovo.com> and navigate to the support page for your server.
2. Click on **How To's** from the navigation pane.
3. Click **Article Type** → **Solution** from the drop-down menu.

Follow the on-screen instructions to choose the category for the problem that you are having.

- Check Lenovo Data Center Forum at https://forums.lenovo.com/t5/Datacenter-Systems/ct-p/sv_eg to see if someone else has encountered a similar problem.

Gathering information needed to call Support

If you require warranty service for your Lenovo product, the service technicians will be able to assist you more efficiently if you prepare the appropriate information before you call. You can also go to <http://datacentersupport.lenovo.com/warrantylookup> for more information about your product warranty.

Gather the following information to provide to the service technician. This data will help the service technician quickly provide a solution to your problem and ensure that you receive the level of service for which you might have contracted.

- Hardware and Software Maintenance agreement contract numbers, if applicable
- Machine type number (Lenovo 4-digit machine identifier). Machine type number can be found on the ID label, see “[Identify the server and access the Lenovo XClarity Controller](#)” on page 55.
- Model number
- Serial number
- Current system UEFI and firmware levels
- Other pertinent information such as error messages and logs

As an alternative to calling Lenovo Support, you can go to <https://support.lenovo.com/servicerequest> to submit an Electronic Service Request. Submitting an Electronic Service Request will start the process of determining a solution to your problem by making the pertinent information available to the service technicians. The Lenovo service technicians can start working on your solution as soon as you have completed and submitted an Electronic Service Request.

Collecting service data

To clearly identify the root cause of a server issue or at the request of Lenovo Support, you might need collect service data that can be used for further analysis. Service data includes information such as event logs and hardware inventory.

Service data can be collected through the following tools:

- **Lenovo XClarity Provisioning Manager**

Use the Collect Service Data function of Lenovo XClarity Provisioning Manager to collect system service data. You can collect existing system log data or run a new diagnostic to collect new data.

- **Lenovo XClarity Controller**

You can use the Lenovo XClarity Controller web interface or the CLI to collect service data for the server. The file can be saved and sent to Lenovo Support.

- For more information about using the web interface to collect service data, see the “Backing up the BMC configuration” section in the XCC documentation compatible with your server at <https://pubs.lenovo.com/lxcc-overview/>.

- For more information about using the CLI to collect service data, see the “XCC `ffdc` command” section in the XCC documentation compatible with your server at <https://pubs.lenovo.com/lxcc-overview/>.

- **Lenovo XClarity Administrator**

Lenovo XClarity Administrator can be set up to collect and send diagnostic files automatically to Lenovo Support when certain serviceable events occur in Lenovo XClarity Administrator and the managed endpoints. You can choose to send diagnostic files to Lenovo Support using Call Home or to another service provider using SFTP. You can also manually collect diagnostic files, open a problem record, and send diagnostic files to the Lenovo Support.

You can find more information about setting up automatic problem notification within the Lenovo XClarity Administrator at https://pubs.lenovo.com/lxca/admin_setupcallhome.

- **Lenovo XClarity Essentials OneCLI**

Lenovo XClarity Essentials OneCLI has inventory application to collect service data. It can run both in-band and out-of-band. When running in-band within the host operating system on the server, OneCLI can collect information about the operating system, such as the operating system event log, in addition to the hardware service data.

To obtain service data, you can run the `getinfor` command. For more information about running the `getinfor`, see https://pubs.lenovo.com/lxce-onecli/onecli_r_getinfor_command.

Contacting Support

You can contact Support to obtain help for your issue.

You can receive hardware service through a Lenovo Authorized Service Provider. To locate a service provider authorized by Lenovo to provide warranty service, go to <https://datacentersupport.lenovo.com/serviceprovider> and use filter searching for different countries. For Lenovo support telephone numbers, see <https://datacentersupport.lenovo.com/supportphonenumberlist> for your region support details.

Appendix B. Documents and supports

This section provides handy documents, driver and firmware downloads, and support resources.

Documents download

This section provides introduction and download links for handy documents.

Documents

Download the following product documentations at:

https://pubs.lenovo.com/se360-v2/pdf_files

- **Rail Installation Guides**
 - Rail installation in a rack
- **Activation Guide**
 - Activation process and activation code
- **Regulatory Notice for ThinkEdge SE360 V2 with WLAN Module**
 - Regulation of product in different countries
- **User Guide**
 - Complete overview, system configuration, hardware components replacing, and troubleshooting.

Selected chapters from *User Guide*:

 - **System Configuration Guide** : Server overview, components identification, system LEDs and diagnostics display, product unboxing, setting up and configuring the server.
 - **Hardware Maintenance Guide** : Installing hardware components, cable routing, and troubleshooting.
- **Messages and Codes Reference**
 - XClarity Controller, LXPM, and uEFI events
- **UEFI Manual**
 - UEFI setting introduction

Support websites

This section provides driver and firmware downloads and support resources.

Support and downloads

- Drivers and Software download website for ThinkEdge SE360 V2
 - <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam/downloads/driver-list/>
- Lenovo Data Center Forum
 - https://forums.lenovo.com/t5/Datacenter-Systems/ct-p/sv_eg
- Lenovo Data Center Support for ThinkEdge SE360 V2
 - <https://datacentersupport.lenovo.com/products/servers/thinkedge/se360v2/7dam>
- Lenovo License Information Documents

- <https://datacentersupport.lenovo.com/documents/Invo-eula>
- Lenovo Press website (Product Guides/Datasheets/White papers)
 - <https://lenovopress.lenovo.com/>
- Lenovo Privacy Statement
 - <https://www.lenovo.com/privacy>
- Lenovo Product Security Advisories
 - https://datacentersupport.lenovo.com/product_security/home
- Lenovo Product Warranty Plans
 - <http://datacentersupport.lenovo.com/warrantylookup>
- Lenovo Server Operating Systems Support Center website
 - <https://datacentersupport.lenovo.com/solutions/server-os>
- Lenovo ServerProven website (Options compatibility lookup)
 - <https://serverproven.lenovo.com>
- Operating System Installation Instructions
 - <https://pubs.lenovo.com/thinkedge#os-installation>
- Submit an eTicket (service request)
 - <https://support.lenovo.com/servicerequest>
- Subscribe to Lenovo Data Center Group product notifications (Stay up to date on firmware updates)
 - <https://datacentersupport.lenovo.com/solutions/ht509500>

Appendix C. Notices

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Important notes

Processor speed indicates the internal clock speed of the processor; other factors also affect application performance.

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1 024 bytes, MB stands for 1 048 576 bytes, and GB stands for 1 073 741 824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity can vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard-disk-drive bays with the largest currently supported drives that are available from Lenovo.

Maximum memory might require replacement of the standard memory with an optional memory module.

Each solid-state memory cell has an intrinsic, finite number of write cycles that the cell can incur. Therefore, a solid-state device has a maximum number of write cycles that it can be subjected to, expressed as total bytes written (TBW). A device that has exceeded this limit might fail to respond to system-generated commands or might be incapable of being written to. Lenovo is not responsible for replacement of a device that has exceeded its maximum guaranteed number of program/erase cycles, as documented in the Official Published Specifications for the device.

Lenovo makes no representations or warranties with respect to non-Lenovo products. Support (if any) for the non-Lenovo products is provided by the third party, not Lenovo.

Some software might differ from its retail version (if available) and might not include user manuals or all program functionality.

Electronic emission notices

When you attach a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices that are supplied with the monitor.

Additional electronic emissions notices are available at:

https://pubs.lenovo.com/important_notices/

Taiwan Region BSMI RoHS declaration

單元 Unit	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞Mercury (Hg)	鎘Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr ⁶⁺)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
機架	○	○	○	○	○	○
外部蓋板	○	○	○	○	○	○
機械組零件	—	○	○	○	○	○
空氣傳動設備	—	○	○	○	○	○
冷卻組零件	—	○	○	○	○	○
內存模組	—	○	○	○	○	○
處理器模組	—	○	○	○	○	○
電纜組零件	—	○	○	○	○	○
電源供應器	—	○	○	○	○	○
儲備設備	—	○	○	○	○	○
印刷電路板	—	○	○	○	○	○
<p>備考1. “超出0.1 wt %” 及 “超出0.01 wt %” 係指限用物質之百分比含量超出百分比含量基準值。</p> <p>Note1 : “exceeding 0.1wt%” and “exceeding 0.01 wt%” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.</p> <p>備考2. “○” 係指該項限用物質之百分比含量未超出百分比含量基準值。</p> <p>Note2 : “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.</p> <p>備考3. “—” 係指該項限用物質為排除項目。</p> <p>Note3 : The “-” indicates that the restricted substance corresponds to the exemption.</p>						

Taiwan Region import and export contact information

Contacts are available for Taiwan Region import and export information.

委製商/進口商名稱: 台灣聯想環球科技股份有限公司
進口商地址: 台北市南港區三重路 66 號 8 樓
進口商電話: 0800-000-702

