System components

Components overview

System board assembly

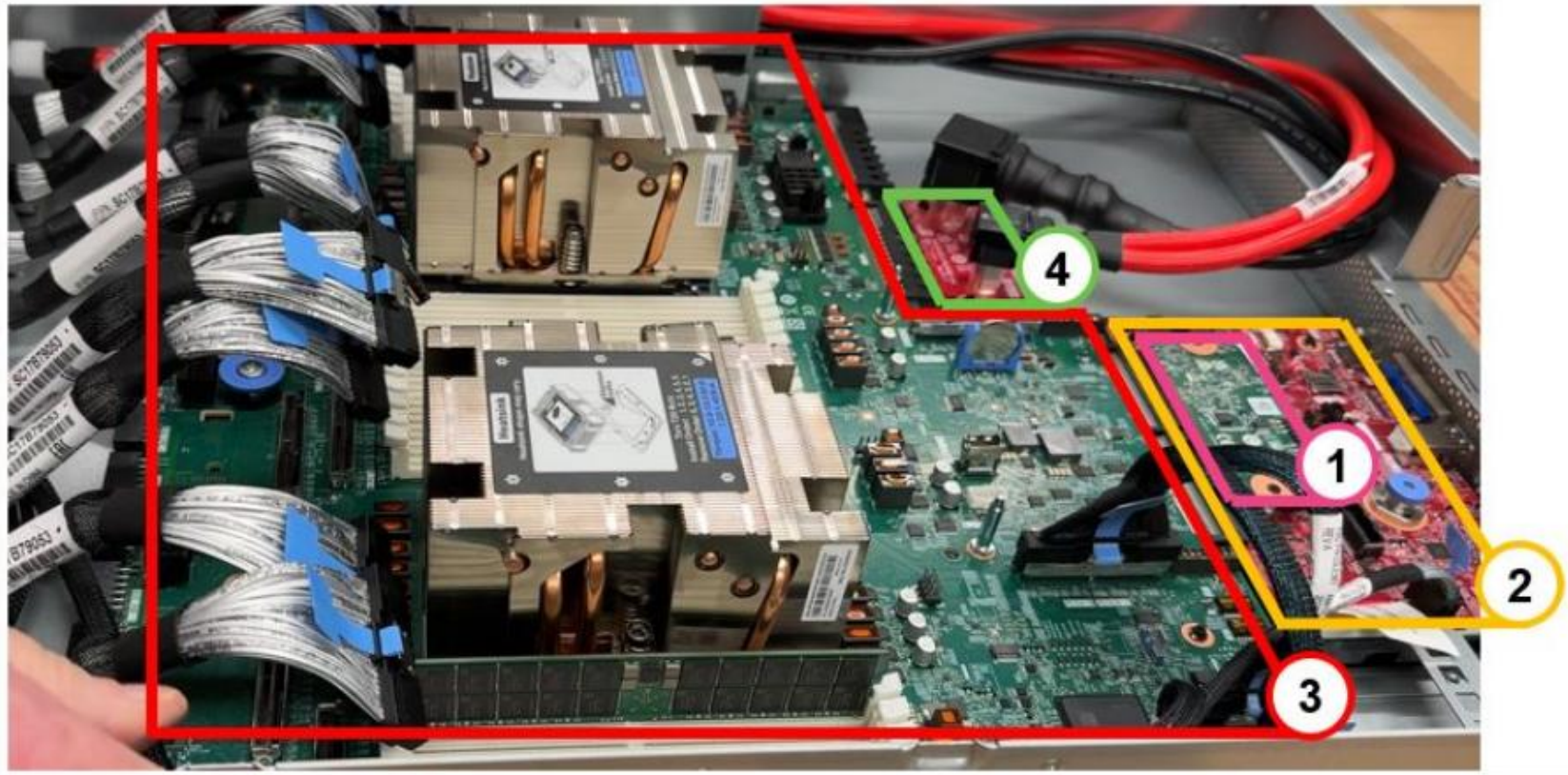
The SR685a V3 system board has three components:

- 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
  - A signal connector to the front PCIe switch board
- 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, system I/O board, and RoT module locations.

System board assembly

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



1. RoT module
2. System I/O board
3. Processor board
4. Power interface board (connects the power cables to the PSU complex)

Note: Refer to the System board assembly layout section of the SR685a V3 User Guide for more information about the locations of the connectors and switches on the system board assembly.

OAM GPUs

OAM GPUs (OCP accelerator module GPUs) are based on the OCP (Open Compute Project) standard design. They are designed to handle large-scale AI training and HPC data workloads.
The standard configuration for the SR685a V3 is eight OAM GPUs – users cannot purchase fewer than eight OAM GPUs.
The SR685a V3 supports NVIDIA or AMD OAM GPUs. For more information, refer to the following websites:

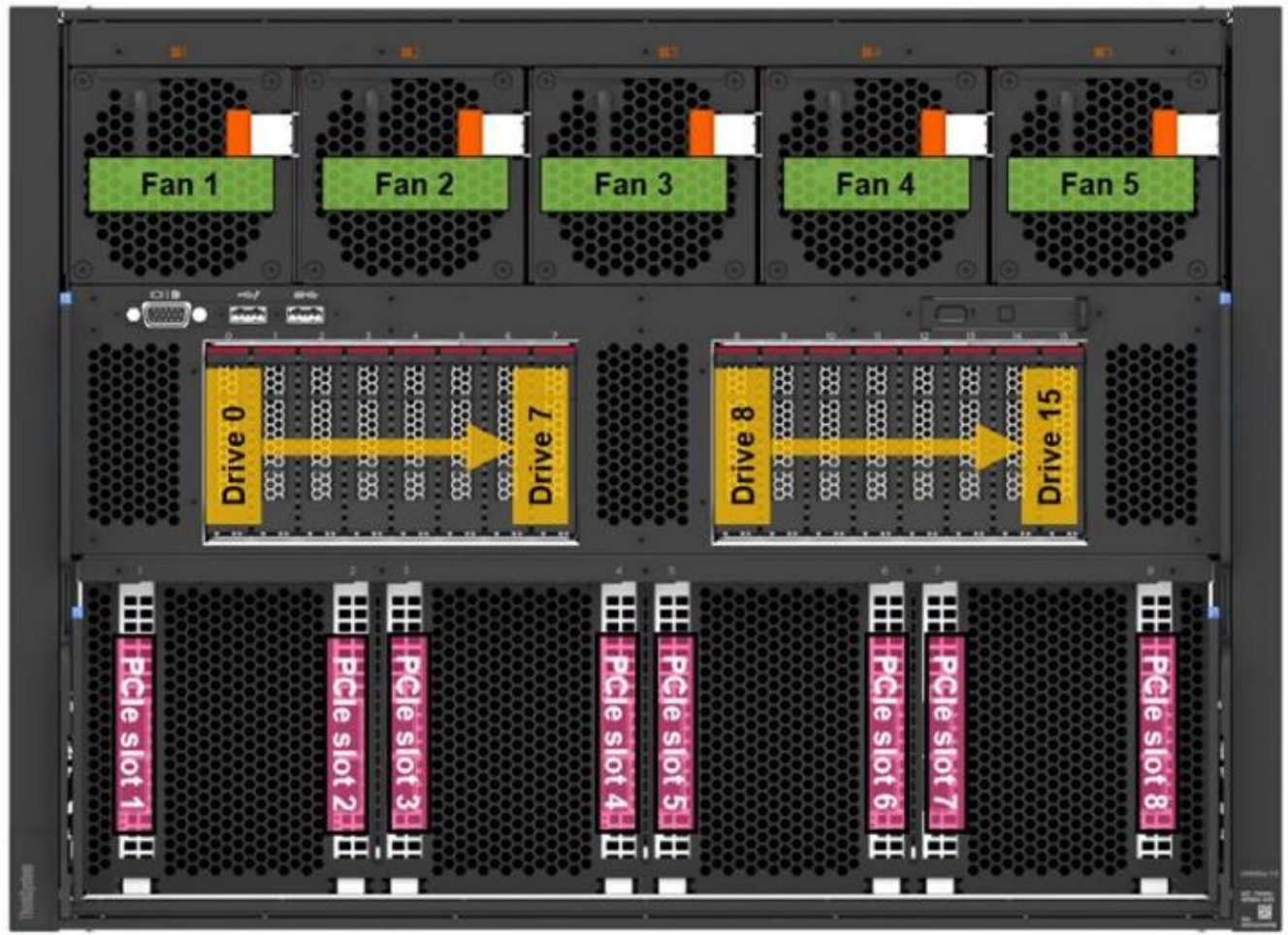
- NVIDIA HGX H100
- NVIDIA HGX H200
- AMD Instinct MI300X

An NVIDIA GPU board with eight H200 GPUs

An AMD GPU board with eight MI300X GPUs

An NVIDIA H100 GPU without a heat sink

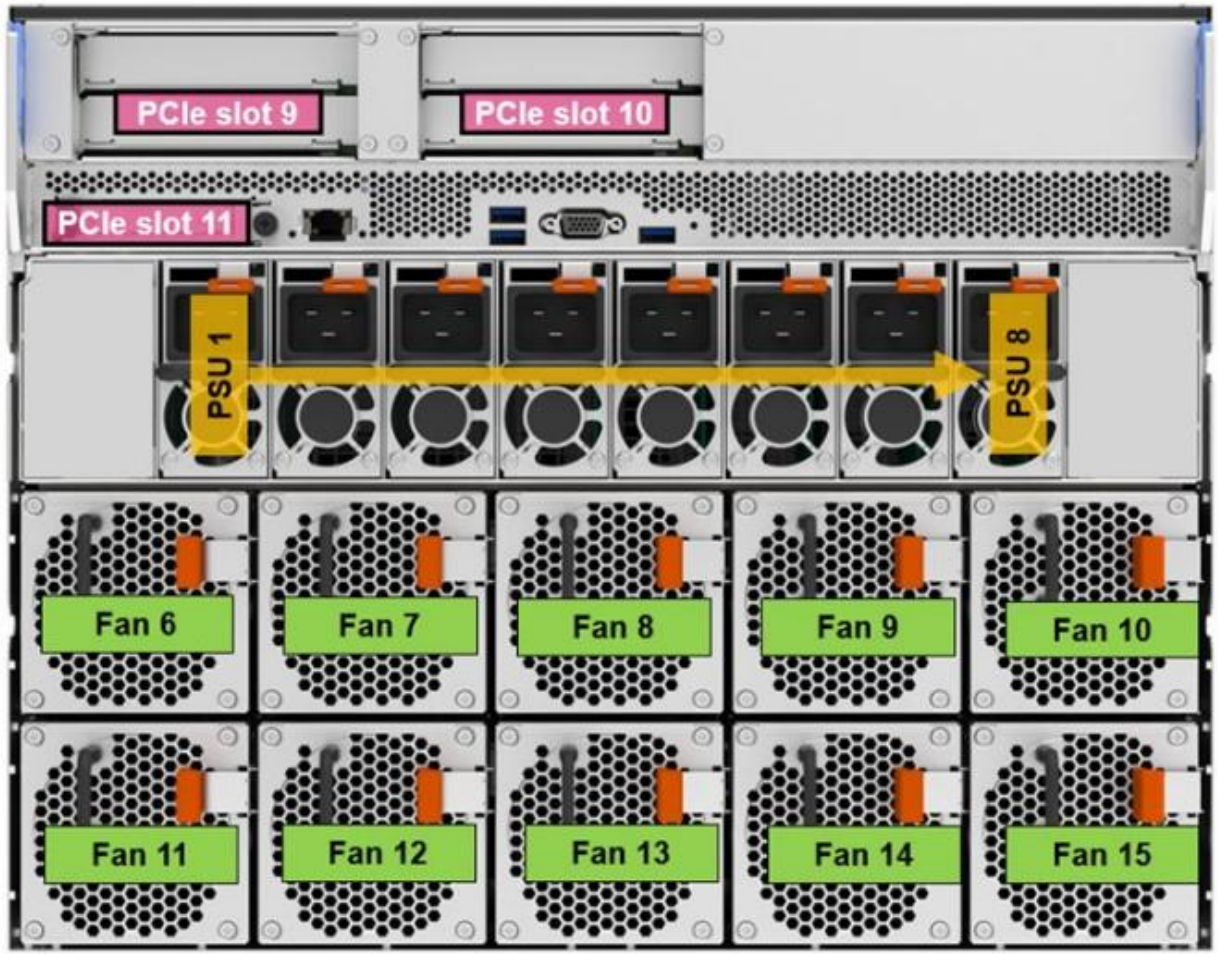
Front component slot numbering



- Eight internal GPUs in the GPU complex (PCIe slots 17 to 24)
- Two M.2 adapters in the compute complex (PCIe slots 33 and 34)

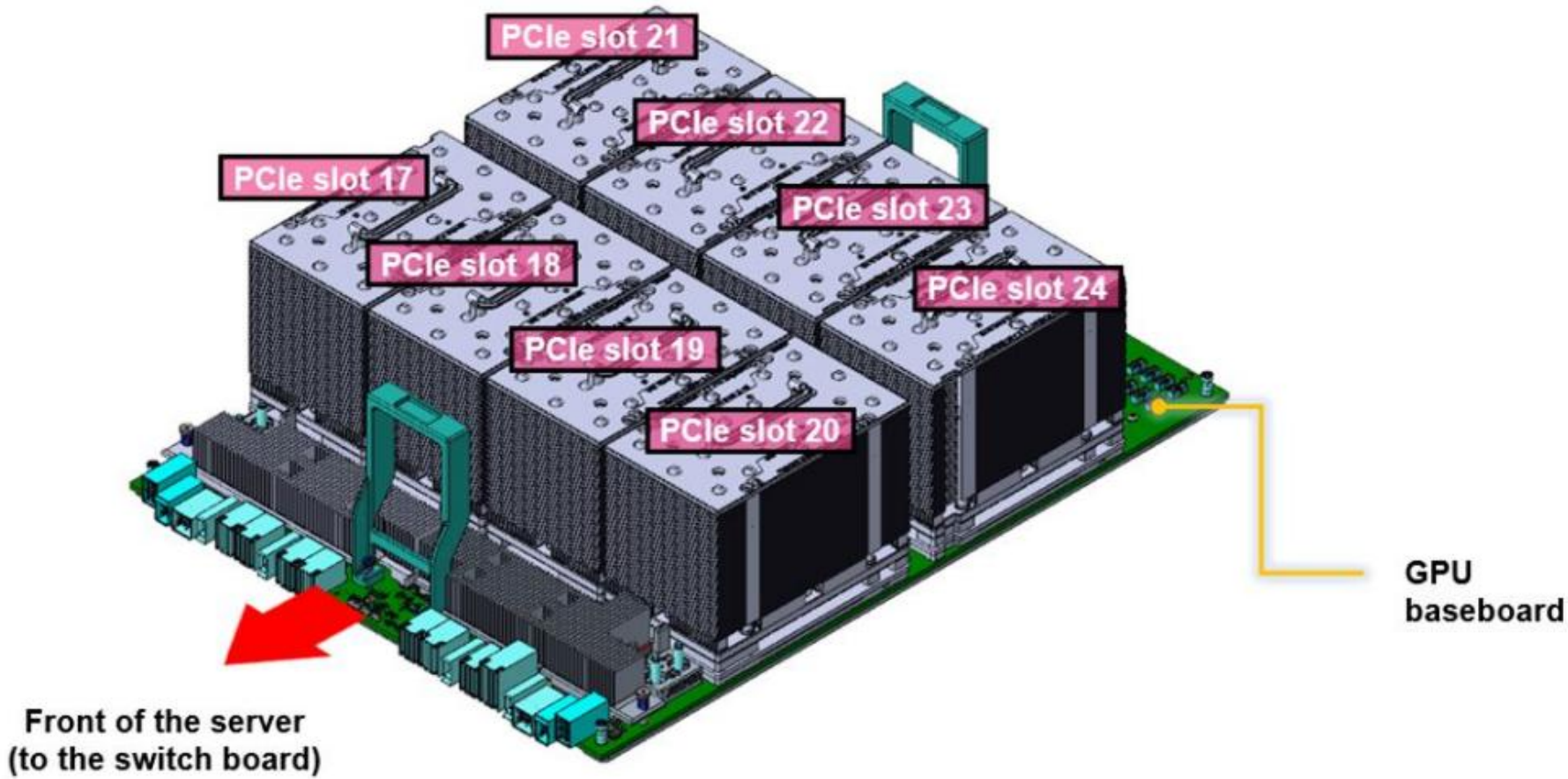
Lenovo

Rear component slot numbering



- PCIe slot 11 is for the OCP network adapter

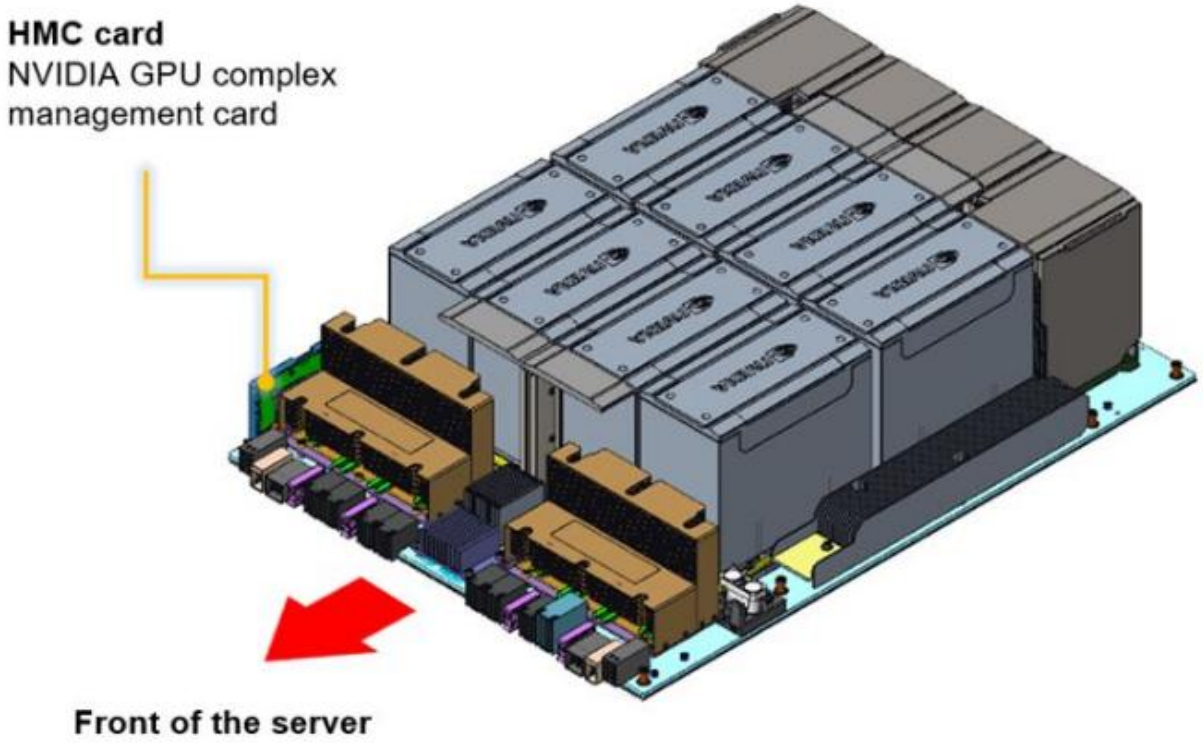
GPU baseboard PCIe slot numbering

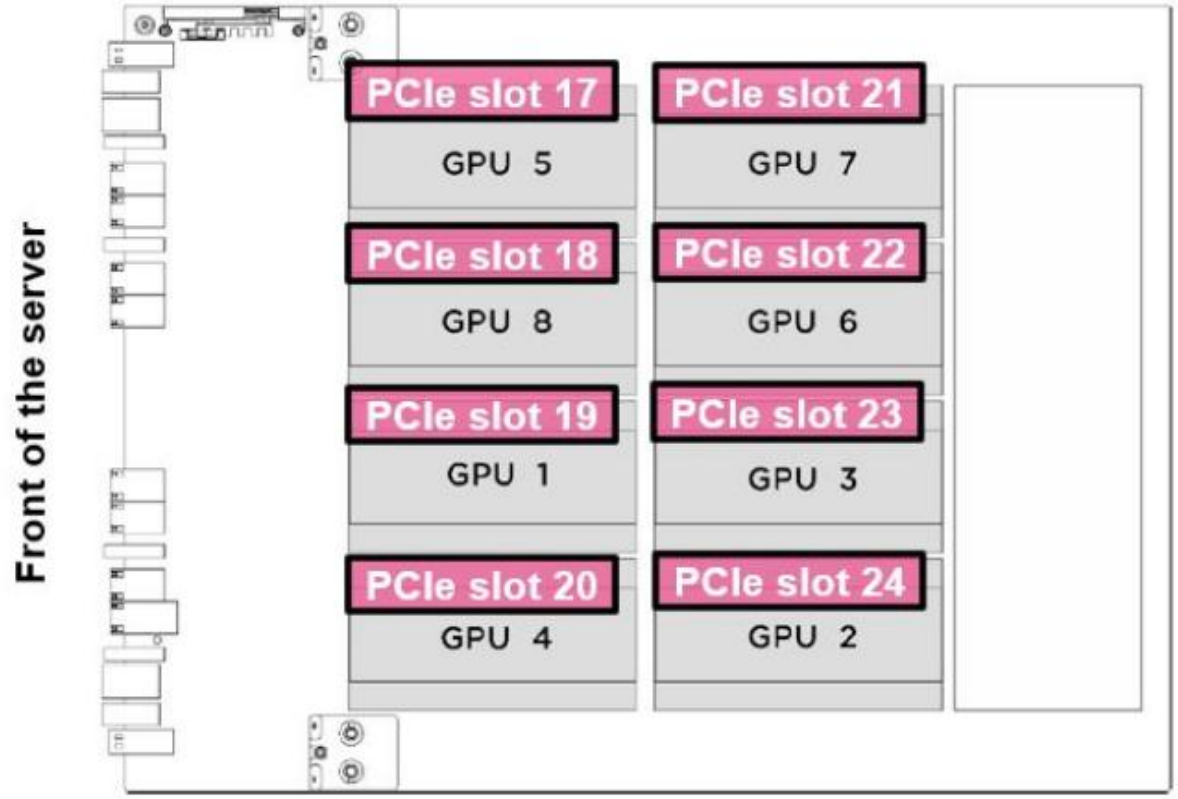


Note: PCIe slot numbering for the AMD GPU board and NVIDIA CPU board is the same.

NVIDIA GPU numbering

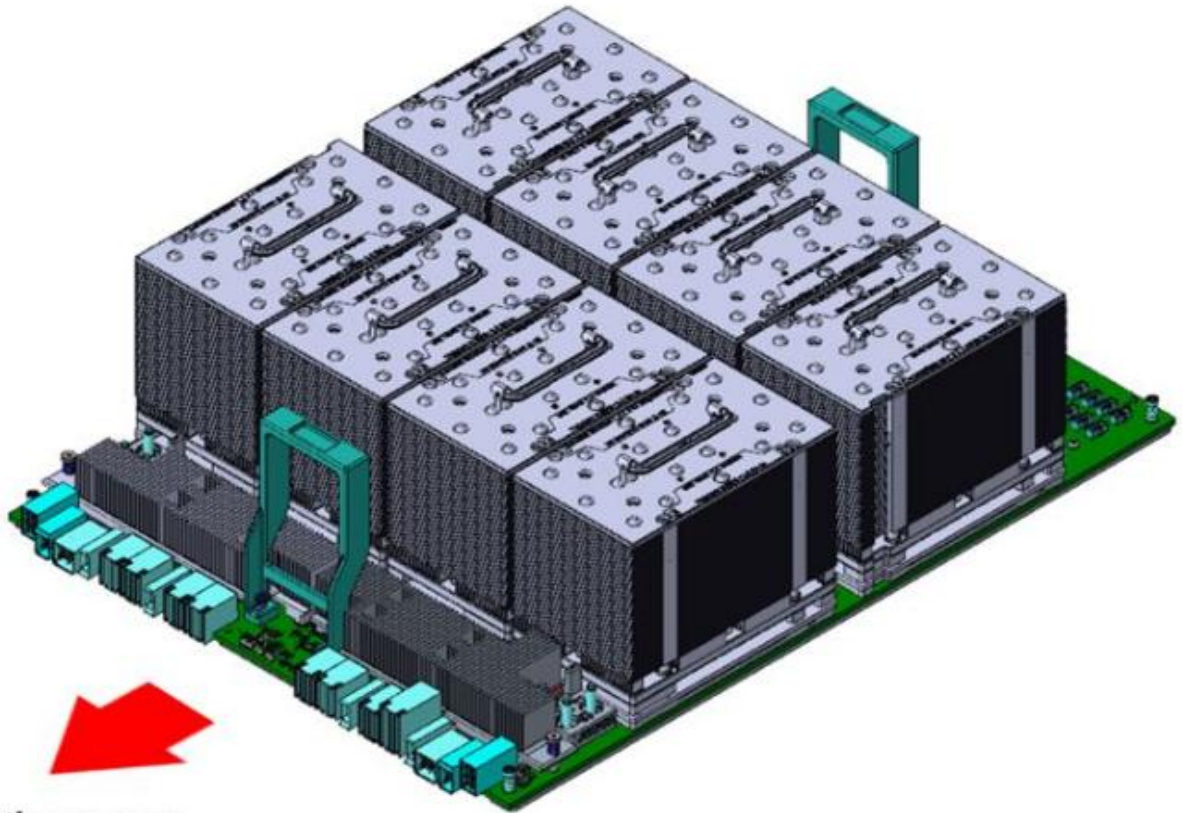
Numbering rules for the NVIDIA H100 and H200 GPUs are the same.



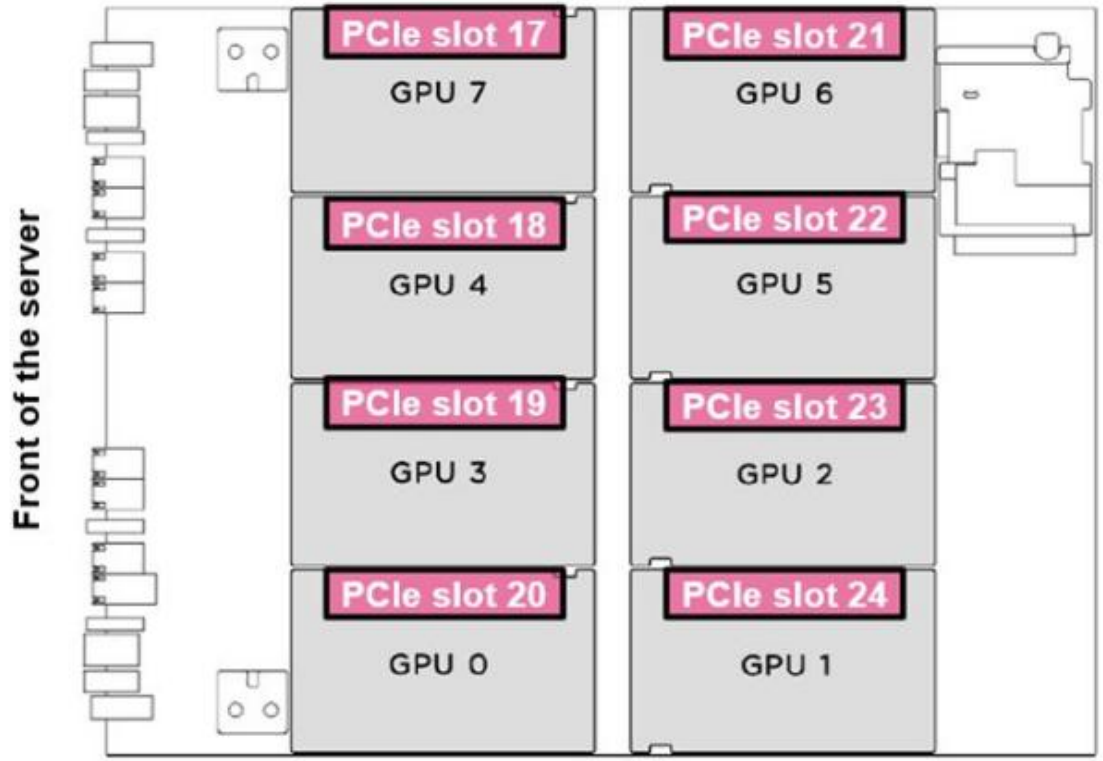


NVIDIA GPU numbering

AMD GPU numbering



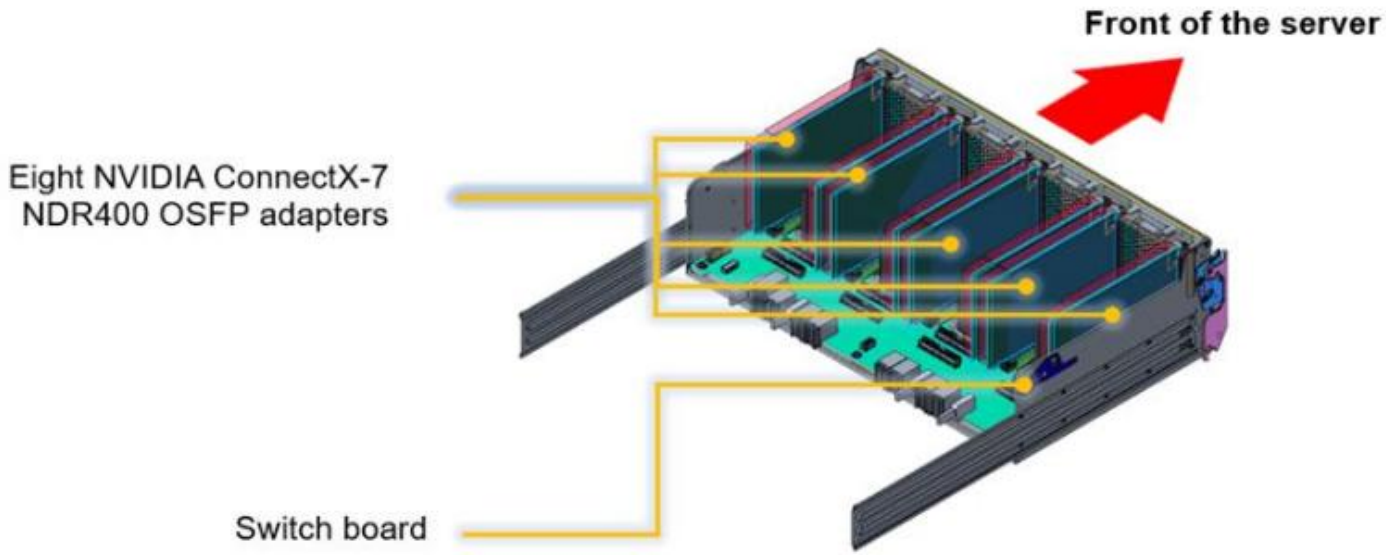
Front of the server

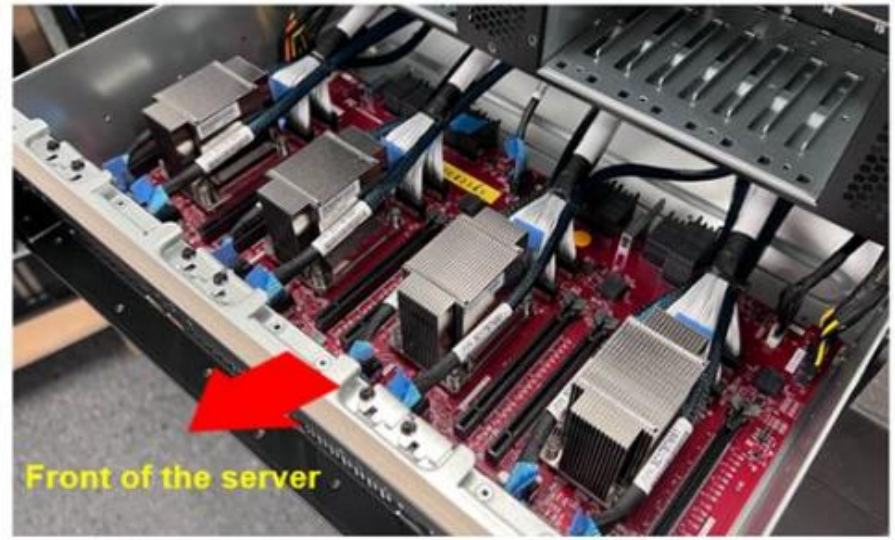


AMD GPU numbering

Switch board

The SR685a V3 has a switch board at the front for internal GPU to system board assembly PCIe lane signal connections. There are eight NVIDIA ConnectX-7 NDR400 OSFP PCIe 5.0 adapters installed on the switch board. Refer to Lenovo Press for more information about the ConnectX-7 NDR400 OSFP adapter.





A switch board without PCIe adapters installed

PCIe adapters

The SR685a V3 supports the following PCIe adapters:

- Eight NVIDIA ConnectX-7 NDR400 OSFP adapters on the front switch board
- Up to two NVIDIA B3220 DPU adapters in the rear compute shuttle
- Up to one OCP network adapter at the rear (PCIe slot 11)

For the latest list of PCIe adapters supported by the SR685a V3, refer to the SR685a V3 Product Guide on Lenovo Press.

[No Title]

Note: The SR685a V3 does not support PCIe RAID or HBA adapters.

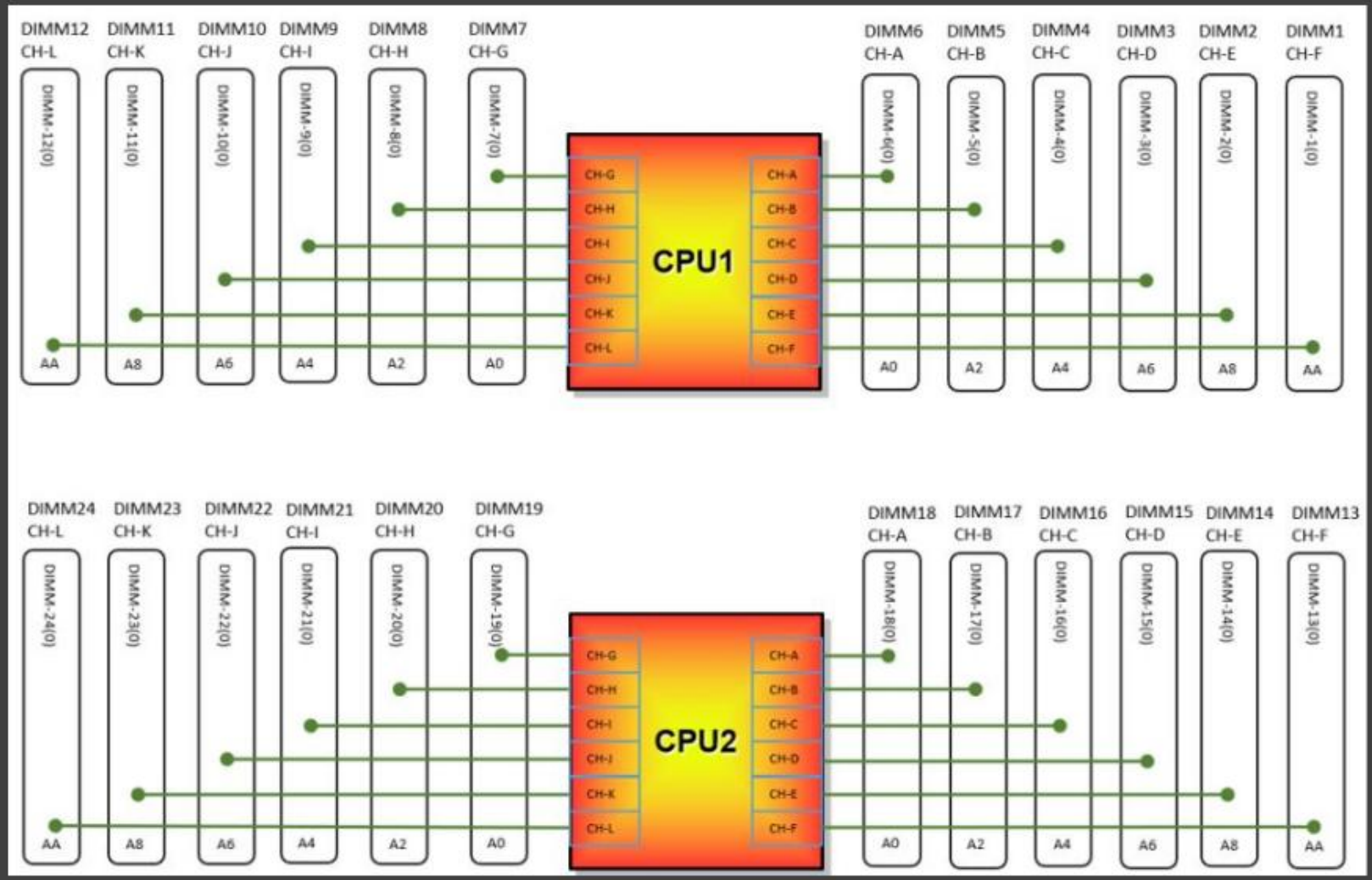
DIMMs

The SR685a V3 supports up to 24 DIMMs:

- One DIMM per channel
- Support for DDR5 RDIMMs up to 4800 MHz
- Support for RDIMMs (1Rx8, 2Rx4, and 2Rx8)
- Support for 3DS RDIMMs (2S2Rx4)
- Support for mixing of memory speeds
  - The system will operate at the lowest DIMM speed
- Support for mixing of DIMM vendors
- DIMMs for each memory channel and CPU must have the same memory capacity and rank
- DIMMs must be installed in a specific order based on the system configuration
  For more information, refer to the Memory module installation rules and order section of the SR685a V3 User Guide on the Lenovo Docs website
- Click HERE to see the SR685a V3 DIMM block diagram

DIMMs

DIMM block diagram



M.2 adapters

The SR685a V3 supports a RAID NVMe M.2 adapter boot kit attached to the air baffle on the processor board in the 2U compute shuttle.