

Smarter technology for all

Servicing the ThinkSystem SR645 V3

ES72376

October 2024



Prerequisites

- ES42430 – AMD EPYC processor architecture for ThinkSystem V3 servers
<https://lenovoedu.lenovo.com/course/view.php?idnumber=ES42430>
- ES51757B – Introducing ThinkSystem tools
<https://lenovoedu.lenovo.com/course/view.php?idnumber=ES51757B>
- ES52374 – ThinkSystem tools for the ThinkSystem V3 platform
<https://lenovoedu.lenovo.com/course/view.php?idnumber=ES52374>
- ES41759C – Introducing ThinkSystem problem determination
<https://lenovoedu.lenovo.com/course/view.php?idnumber=ES41759C>

Objectives

After completing the course, you will be able to:

- Describe the ThinkSystem SR645 V3 server and components
- List the SR645 V3 server specifications
- Describe the SR645 V3 server configurations and block diagrams
- Describe the SR645 V3 server management tools
- Describe the problem determination steps and explain how to troubleshoot issues with the SR645 V3

ThinkSystem SR645 V3 overview

Product features, technical specifications

The Lenovo logo is positioned in the top right corner of the slide. It consists of the word "Lenovo" in white, sans-serif font, oriented vertically. The text is set against a rectangular background with a vertical color gradient transitioning from green at the top to blue at the bottom.

Lenovo

ThinkSystem SR645 V3 product overview

The ThinkSystem SR645 V3 is a 1U two-socket rack server that features 4th and 5th Gen AMD EPYC (9004 and 9005 Series). It supports various front and rear drive configurations for internal storage. For processors with a TDP of 320 W or more, the Lenovo Neptune liquid assisted cooling module (LACM) must be installed.

There are two SR645 V3 machine types:

- 7D9C (three-year warranty)
- 7D9D (one-year warranty)



Features and specifications

Scroll down for more information

Features	Descriptions
Form factor	1U rack mount
CPU	<p>Two AMD EPYC 9004 series processors (AMD code name: Genoa)</p> <ul style="list-style-type: none">• Up to 96 Zen4 cores (192 threads) per socket• Up to four GMI3 links at up to 32 GT/s• TDP of up to 360 W <p>or</p> <p>Two AMD EPYC 9005 series processors (AMD code name: Turin)</p> <ul style="list-style-type: none">• Up to 160 Zen5 cores and 320 threads• Core speed of up to 4.0 GHz• TDP of up to 400 W
Storage	<ul style="list-style-type: none">• Up to four 3.5-inch hot-swap SAS/SATA drives• Up to 10 2.5-inch hot-swap SAS/SATA drives• Up to 16 hot-swap E1.S EDSFF NVMe drives <p>Inside</p> <ul style="list-style-type: none">• Up to two SATA M.2 drives

Note:

- For the latest specifications, refer to the SR645 V3 product guide on [Lenovo Press](#)
- For the complete drive configuration rules, refer to [Lenovo Press product guide – Internal storage section](#)

Features and specifications

Scroll down for more information

Features	Descriptions
	Rear <ul style="list-style-type: none">• Up to two 2.5-inch hot-swap SAS/SATA/NVMe drives• Up to two 7 mm hot-swap SATA/NVMe drives
Memory	24 DDR5 DIMM slots <ul style="list-style-type: none">• Maximum speed: 6000 MHz (1DPC)• Minimum memory: 16 GB• Maximum memory: 1.5 TB (twenty-four 64 GB RDIMMs)
Network interface	OCP 3.0
I/O expansion slots	<ul style="list-style-type: none">• Up to three PCIe 5.0 slots• One OCP network adapter slot
Cooling	<ul style="list-style-type: none">• Up to eight fans (N+2 redundant)• Closed loop liquid cooling heat sink if processors with a TDP of 320 W or more are installed
Power supplies	Up to two hot-swap power supplies
Management interface	Lenovo XClarity Controller 2 (XCC2)

Note:

- For the latest specifications, refer to the SR645 V3 product guide on [Lenovo Press](#)
- For the complete drive configuration rules, refer to [Lenovo Press product guide – Internal storage section](#)

ThinkSystem SR645 V3 front view

The SR645 V3 supports various front drive configurations. Click the pictures to see more information.



Four 3.5-inch drives configuration



16 E1.S EDSFF NVMe drives configuration



Eight 2.5-inch drives configuration



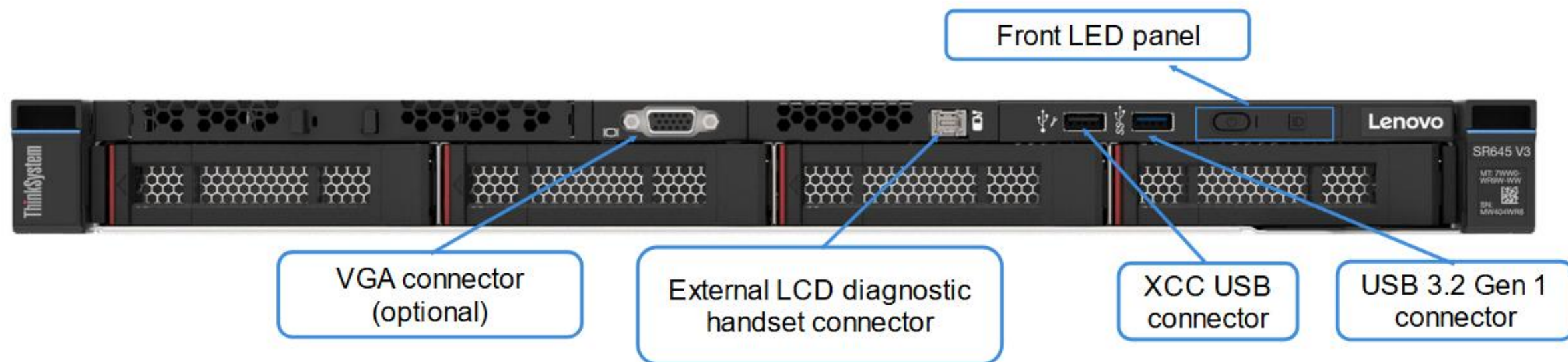
Four 2.5-inch drives, two PCIe 5.0 slots, and one OCP slot



10 2.5-inch drives configuration

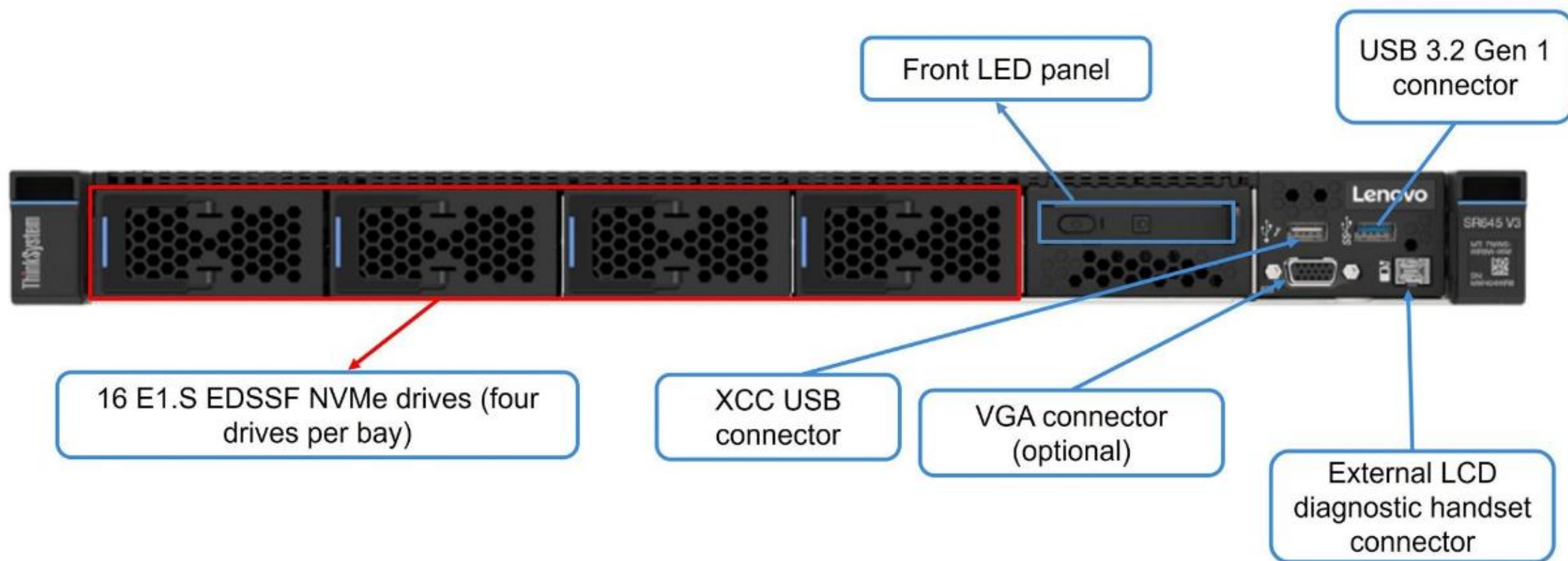
Four 3.5-inch drives configuration V3 front view

The SR645 V3 supports various front drive configurations. Click the pictures to see more information.

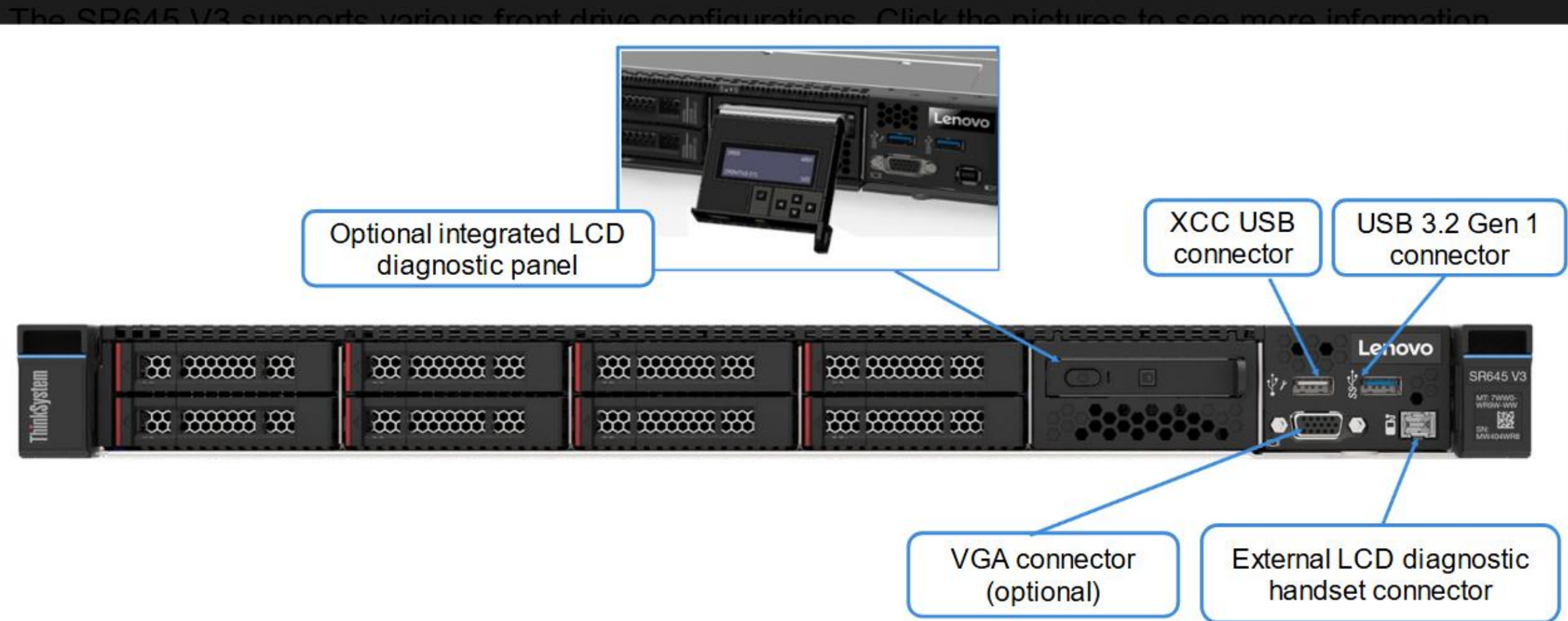


16 E1.S drives configuration SR645 V3 front view

The SR645 V3 supports various front drive configurations. Click the pictures to see more information.

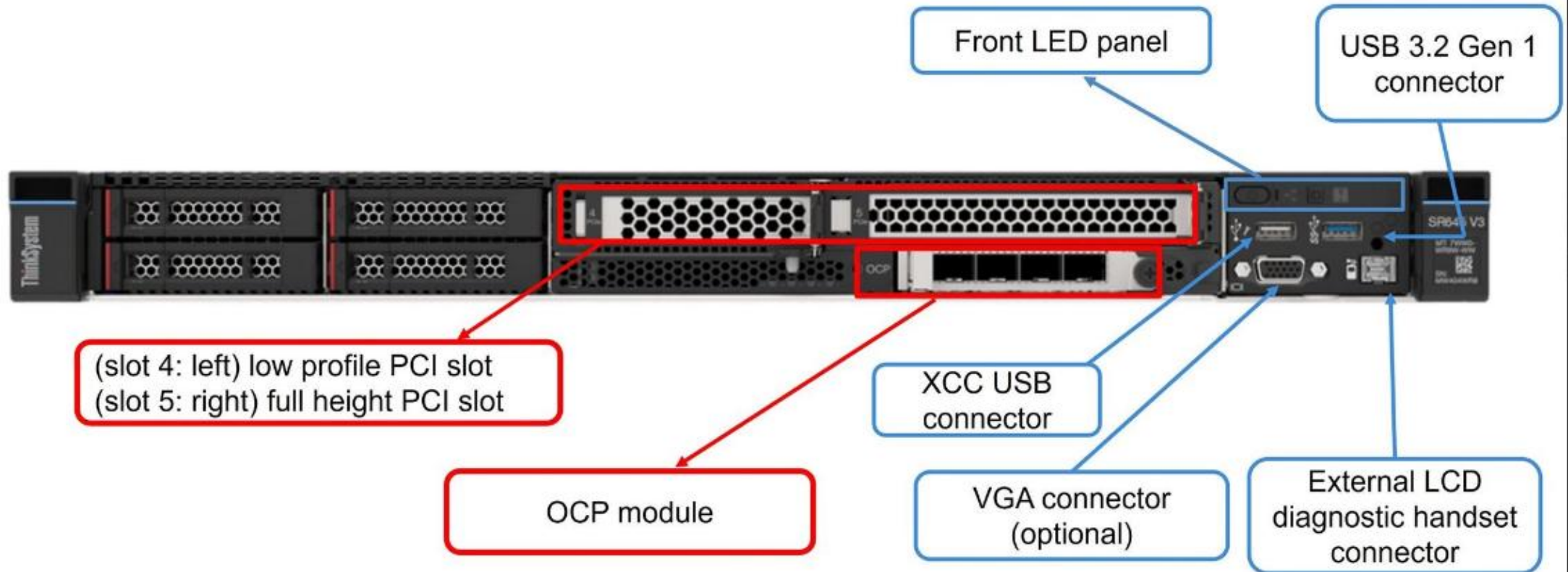


Eight 2.5-inch drives configuration V3 front view



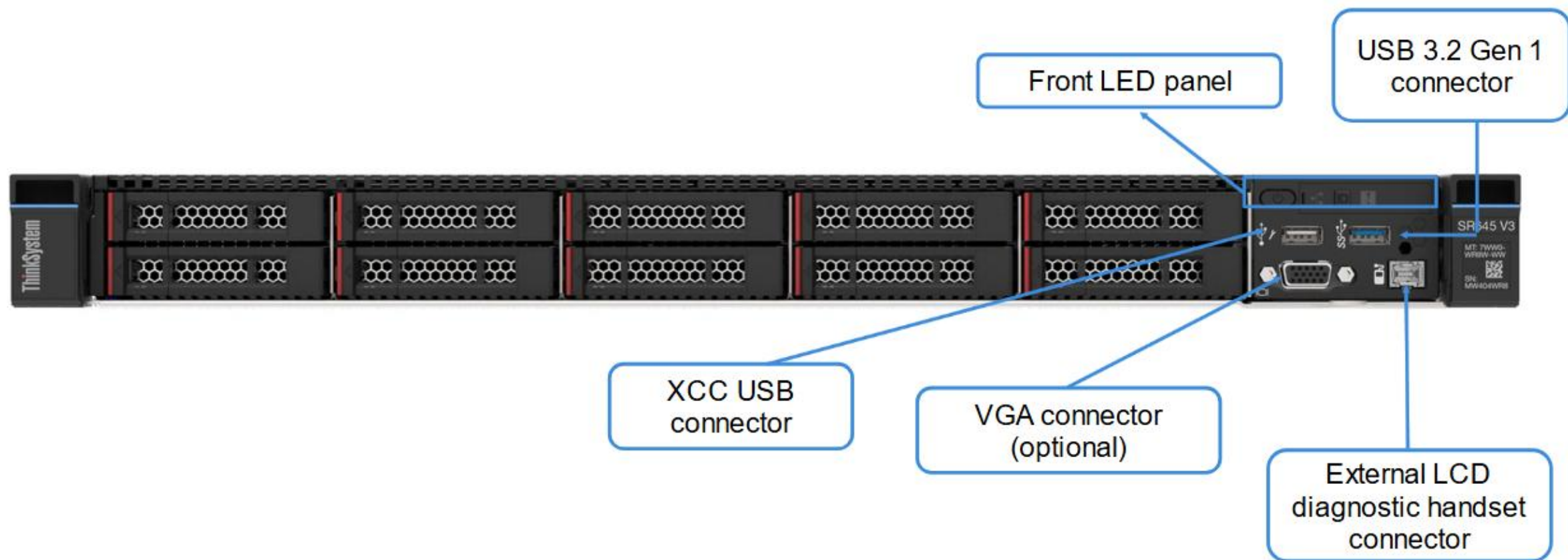
Four 2.5-inch drives + two PCIe 5.0 slots + one OCP slot

The SR645 V3 supports various front drive configurations. Click the pictures to see more information.



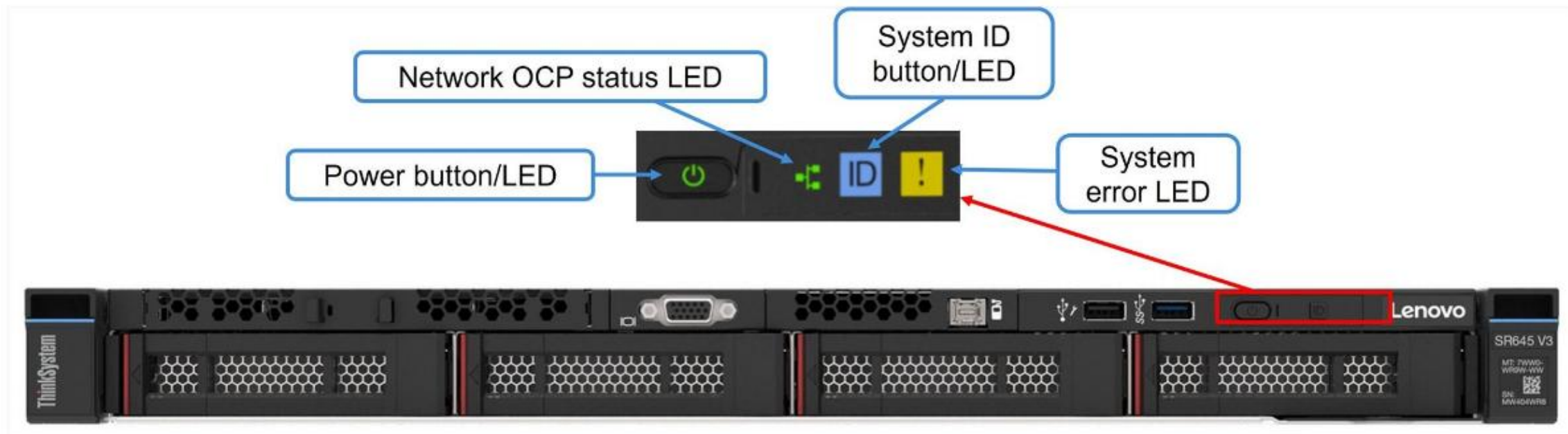
10 2.5-inch drives configuration SR645 V3 front view

The SR645 V3 supports various front drive configurations. Click the pictures to see more information

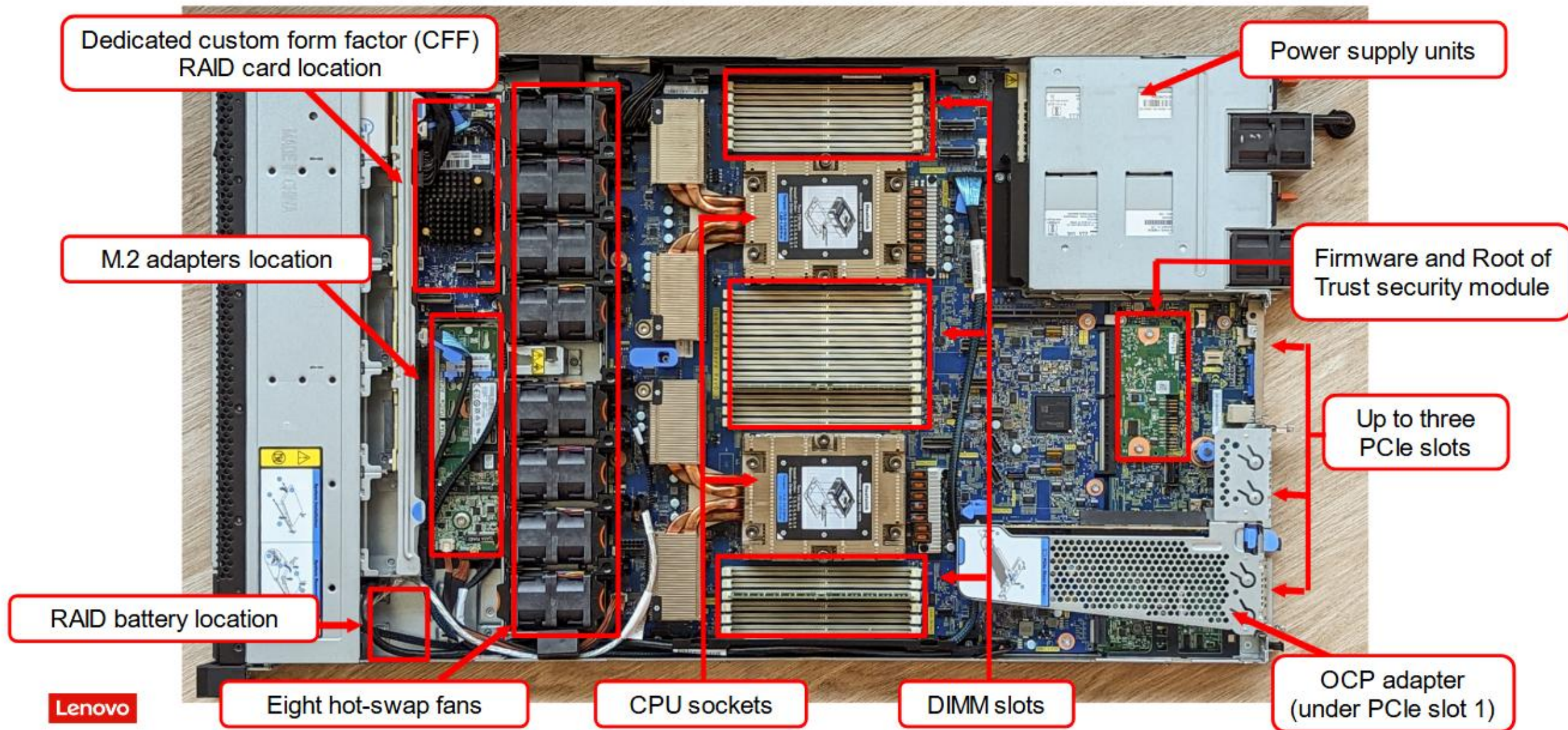


SR645 V3 front LED panel

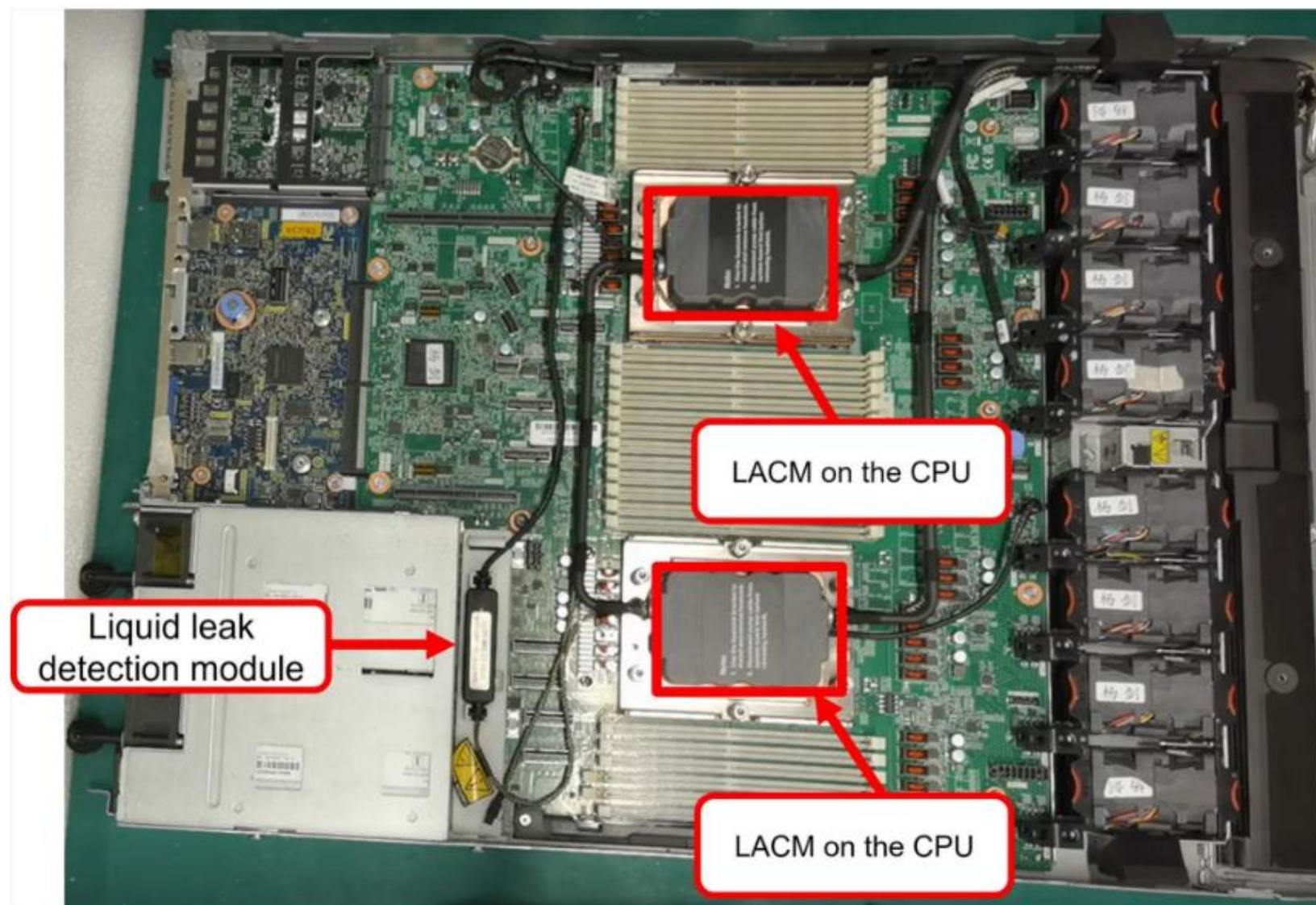
The SR645 V3 supports the front LED panel. The location of the panel will vary for the different SR645 V3 models.



ThinkSystem SR645 V3 inside view



SR645 V3 inside view – LACM configuration



ThinkSystem SR645 V3 rear view

The SR645 V3 supports the following rear configurations.



One low profile and one full height PCIe slot – both for CPU 1



One low profile and one full height PCIe slot



Three low profile PCIe slots

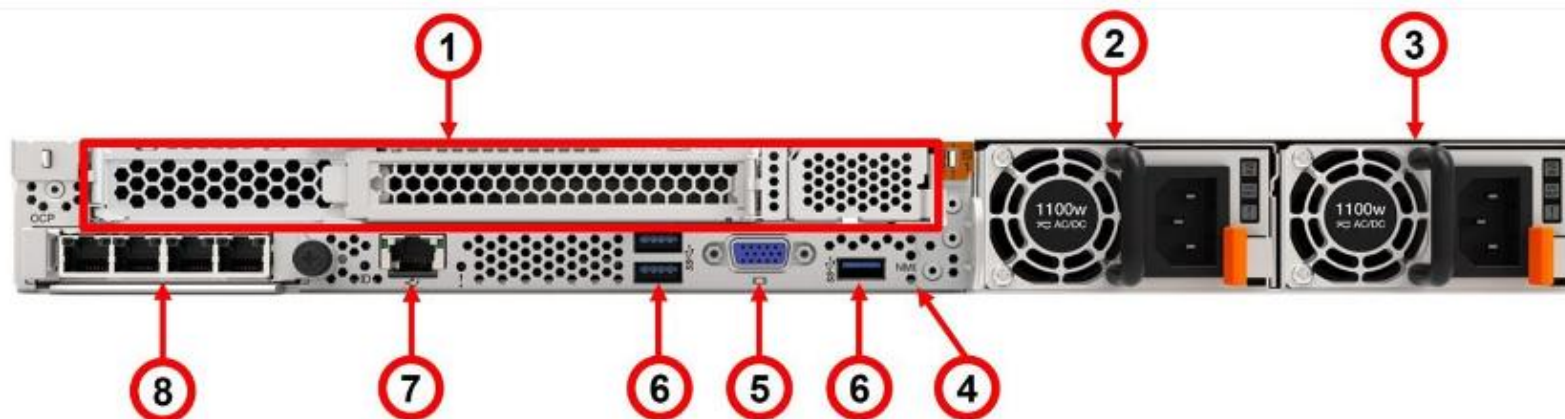


One low profile PCIe slot and two 2.5-inch hot-swap drives



Two low profile PCIe slots and two 7 mm hot-swap drives

ThinkSystem SR645 V3 rear components



① PCIe slots or rear drive slots

② PSU 2 (optional)

③ PSU 1

④ NMI button

⑤ VGA connector

⑥ USB 3.2 Gen 1 connectors

⑦ XCC2 management port

⑧ OCP module (optional, two or four connectors)

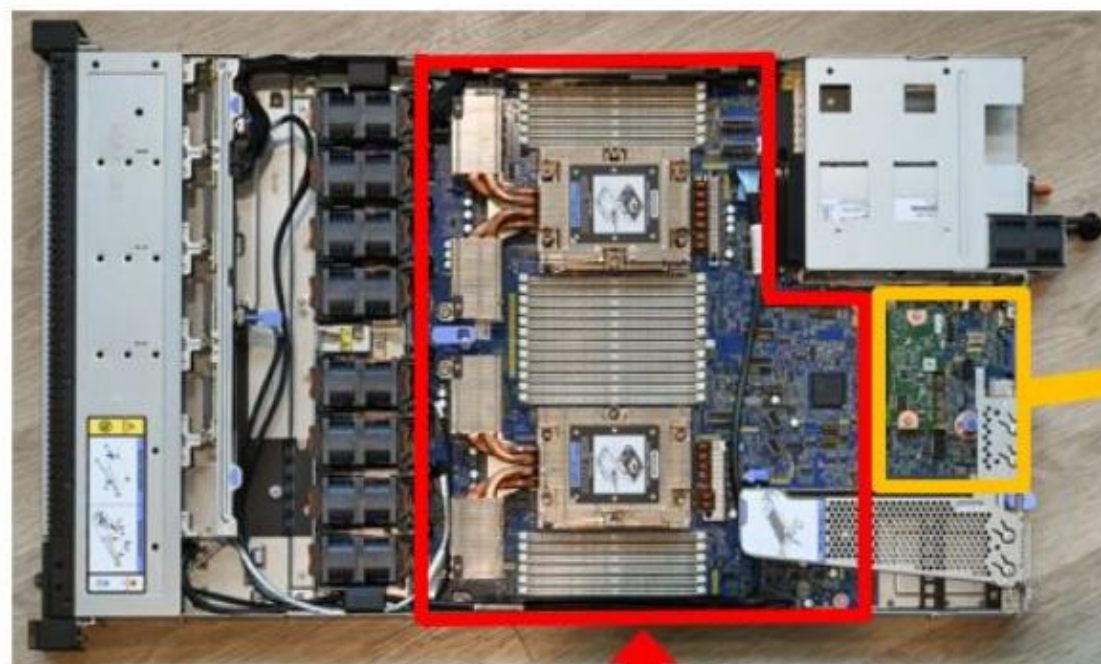
BMC I/O board and RoT module

The SR645 V3 system board has three components

- Processor board
 - A board containing CPU sockets, PCIe slots, memory slots, and other server component connectors
- System I/O board
 - A board containing the system BMC (XCC2) management port, USB ports, and a VGA connector
 - A Micro SD card slot to extend XCC2 storage space for the backup of firmware and for remote console virtual media
- Firmware and Root of Trust security module (RoT module)
 - A mezzanine card containing the Trusted Platform Module (TPM), UEFI firmware, XCC2 firmware, and a silicon Root of Trust

Click [HERE](#) to see the processor board, BMC I/O board, and RoT module locations

Processor board, system I/O board, and RoT module



Processor board



- ① RoT module
- ② System I/O board
- ③ Micro SD card slot

