System configurations and diagrams

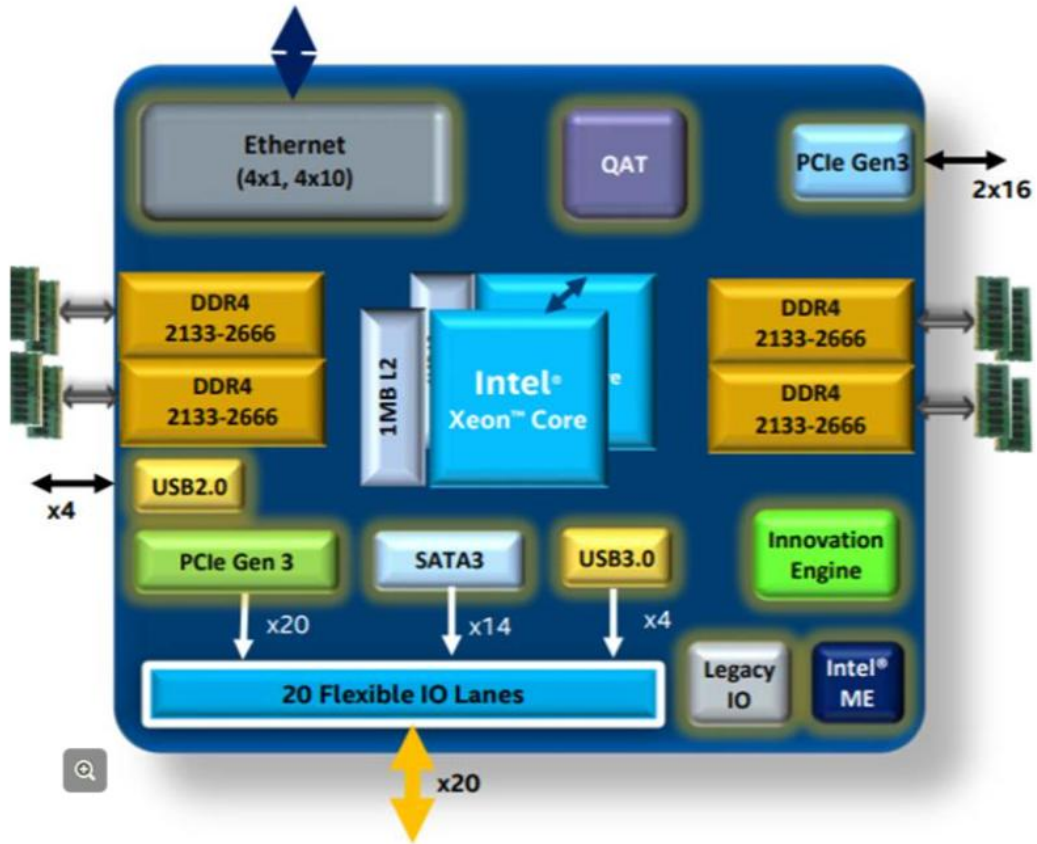
Intel Xeon D processor architecture, mounting options, and M.2 adapters

Lenovo

Intel Xeon D processor architecture on the ThinkSystem SE350

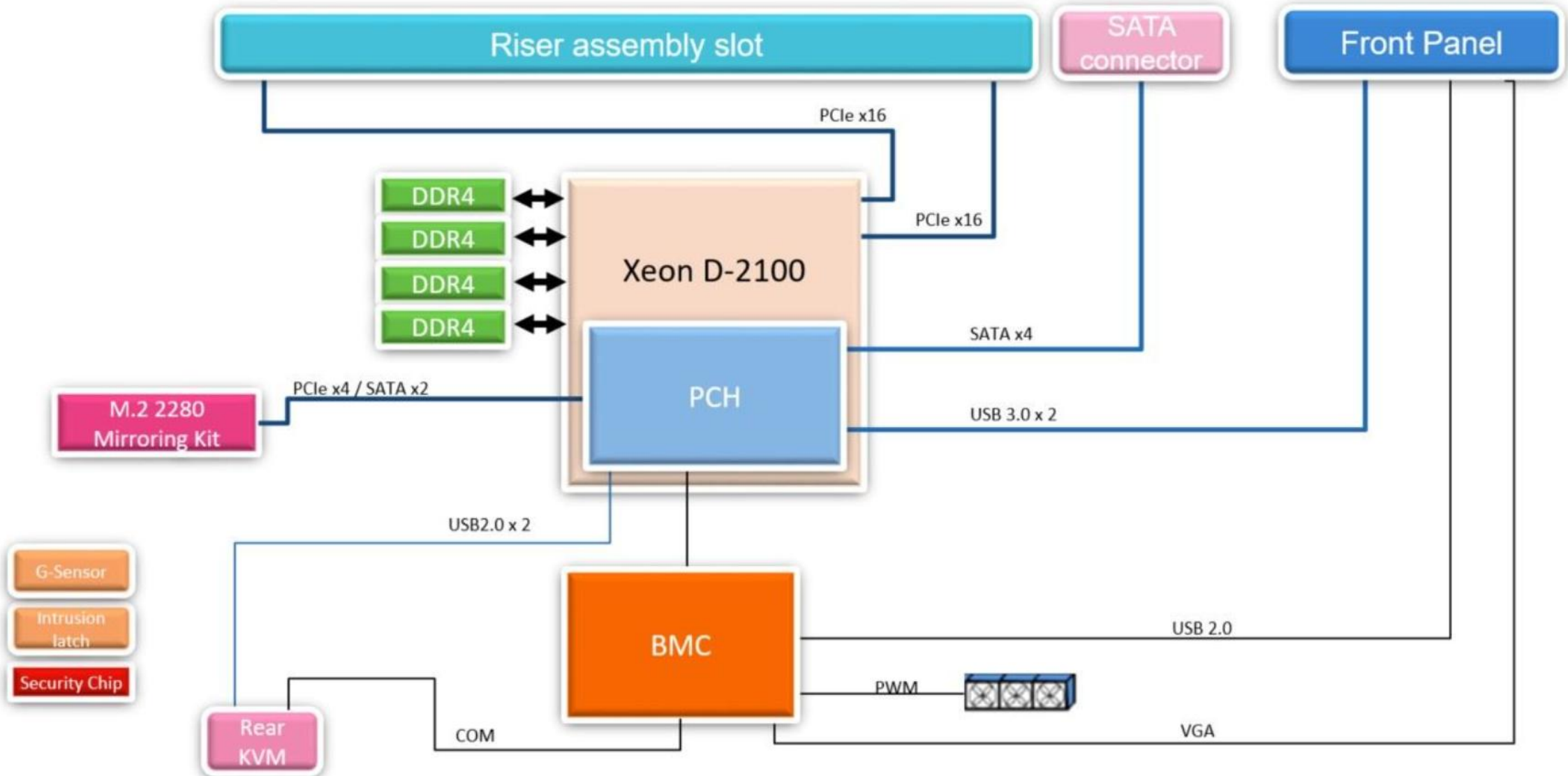
As used in the SE350, the Intel Xeon D processor provides:

- Four channels of DDR4 Memory
- Eight SATA3 ports
- Two PCIe Gen 3 lanes to the M.2 adapter
- Thirty-two PCIe Gen 3 lanes to the PCIe/Storage risers
- Three USB 3.0 ports on the front, two USB 2.0 ports on the rear
- Four PCIe Gen 3 lanes to the network switch board
- One PCIe Gen 3 lane to the XCC
- Two PCIe Gen 3 lanes to the i350
- Four X722 Ethernet ports from the embedded controller



Attention: The SE350 processor is integrated to the system board. You need to replace the entire system board if the processor fails.

System board block diagram



ThinkSystem SE350 mounting options

The ThinkSystem SE350 has the following mounting options:

- Tower stand configuration known as a Bookshelf
- DIN rail or wall mount configuration
- Rail mount

Tower stand

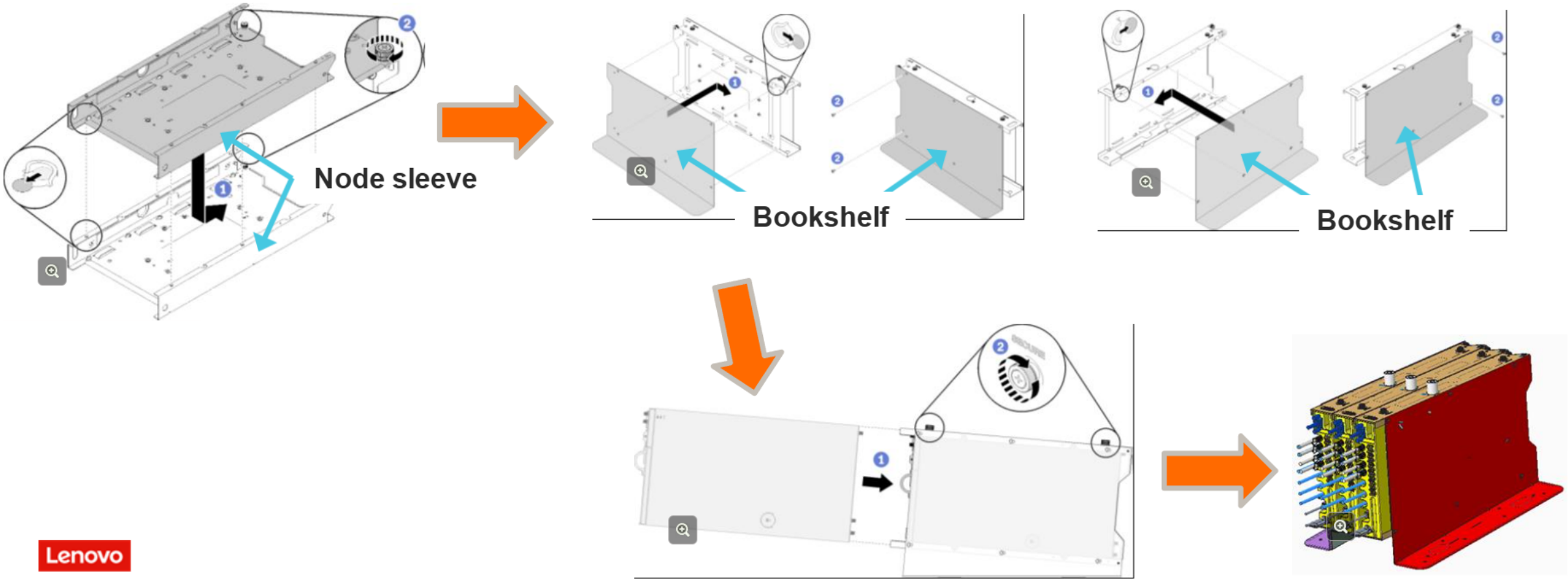
Wall mount

Rack mount
(2U or 1U)

Tower stand configuration

The tower stand configuration supports up to three node stacks.

- Stack the node sleeves, and then install the right and left bookshelves to the node sleeves to create a tower stand configuration.
- Install the nodes in the node sleeves, and secure them in position with two thumbscrews for each node.



DIN rail or wall mount configuration

The SE350 can also be installed on a wall. The node can be mounted directly on a wall or on a DIN rail pre-attached to a wall. The parts for the DIN rail or wall mount configuration are as follows:

- An ac adapter bracket: This holds the ac adapter and is mounted to a wall or DIN rail. It can be mounted either horizontally or vertically.
- A node sleeve: This holds the SE350 and is mounted to a wall or DIN rail. It can only be mounted horizontally.
- A DIN rail: This is installed on a wall and is for the rapid installation or removal of the SE350 from the wall.
- DIN rail clips: They are installed on an ac adapter bracket or node sleeve and are hooked onto the DIN rail.

Installing a node sleeve with an ac adapter bracket onto a DIN rail

To install a node sleeve with an ac adapter bracket onto a DIN rail, complete the following steps.

Note: To ensure you have sufficient space to install and remove the node, keep a 500 mm space in front of the node free.

Click each number in turn to see the procedure.

Step 1 2 3 4 5

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Installing a node sleeve with an ac adapter bracket onto a DIN rail

The DIN rail clips should be installed on the ac adapter bracket if it will be mounted on the DIN rail.

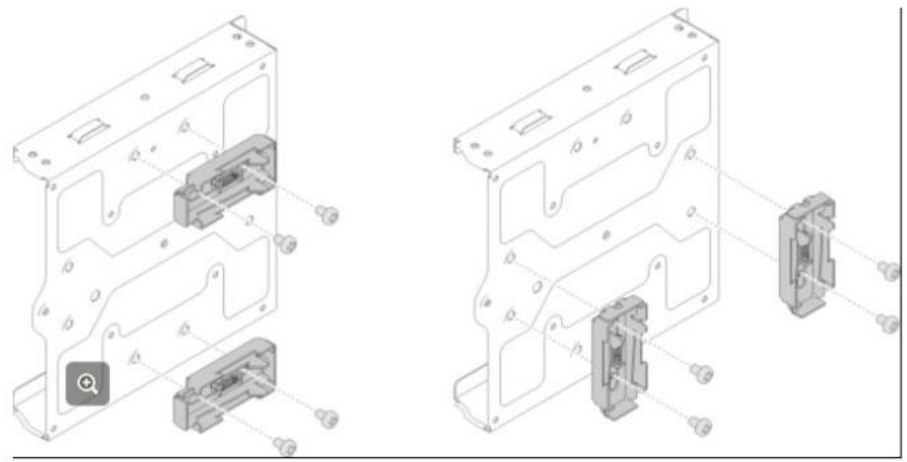
: Wall mount 200x200 threaded holes (M4)

: Wall mount 100x100 threaded holes (M4)

: DIN rail clip screw holes

The carrier side of the ac adapter

Wall mount side with DIN rail clips installed



The DIN rail clips can be installed horizontally or vertically on the ac adapter bracket.

Step 1 2 3 4 5

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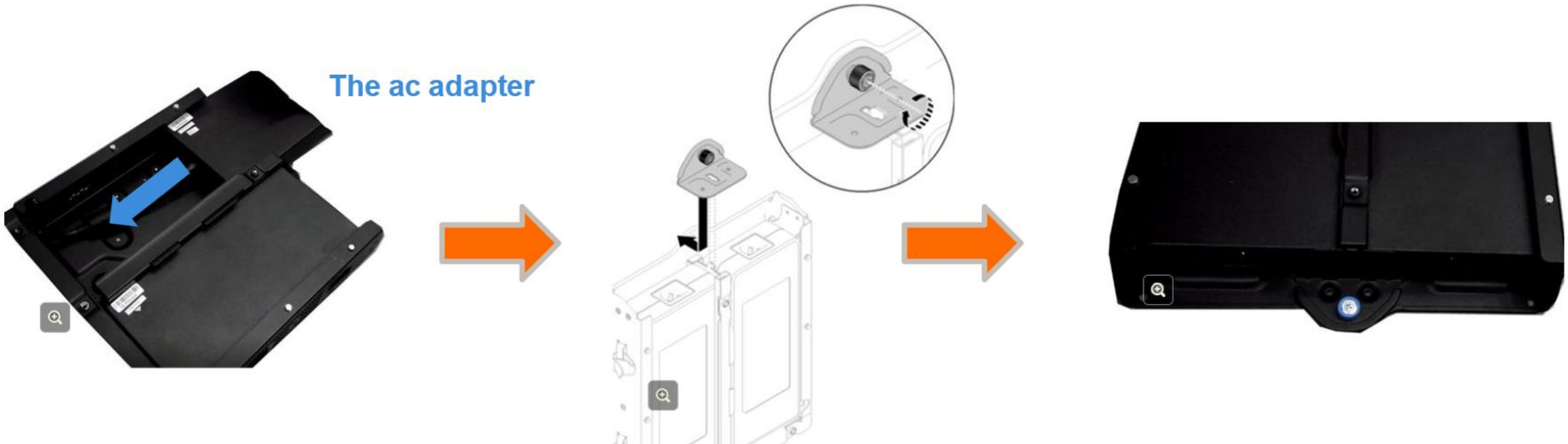
Installing a node sleeve with an ac adapter bracket onto a DIN rail

Installing an ac adapter into a bracket

Slide the ac adapter into the bracket, and then hook the lock tab into position. Fasten the thumbscrew to secure the ac adapter.

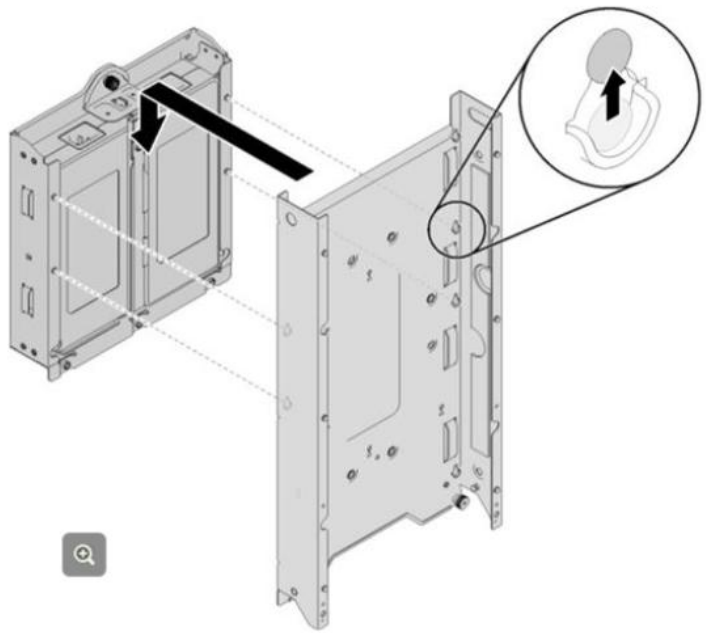


Step 1 2 3 4 5

Installing a node sleeve with an ac adapter bracket onto a DIN rail

Installing a node sleeve onto an ac adapter bracket

- Align the node sleeve with the power adapter bracket, and then push the node sleeve downward slightly to hook the four T-pins into place.
- Insert and tighten the four screws.

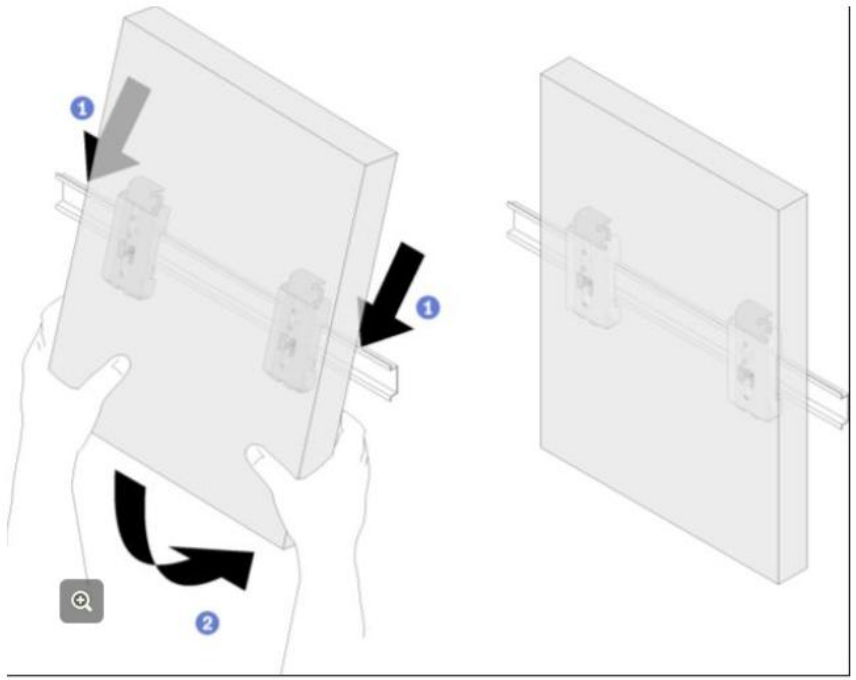


: Four screws

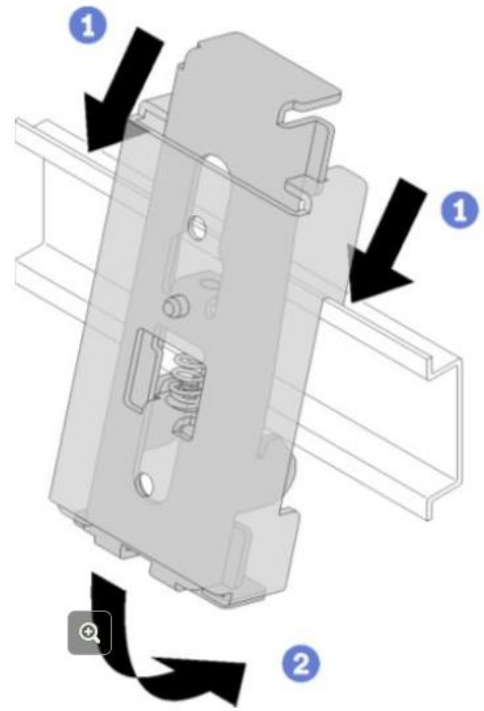
Step 1 2 3 4 5

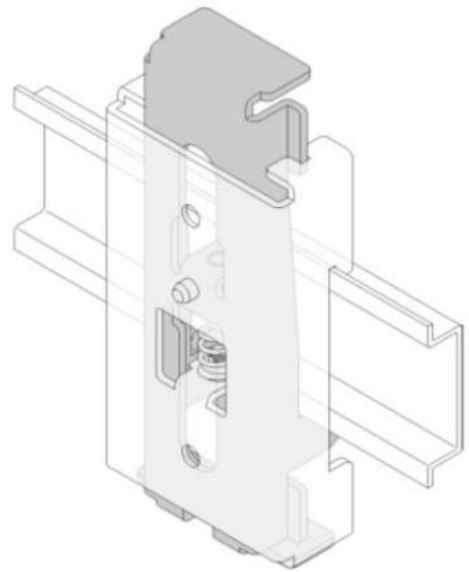
Installing a node sleeve with an ac adapter bracket onto a DIN rail

1. Hook the two DIN rail clips onto the rails at an angle.
2. Lower the node sleeve and ensure that the DIN rail clips are securely seated.



Detailed view





Step 1 2 3 4 5

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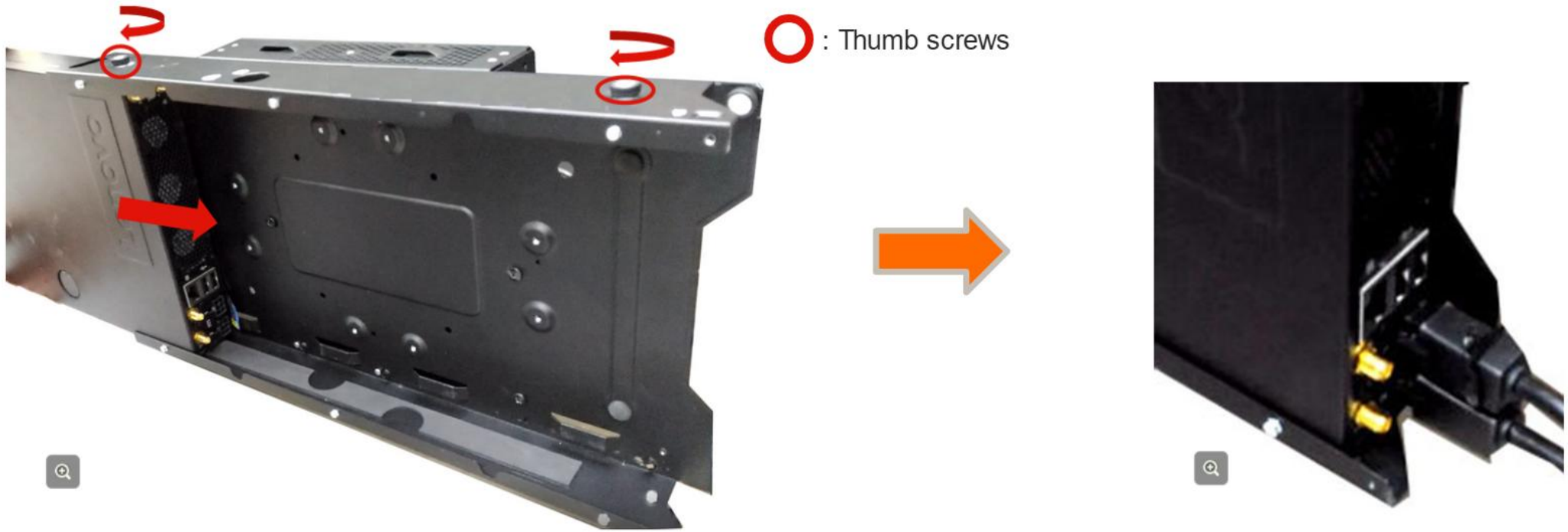
Installing a node sleeve with an ac adapter bracket onto a DIN rail

1. Insert the node into the node sleeve, and then fasten the two thumbscrews to secure the node.
2. Connect the ac cables and, if necessary, other cables.



Step 1 2 3 4 5

Installing a node sleeve onto a DIN rail

To install a node sleeve onto a DIN rail, complete the following steps.

Note: To ensure you have sufficient space to install and remove the node, keep a 500 mm space in front of the node free.

Click each number in turn to see the procedure.

Step 1 2 3

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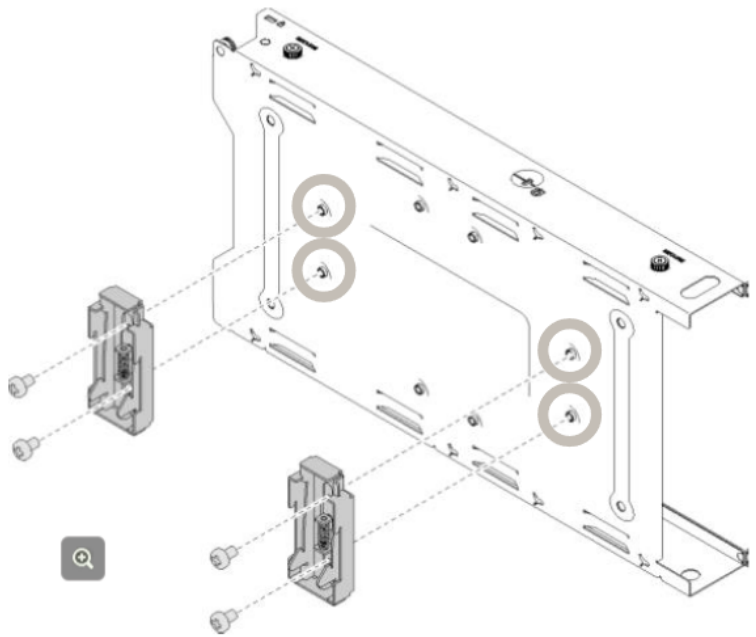
Installing a node sleeve onto a DIN rail

Installing two DIN rail clips onto the node sleeve.

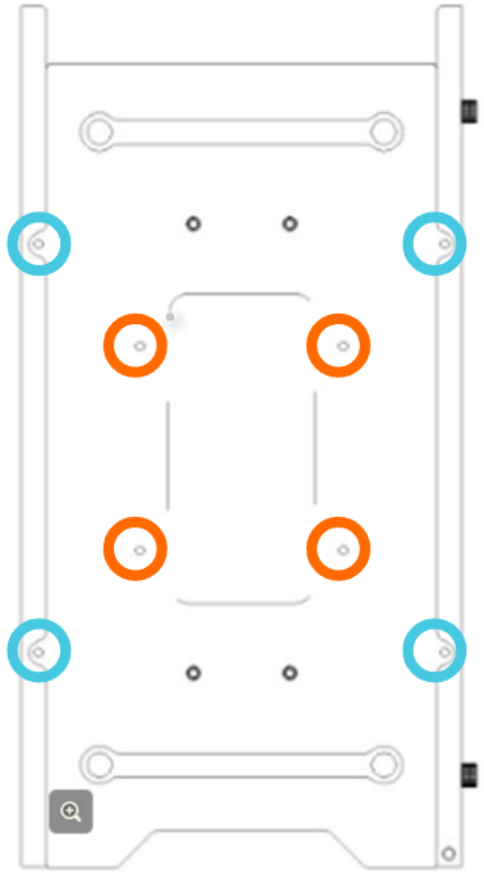
: Wall mount 200x200 threaded holes (M4)

: Wall mount 100x100 threaded holes (M4)

: DIN rail clip screw holes



The node sleeve only supports horizontal mounting



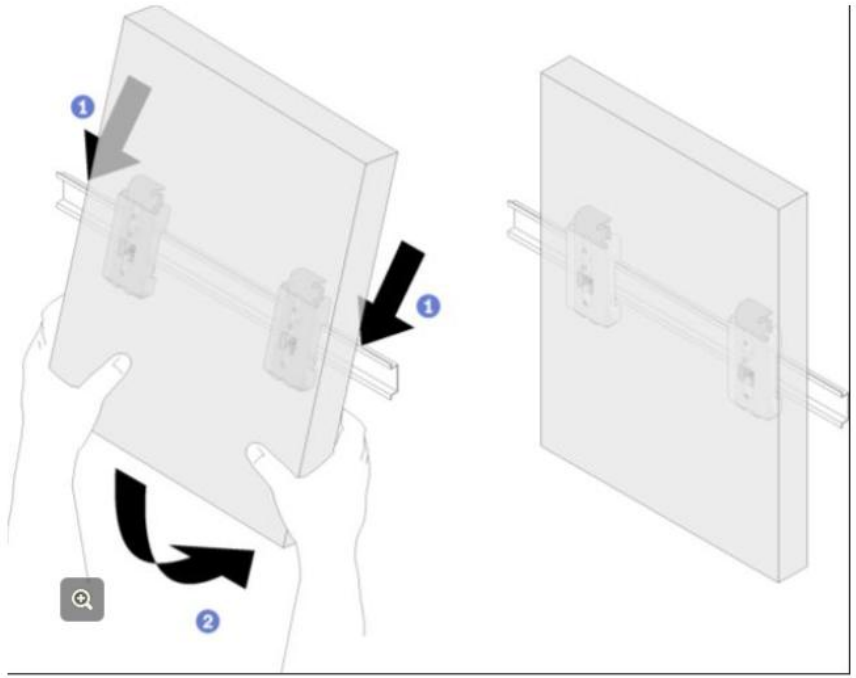
Carrier side of the ac adapter

Step 1 2 3

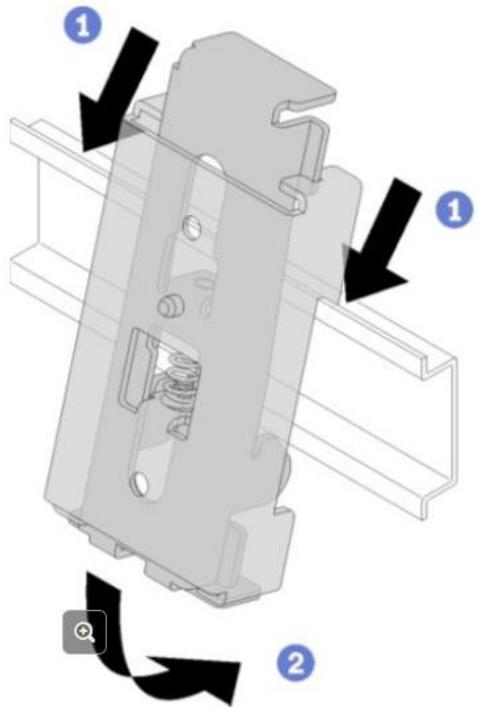
Lenovo

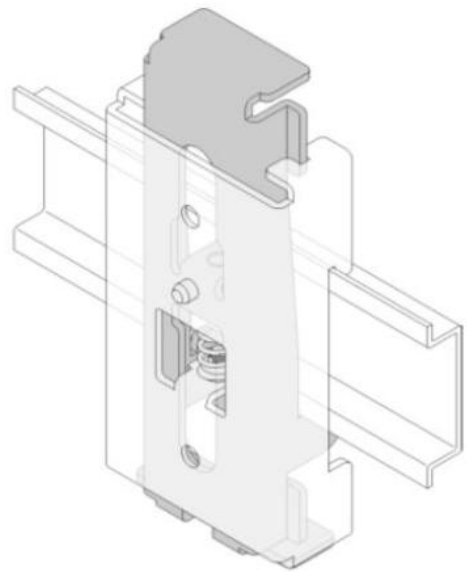
Installing a node sleeve onto a DIN rail

1. Hook the two DIN rail clips onto the rails at an angle.
2. Lower the node sleeve and ensure that the DIN rail clips are securely seated.



Detailed view

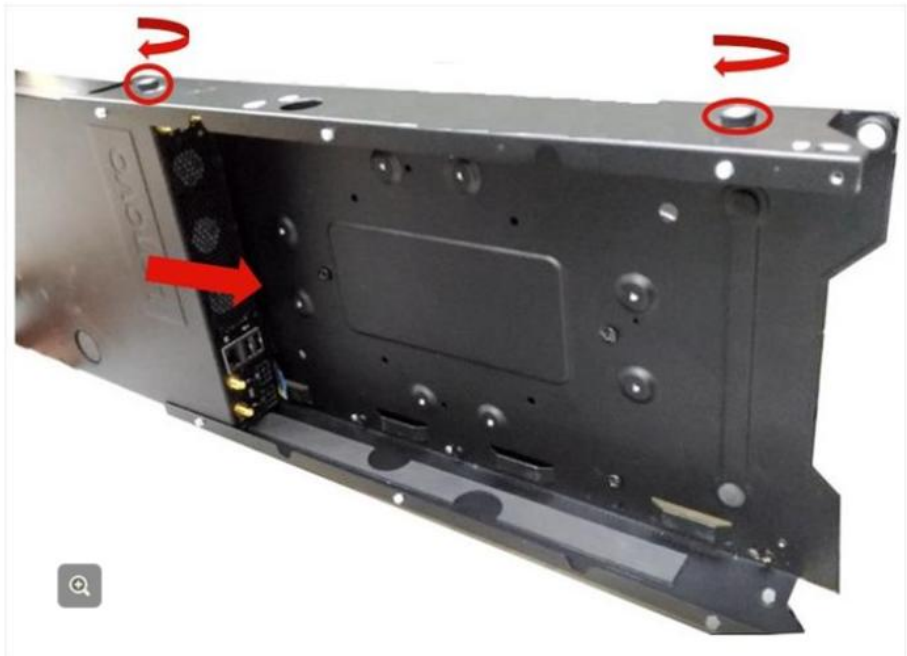




Step 1 2 3

Installing a node sleeve onto a DIN rail

1. Insert the node into the node sleeve, and then fasten the two thumbscrews to secure the node.
2. Connect the ac cables and, if necessary, other cables.



: Thumb screws

Step 1 2 3

Wall mount

To install the wall mount configuration, complete the following steps:

Note: To ensure you have sufficient space to install and remove the node, keep a 500 mm space in front of the node free.

Click each number in turn to see the procedure.

Step 1 2 3 4 5

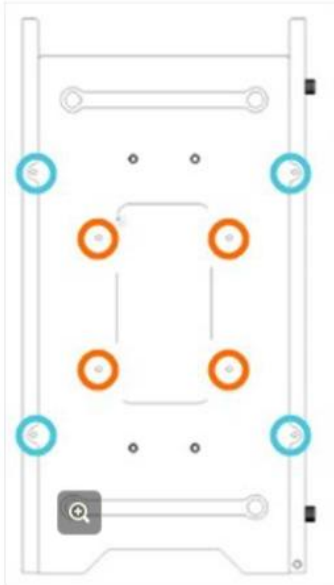
Wall mount

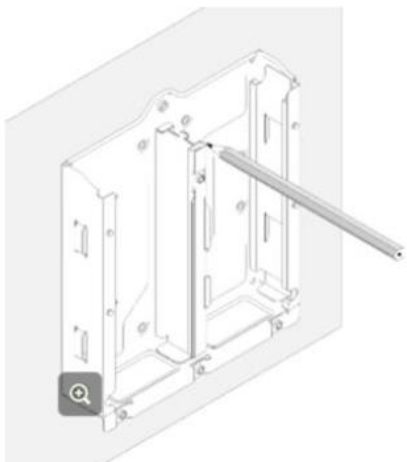
- Place the node sleeve or the ac adapter bracket on the wall.
- You can use either 200x200 or 100x100 threaded holes (M4) for wall installation. Prepare suitable M4 screws (and nuts) before installation.
- Use a pencil to mark the screw positions.

: Wall mount 200x200 threaded holes (M4)

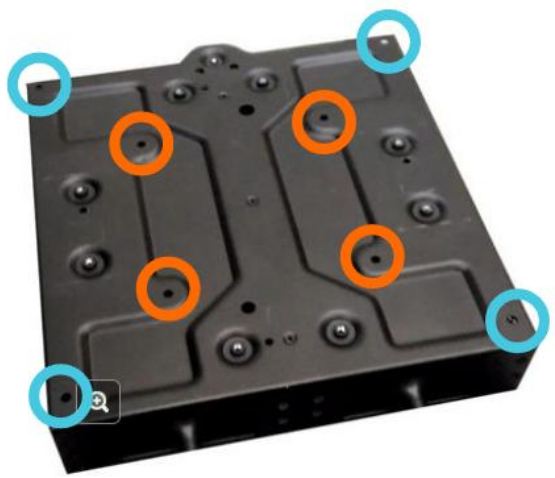
: Wall mount 100x100 threaded holes (M4)

Node sleeve





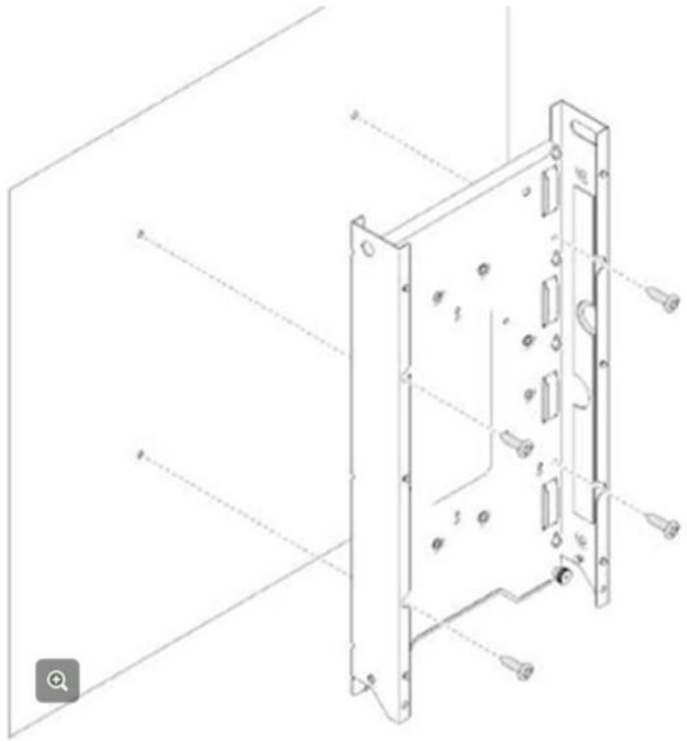
The ac adapter bracket

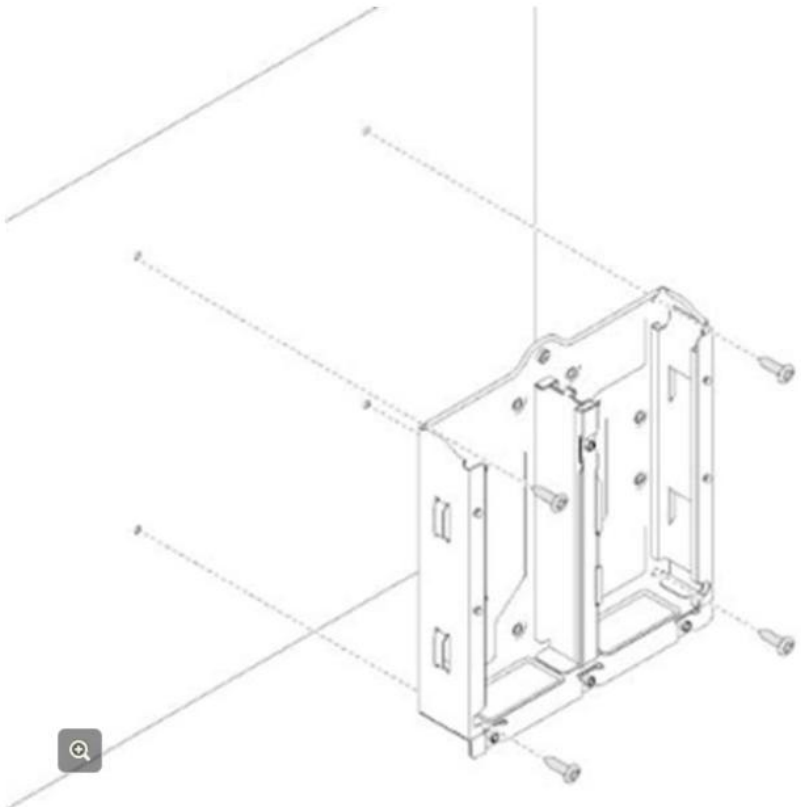


Step 1 2 3 4 5

Wall mount

- Drill the four holes as marked.
- Insert and tighten the four tapping screws.

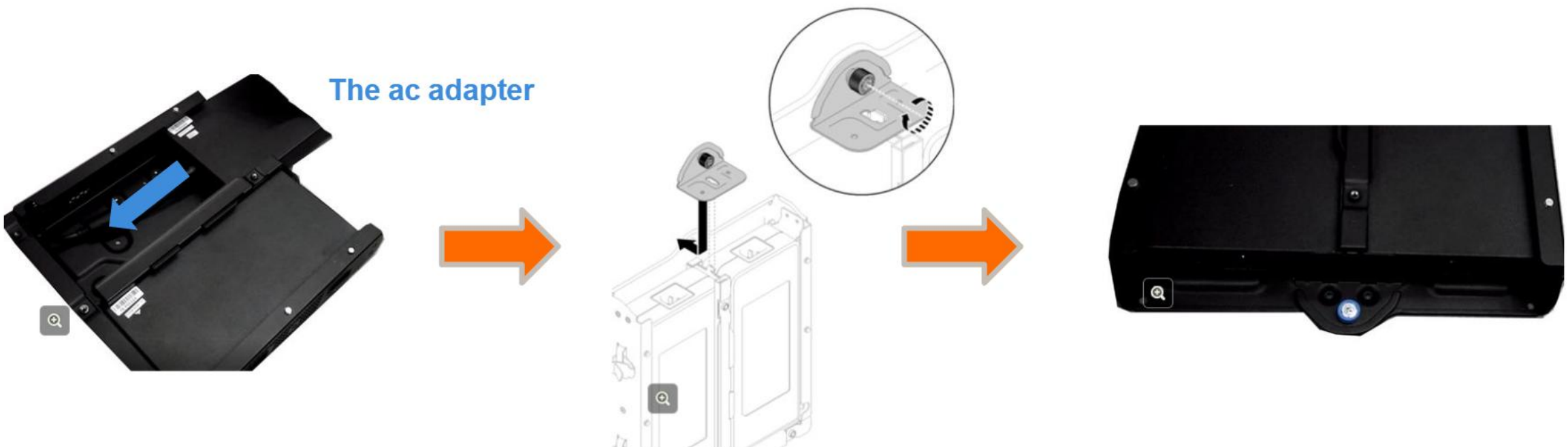




Step 1 2 3 4 5

Wall mount

To install a node sleeve with a power adapter bracket:
Slide the ac adapter into the bracket, and then hook the lock tab into position. Fasten the thumbscrew to secure the ac adapter.

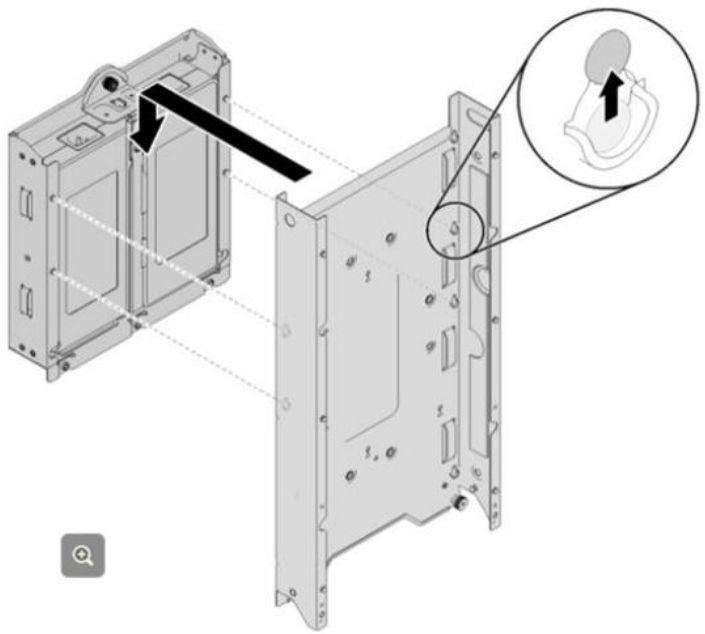


Step 1 2 3 4 5

Wall mount

To install the node sleeve onto the ac adapter bracket:

- Align the node sleeve with the power adapter bracket and push the node sleeve downward slightly to hook the four T-pins into place.
- Insert and tighten the four screws.

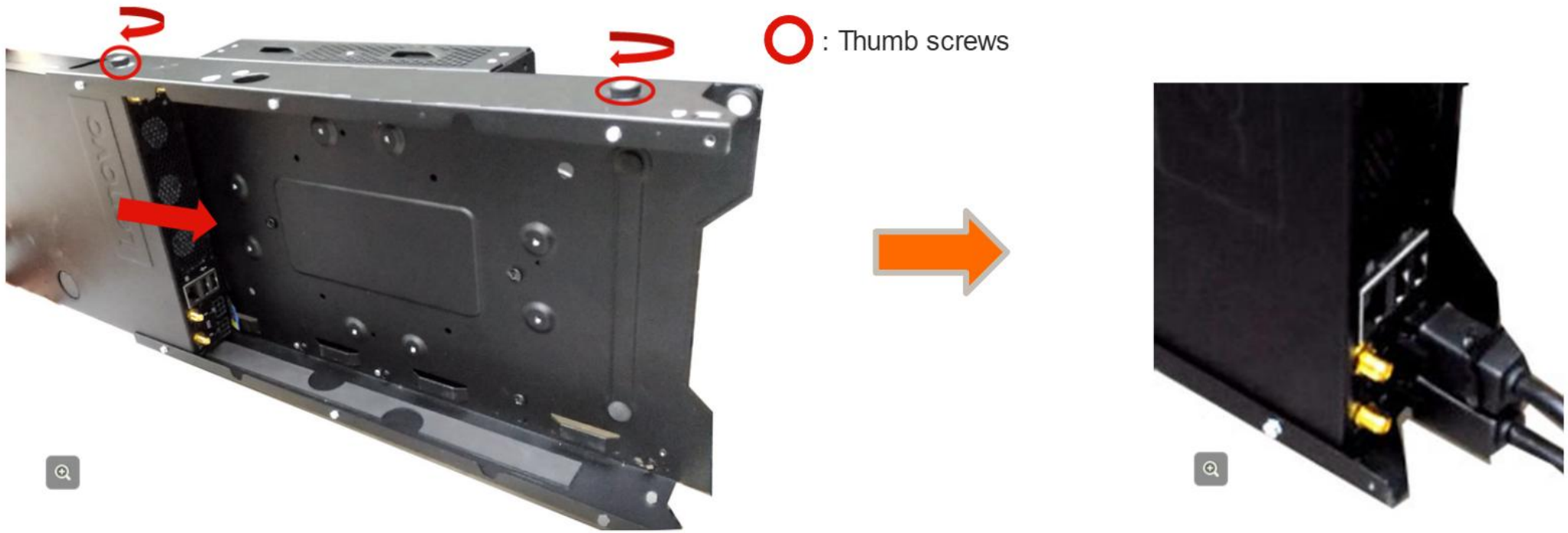


: Four screws

Step 1 2 3 4 5

Wall mount

1. Insert the node into the node sleeve, and then fasten the two thumbscrews to secure the node.
2. Connect the ac cables and, if necessary, other cables.

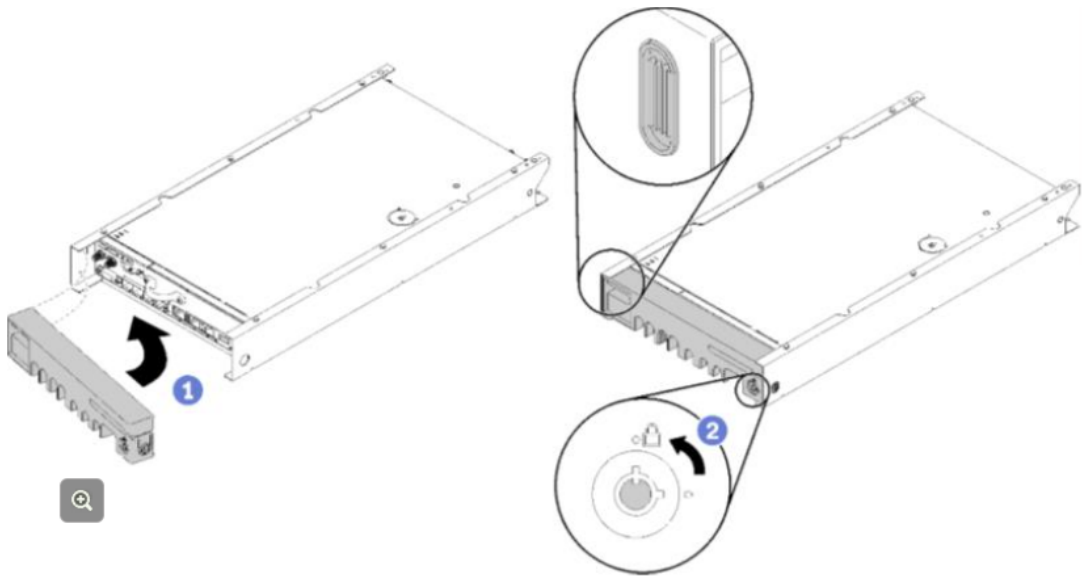


Step 1 2 3 4 5

Security bezel

If the optional security bezel is part of the configuration, install the security bezel after the node has been installed into the node sleeve and all the cables have been connected.

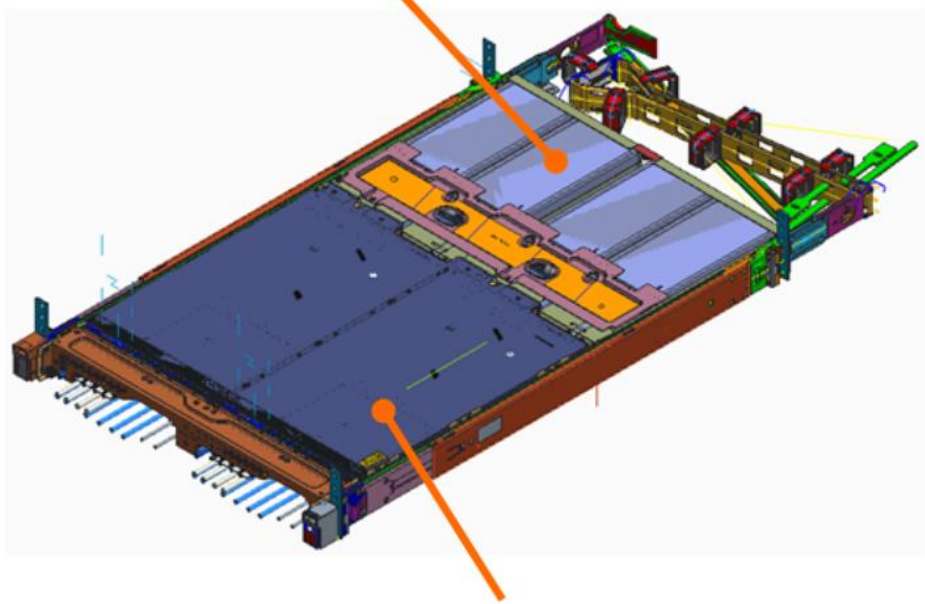
1. Carefully insert the tab on the security bezel into the slot, and then push the security bezel inward until the other side clicks into place.
2. Use the key to lock the security bezel.

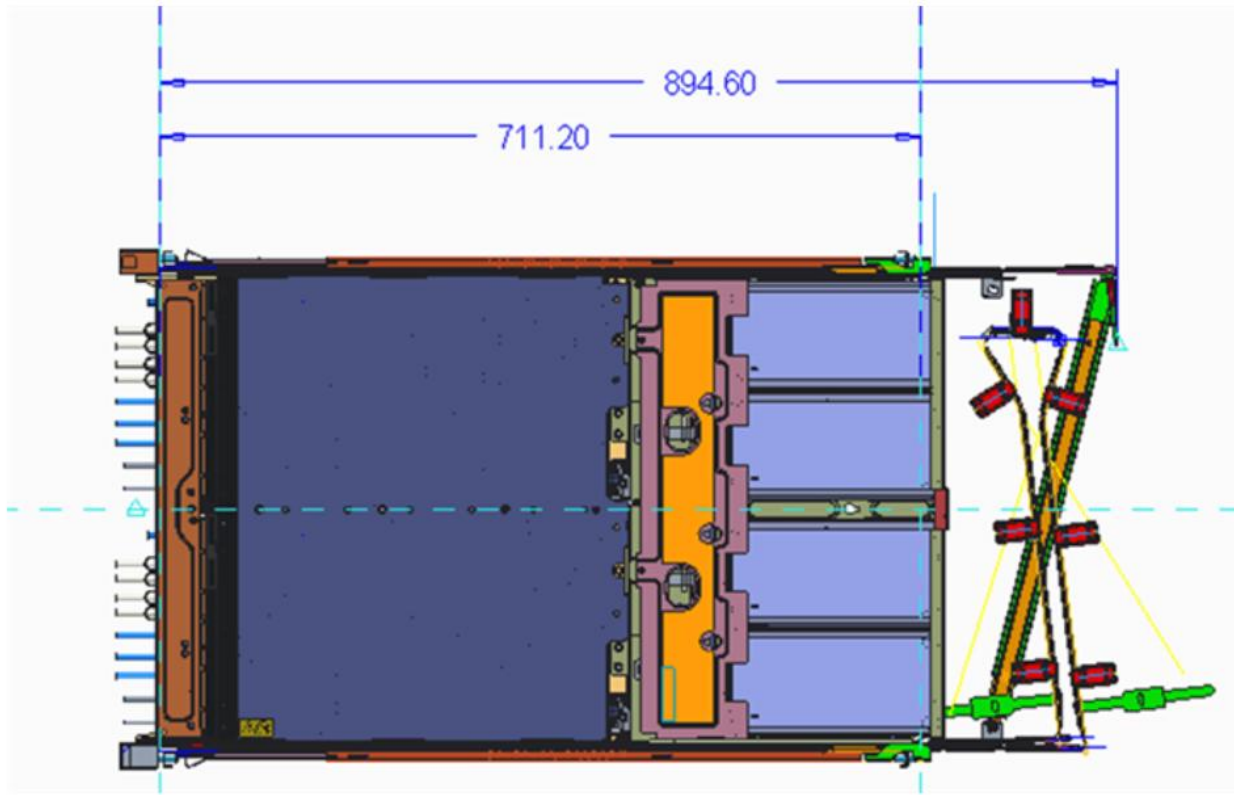


Note: Refer to the SE350 Configuration Installation Guide for the details of the DIN rail or wall mount configuration.

ThinkSystem E1 enclosure

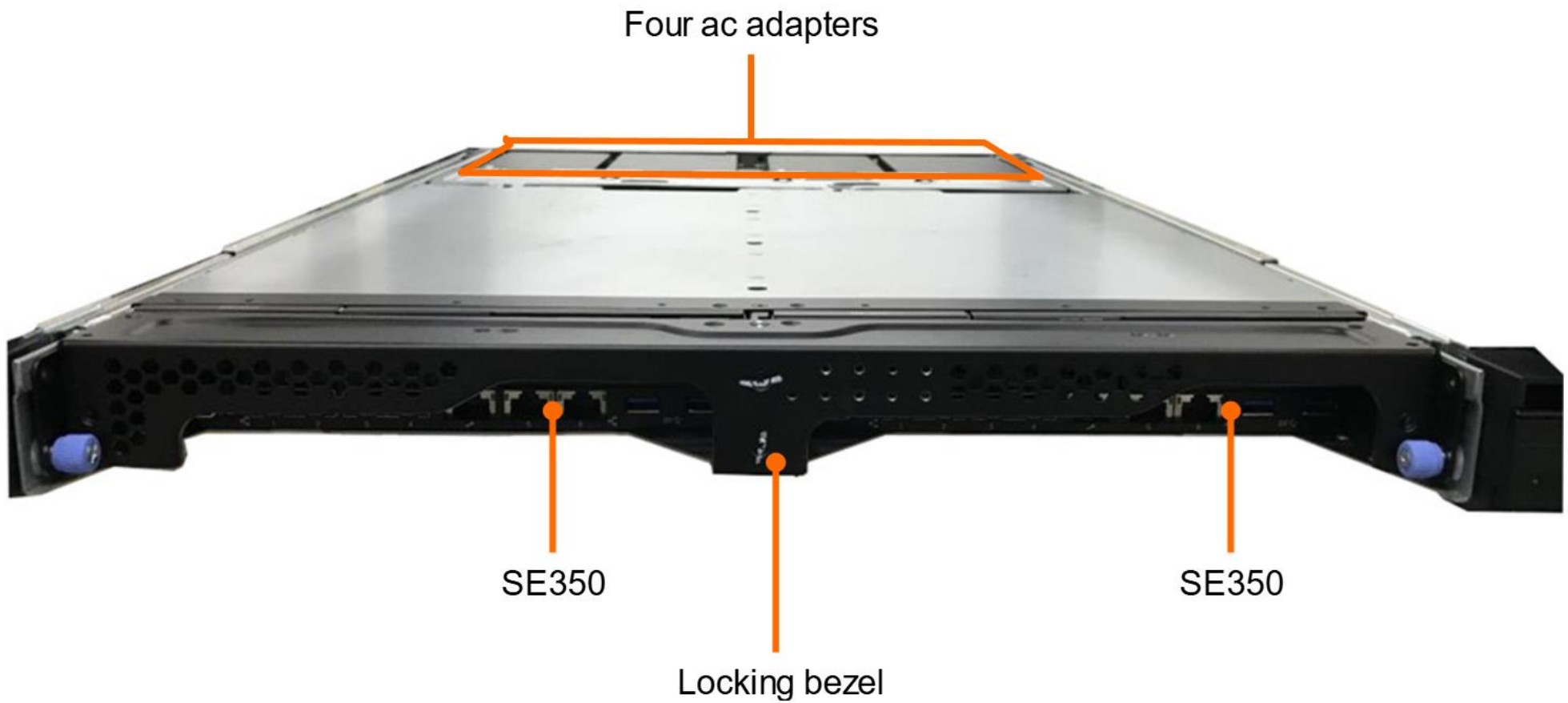
The ThinkSystem E1 enclosure is the rack kit for the SE350, machine type 7D1R, model CTO1WW. The form factor of the enclosure is 1U 2 node (1U2N) and it can fit two SE350 nodes installed side by side. The E1 enclosure is used for long racks.





E1 enclosure front view

The ac adapters are installed at the rear of the server nodes to form a 1U2N form factor system.

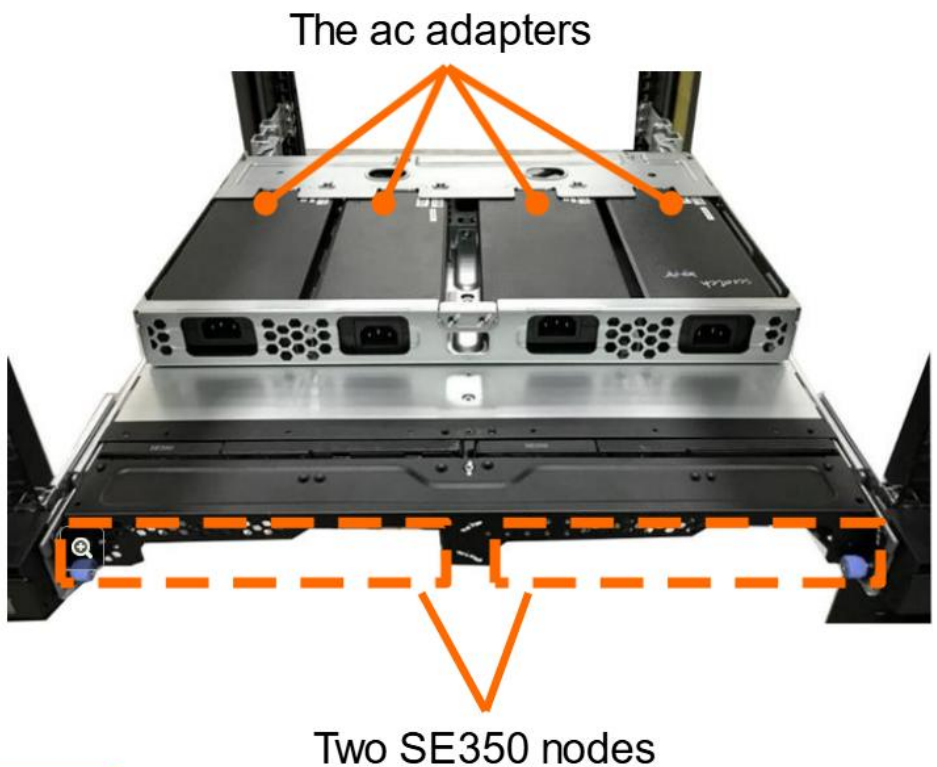


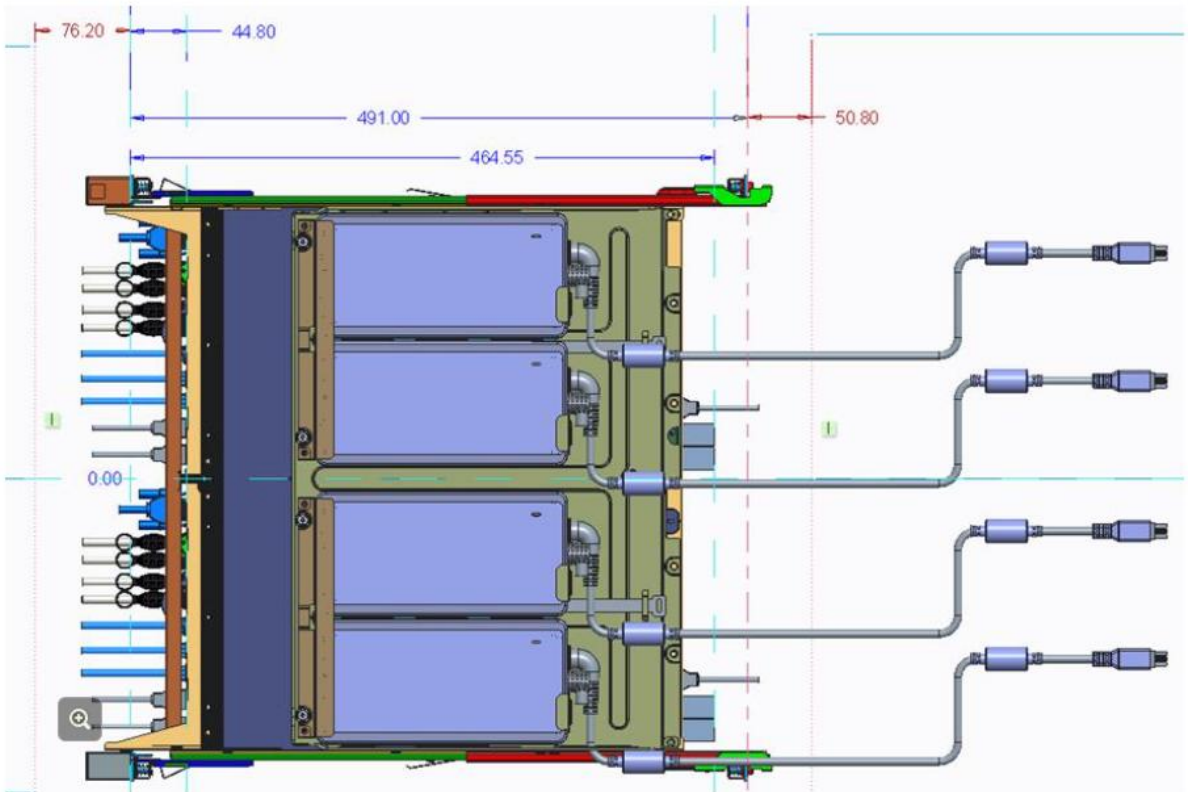
E1 enclosure rear view

The E1/E2 enclosure is used to install SE350 nodes onto a rack in a server room. The 10 G SFP+ LOM package model is generally the best choice for this type of installation as WiFi and LTE is not necessary in the server room.

ThinkSystem E2 enclosure

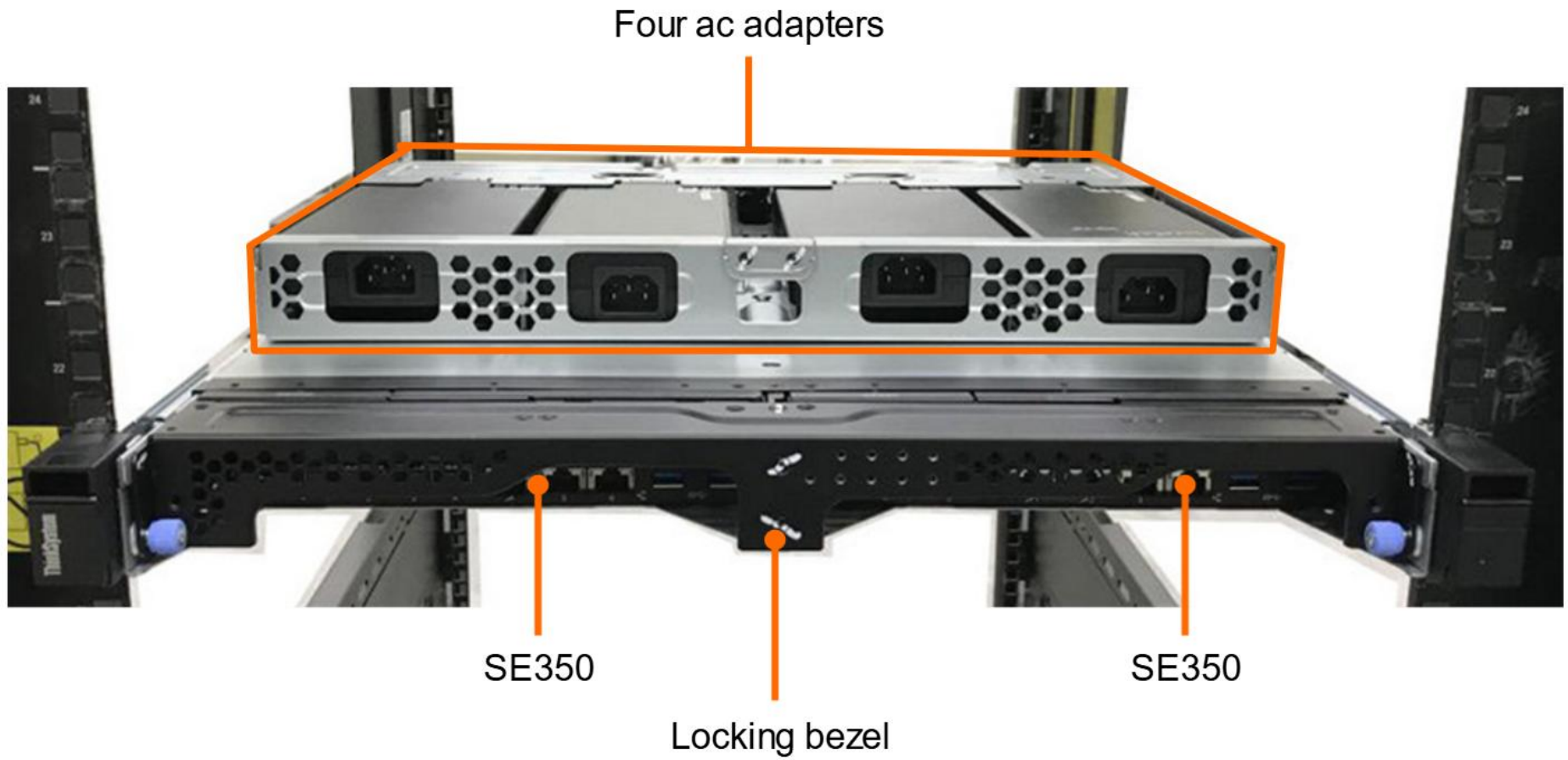
The ThinkSystem E2 enclosure is the other rack kit option for the SE350, machine type 7D1R, model CTO2WW. The form factor of the enclosure is 2U 2 node (2U2N) and it can fit two SE350 nodes installed side by side. The purpose of the enclosure's 2U design is that by moving the ac adapters above the server nodes, the solution can fit shorter server racks.





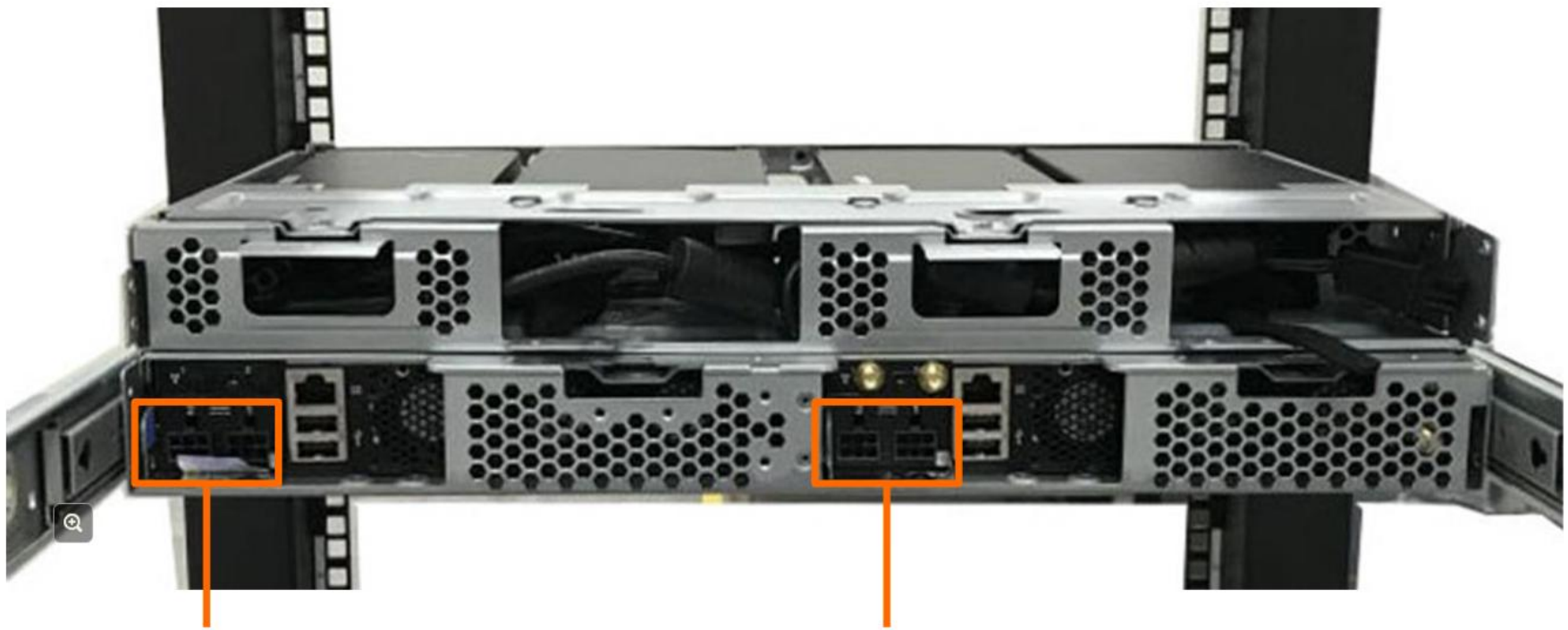
E2 enclosure front view

The ac adapters are installed on top of the server nodes to create a 2U2N form factor.



E2 enclosure rear view

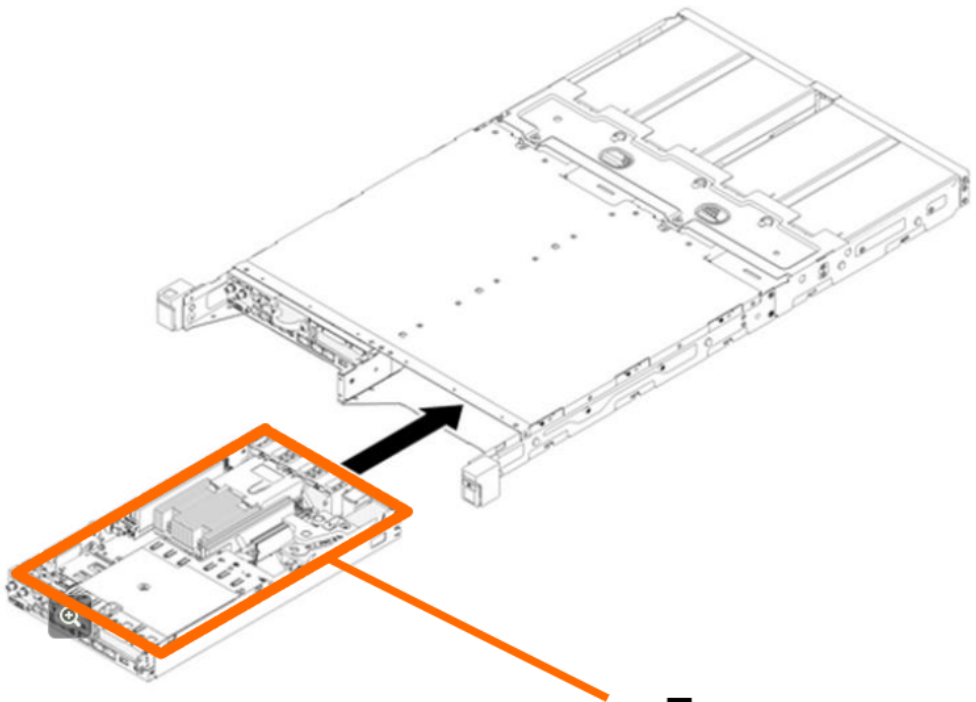
The E1/E2 enclosure is used to install SE350 nodes onto a rack in a server room. The 10 G SFP+ LOM package model is generally the best choice for this type of installation as WiFi and LTE is not necessary in the server room.



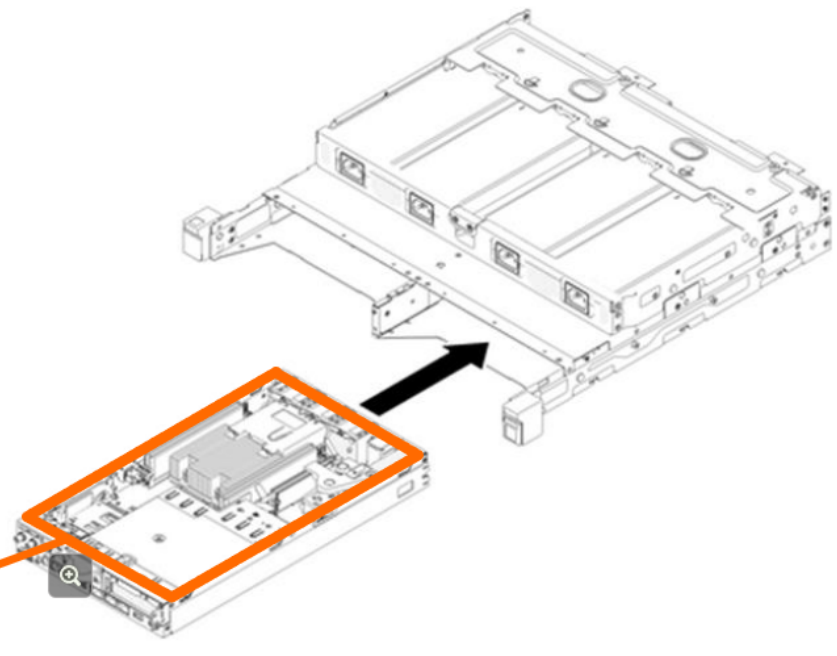
Installing server nodes into the enclosure

To ensure proper cooling, the top cover of the SE350 must be removed before it can be installed into the E1/E2 enclosure.

E1 enclosure



E2 enclosure



Top cover removed

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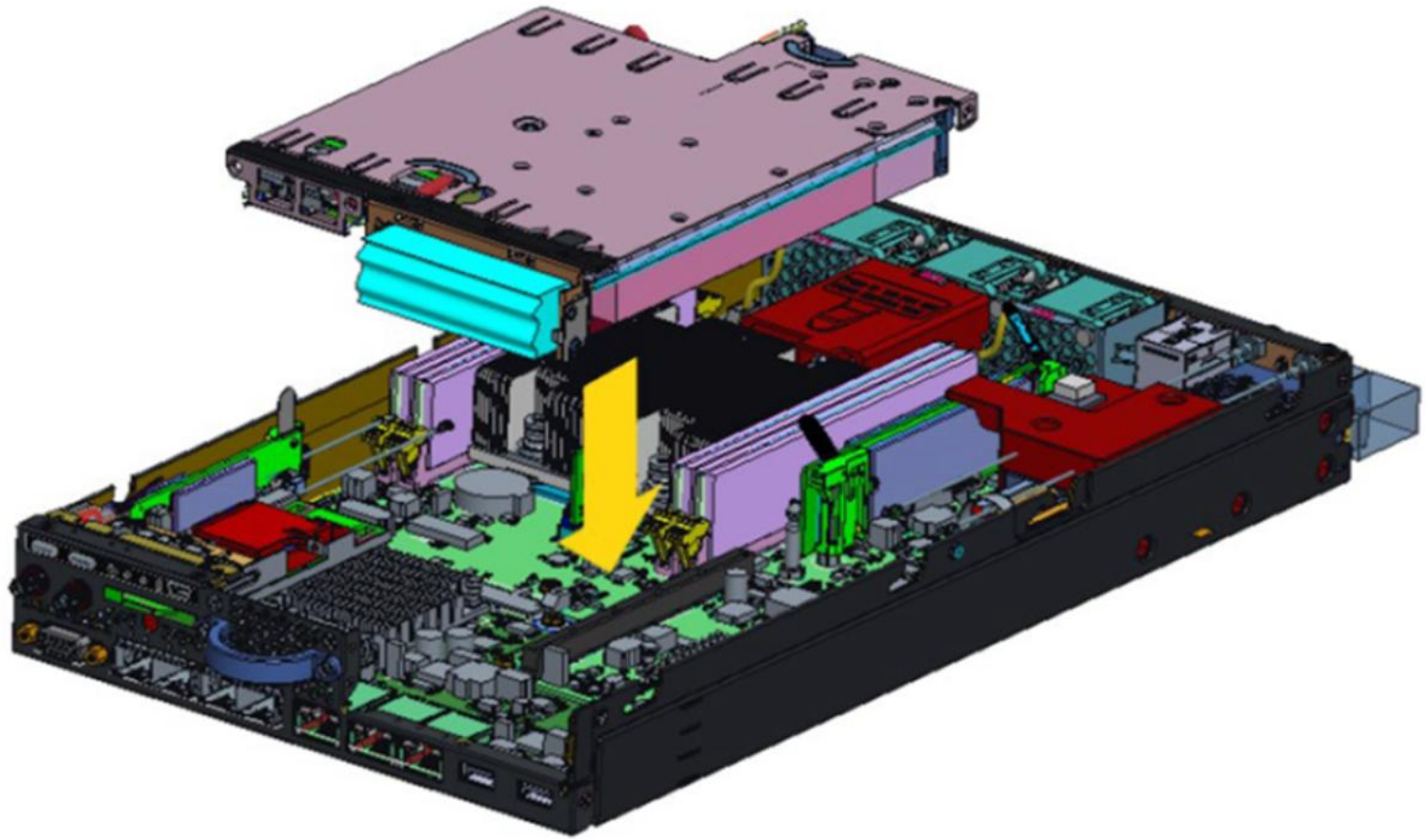
Riser assembly location

The figure illustrates the location of the SE350 riser assembly.



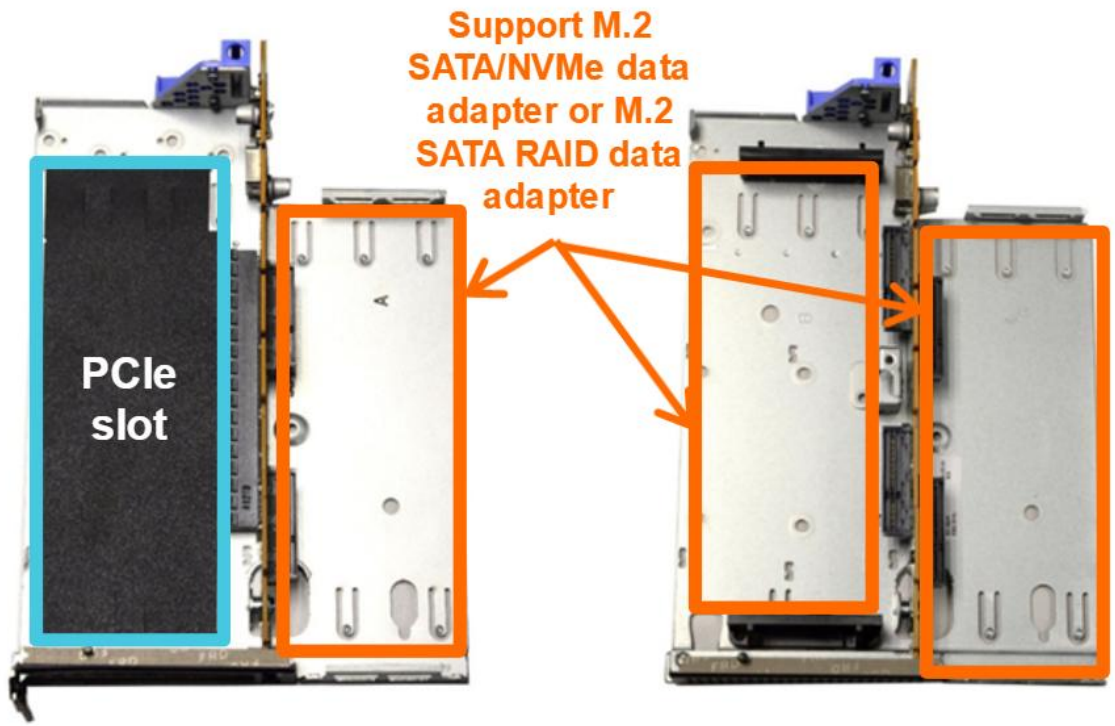
Riser cage

The SE350 supports two types of riser cage.

1. PCIe and M.2 riser assembly
   - One PCIe 3.0 x16 slot
     - Supports low profile, half-height, half-length PCIe adapters lower than 75 watts
       - NVIDIA Tesla T4 GPU
       - Multiple LP PCIe I/O networking cards
   - One M.2 data adapter / SATA RAID data adapter
     - Supports M.2 drives from slot numbers 2 to 5
     - At least one drive is required
2. M.2 riser assembly
   - Supports up to two M.2 data adapters / SATA RAID data adapters
     - M.2 drives from slot numbers 2 to 5
     - M.2 drives from slot numbers 6 to 9
     - At least one drive is required

PCIe and M.2 riser assembly

M.2 riser assembly



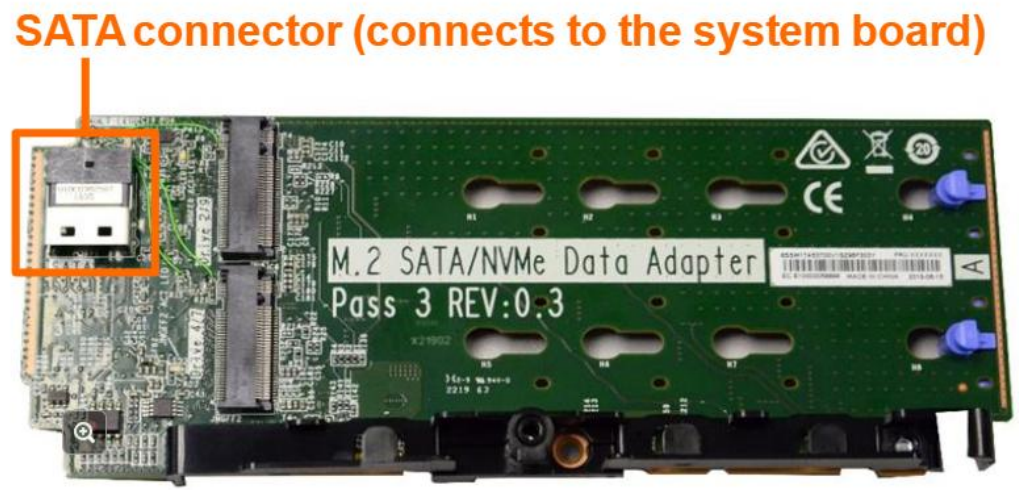
M.2 storage adapters for the SE350

The SE350 supports two types of M.2 storage adapters.

- M.2 boot adapters
  - Similar to the existing ThinkSystem M.2 with the Mirroring Enablement Kit, but they are not compatible.
  - Supports up to two identical M.2 SATA drives.
- M.2 data adapter
  - New design, known as the ThinkSystem SE350 M.2 SATA/NVMe 4-bay Data Drive Enablement Kit
  - Supports up to four M.2 SATA/NVMe drives

Note: M.2 drives installed on boot adapters and data adapters are not swappable.

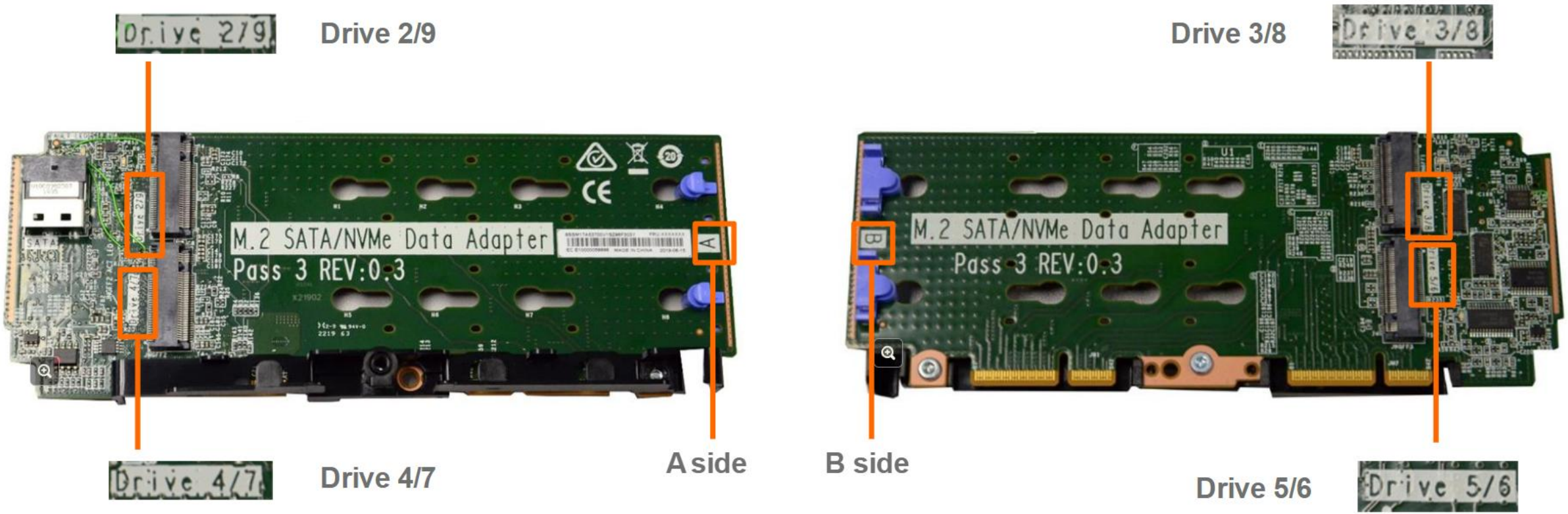
M.2 boot adapter



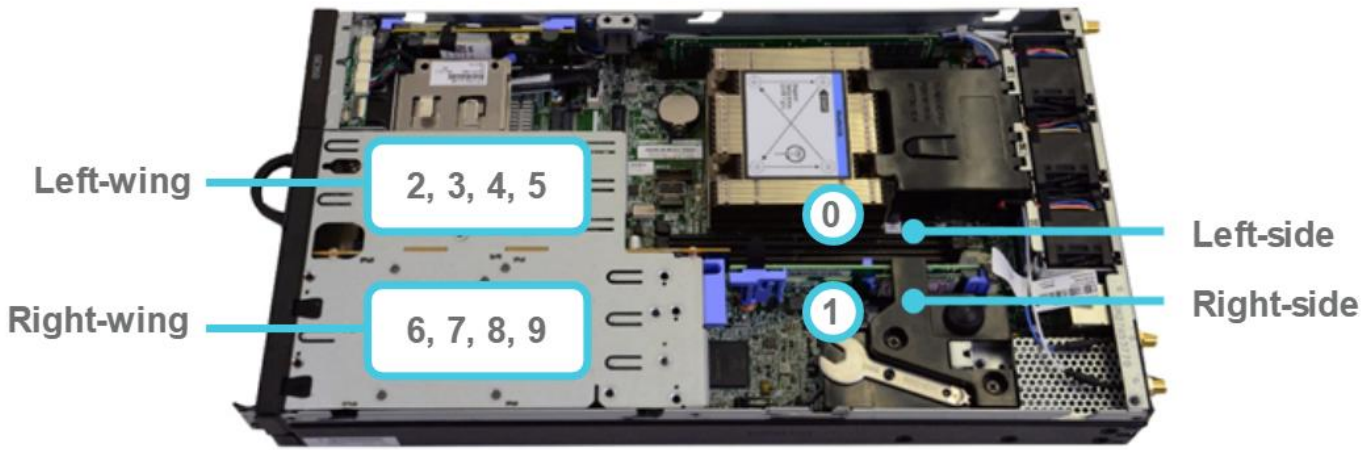
M.2 data adapter

The M.2 SATA/NVMe Data adapter

The M.2 slot numbers are printed on the adapter.



M.2 slot numbering



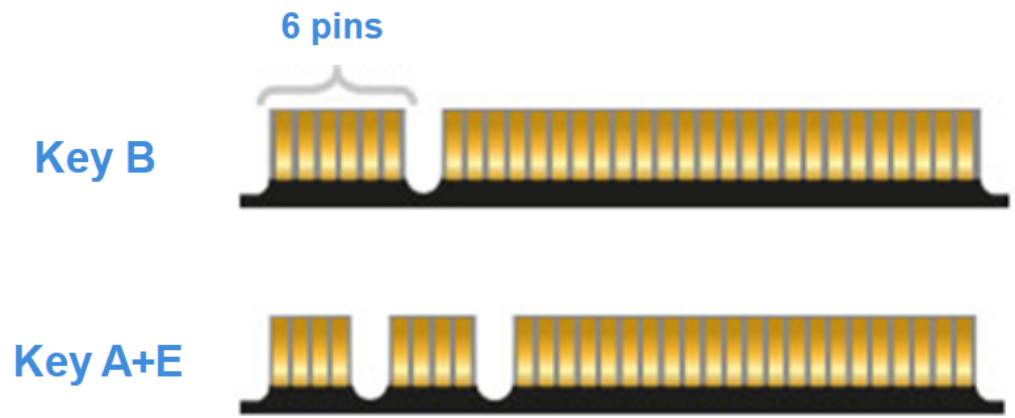
M.2 boot adapter	The slot number in the UEFI Setup Menu
Left-side	Slot 0
Right-side	Slot 1

Left-wing M.2 data adapter (support for SATA or NVMe drives)		Right-wing M.2 data adapter (if equipped) (support for NVMe drives only if equipped)	
The drive numbering on the adapter	The slot number in the UEFI Setup Menu	The drive numbering on the adapter	The slot number in the UEFI Setup Menu
Drive 2/9	Slot 2	Drive 2/9	Slot 9
Drive 3/8	Slot 3	Drive 3/8	Slot 8
Drive 4/7	Slot 4	Drive 4/7	Slot 7
Drive 5/6	Slot 5	Drive 5/6	Slot 6

M.2 WLAN/LTE wireless adapter

The M.2 WLAN/LTE wireless adapter is for the SE350 wireless-enabled LOM package model only. This adapter is used for the Wi-Fi and LTE modules and the SIM card. The card supports the following wireless modules:

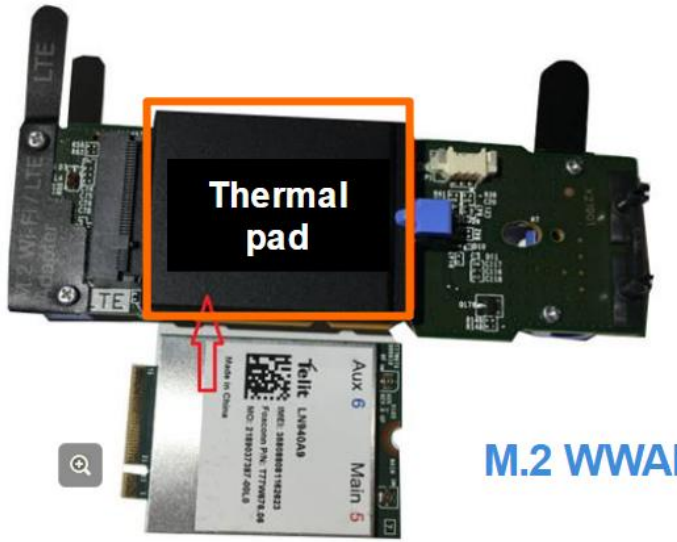
- ThinkSystem M.2 WWAN LTE Module
  - M.2 3042 form factor
  - Key B connector
- ThinkSystem M.2 WiFi Module:
  - M.2 2230 form factor
  - Key A+E connector



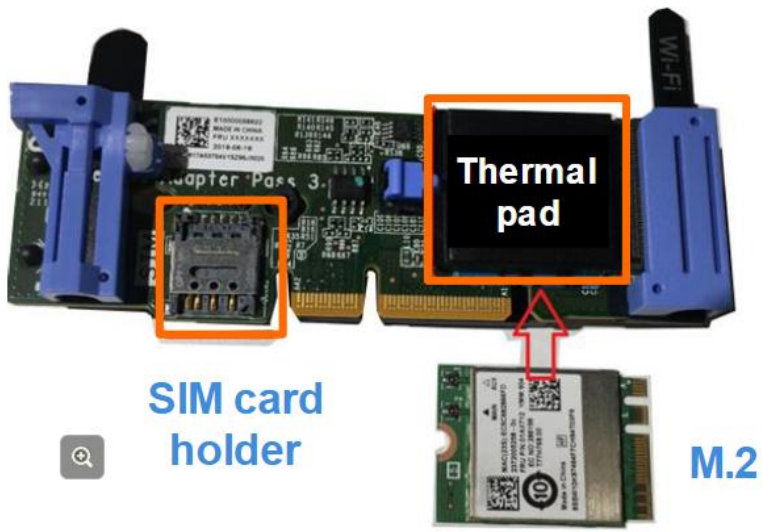
Note: The power adapter must be unplugged before servicing the ThinkSystem Wireless Adapter Carrier Card. Wireless modules are sensitive to electrical hazards.

M.2 WLAN/LTE wireless adapter location

Front



M.2 WWAN LTE Module



SIM card holder

M.2 WiFi Module

Lenovo

Antenna location and position

Install the LTE and Wi-Fi antennas in the correct locations. Both LTE and Wi-Fi modules have two antenna connectors, and it is recommended to keep one antenna in a vertical position and the other in a horizontal position.