

# System components

Components overview

Lenovo

## System board assembly

The SR680a V3 system board has two components:

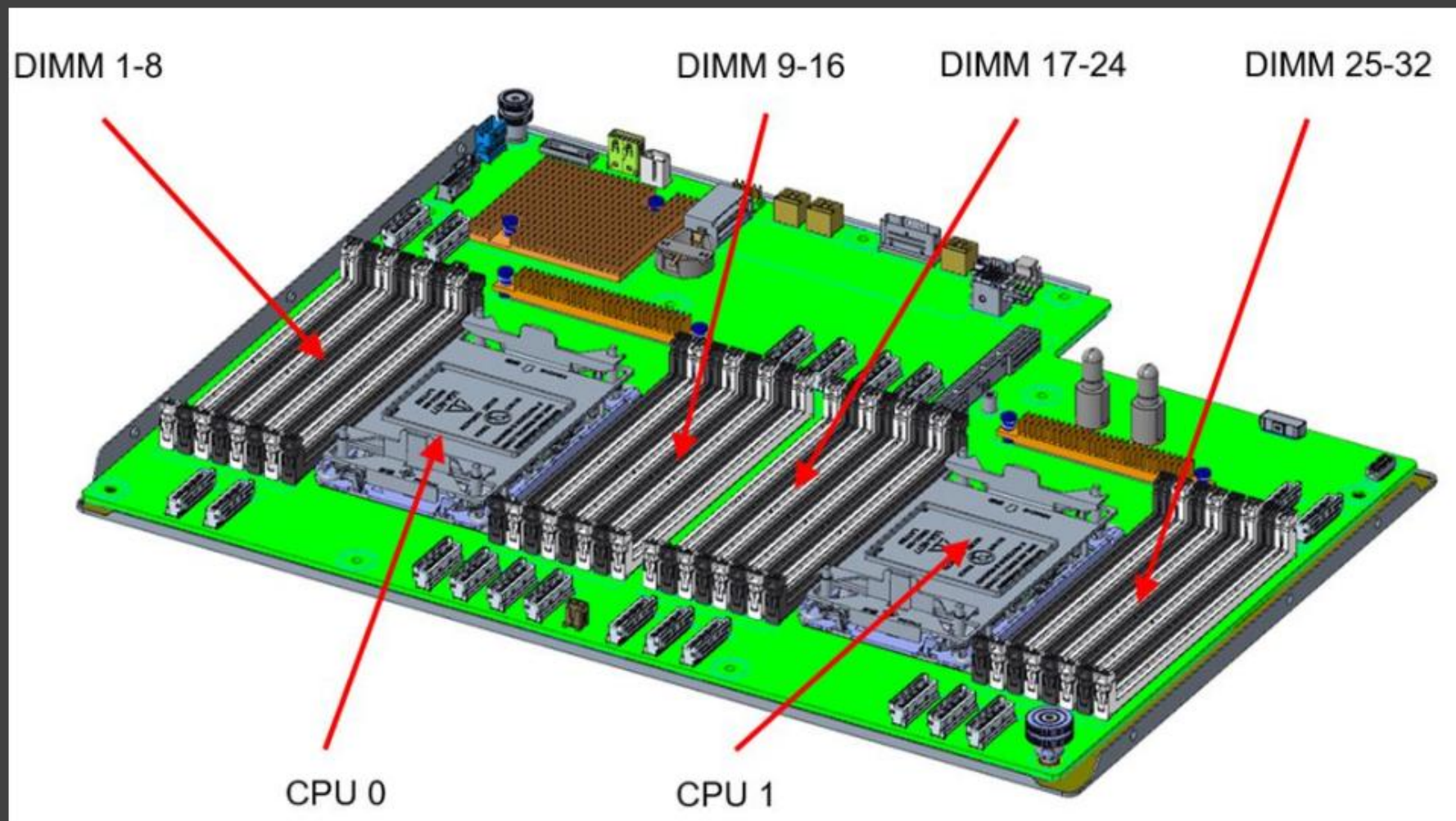
- Processor board
  - A board containing CPU sockets, PCIe connectors, memory slots, and other server component connectors

Click [HERE](#) to see the processor board.
- System I/O board
  - A module containing the system BMC (XCC2) management port, USB ports, and a VGA connector
  - Integrated Root of Trust security module containing the Trusted Platform Module (TPM), UEFI firmware, XCC2 firmware, and a silicon Root of Trust
  - 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 processor board

Click [HERE](#) to see the System I/O board.

# System board assembly

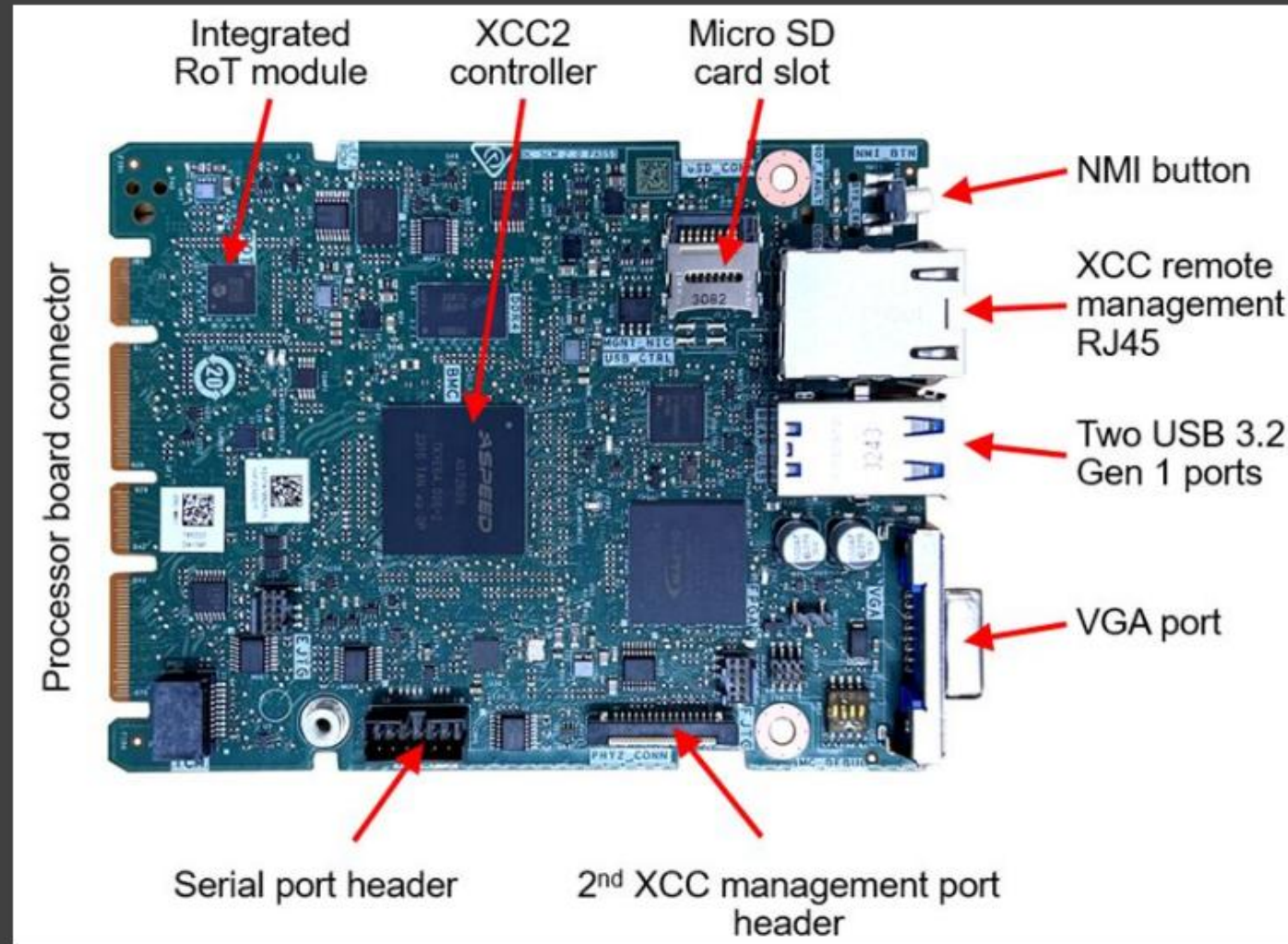
## Processor board



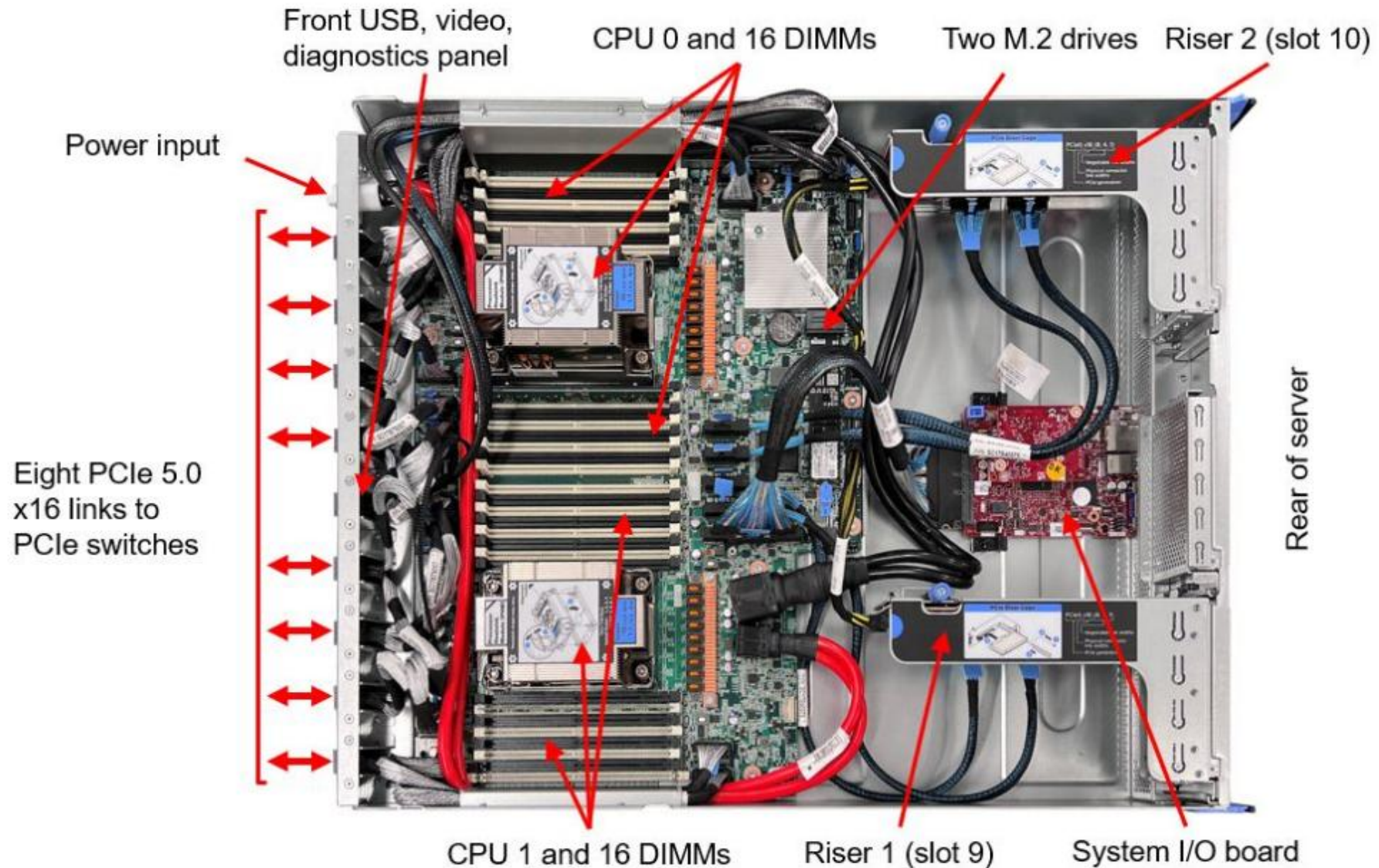


# System board assembly

## System I/O board



# Compute shuttle assembly



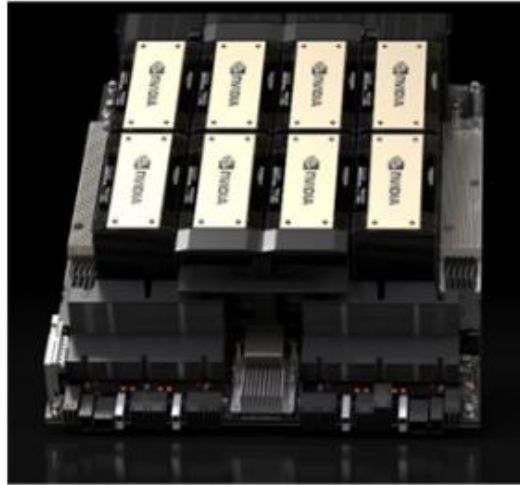


## OAM – GPUs

OAMs (OCP Accelerator Modules) are a type of GPU 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 SR680a V3 is eight GPUs – users cannot purchase fewer than eight OAMs. For more information, refer to the following websites:

- [NVIDIA HGX H100](#)
- [NVIDIA HGX H200](#)
- [AMD Instinct MI300X](#)

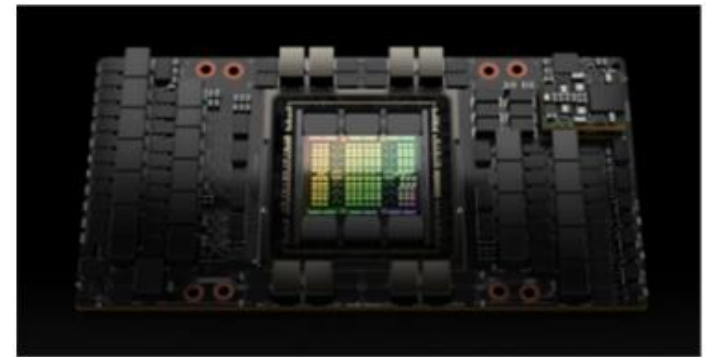
**Note:** Support for the AMD Instinct MI300X GPU is planned for Q4 2024.



An NVIDIA GPU board with eight H200 GPUs

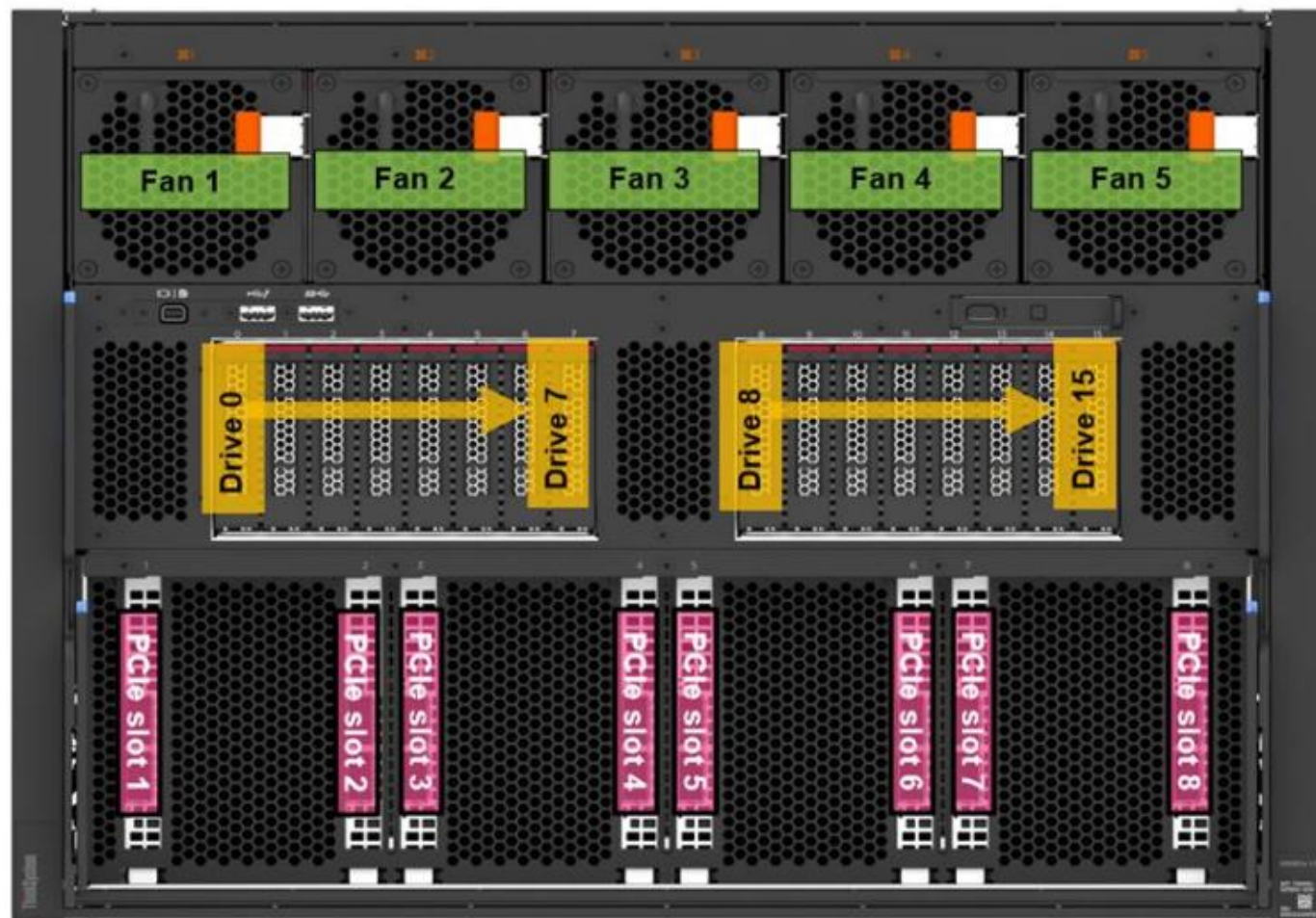


An AMD GPU board with eight MI300X GPUs



An NVIDIA H100 GPU without a heat sink

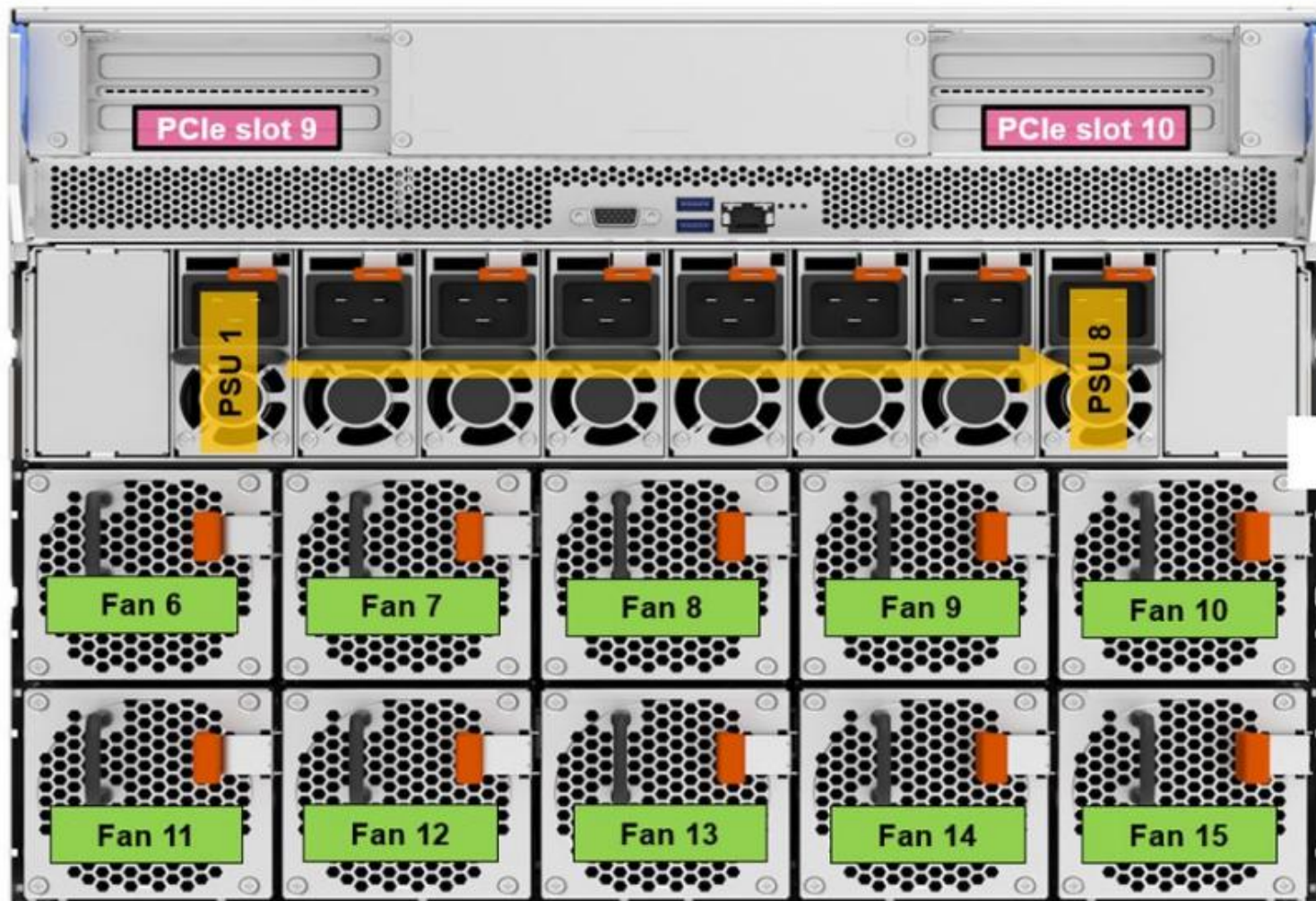
# Front component slot numbering



- 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)

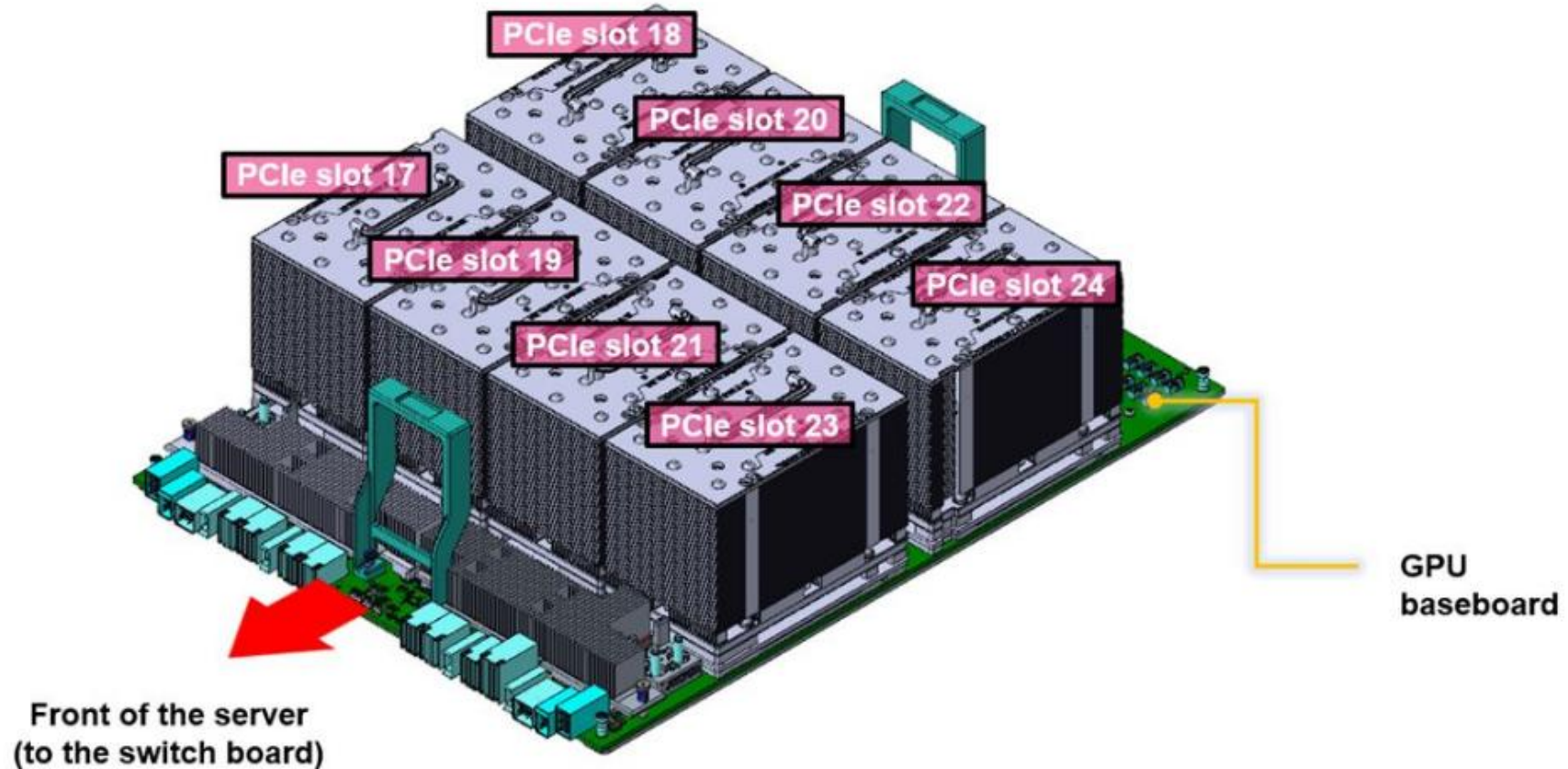


# Rear component slot numbering





# GPU baseboard PCIe slot numbering

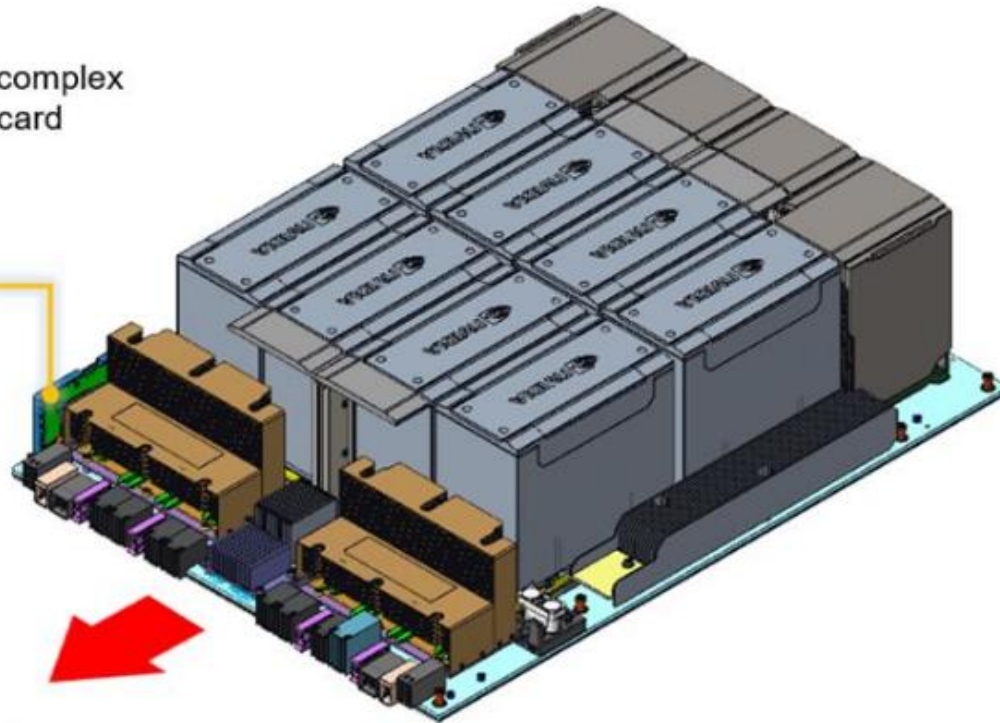


**Note:** Support for the AMD Instinct MI300X GPU is planned for Q4 2024. The PCIe slot numbering for the AMD GPU board and the NVIDIA GPU board is the same.

# NVIDIA GPU numbering

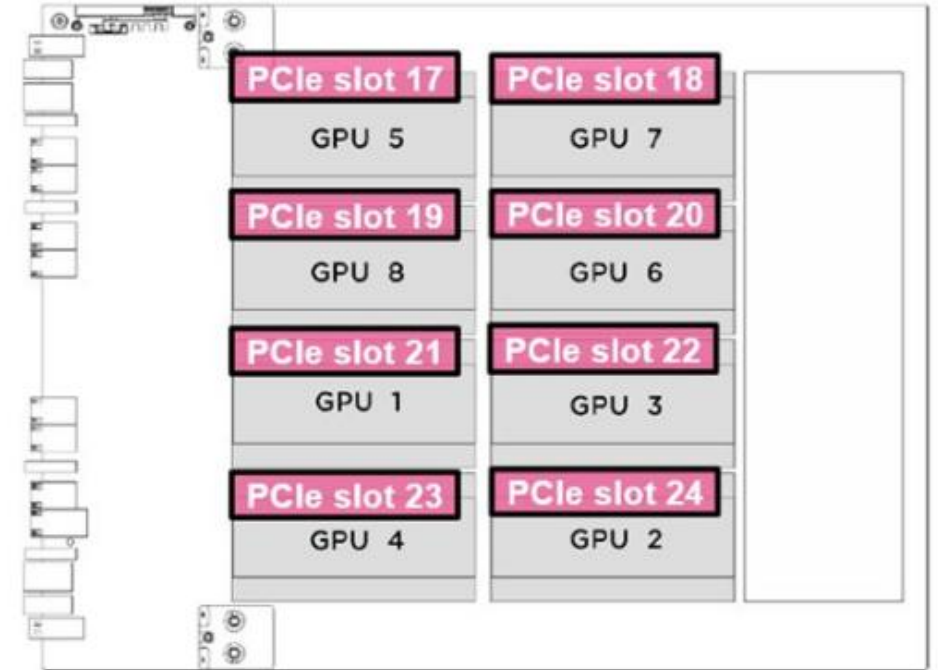
HMC card

NVIDIA GPU complex  
management card



Front of the server

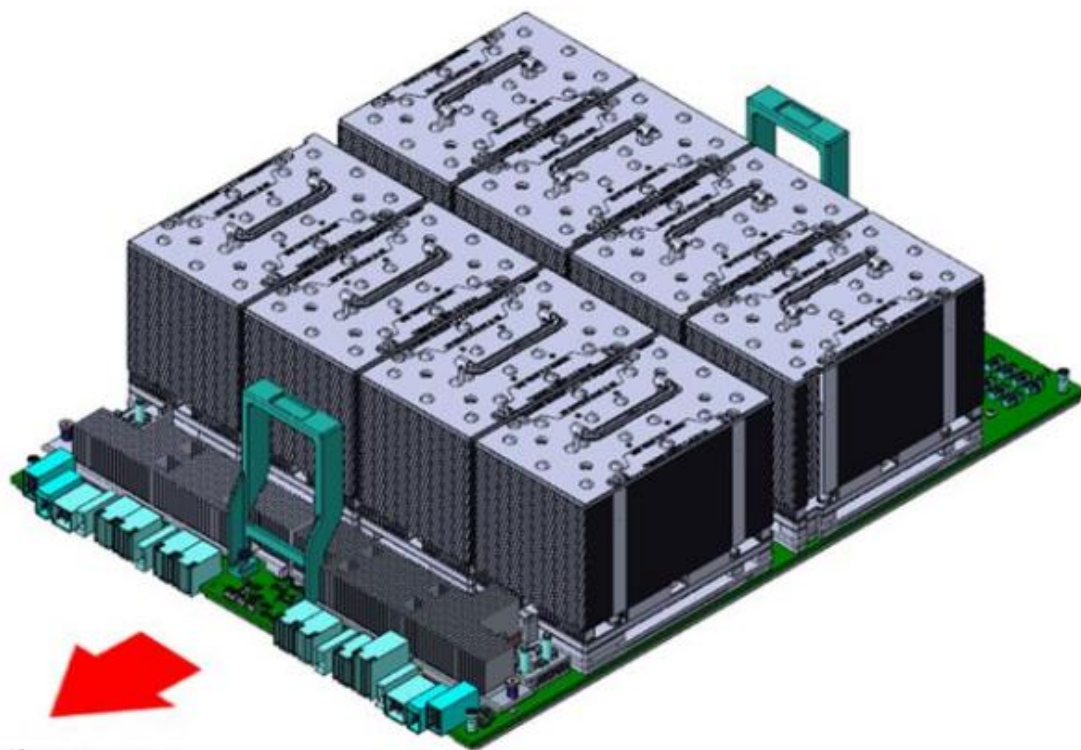
Front of the server



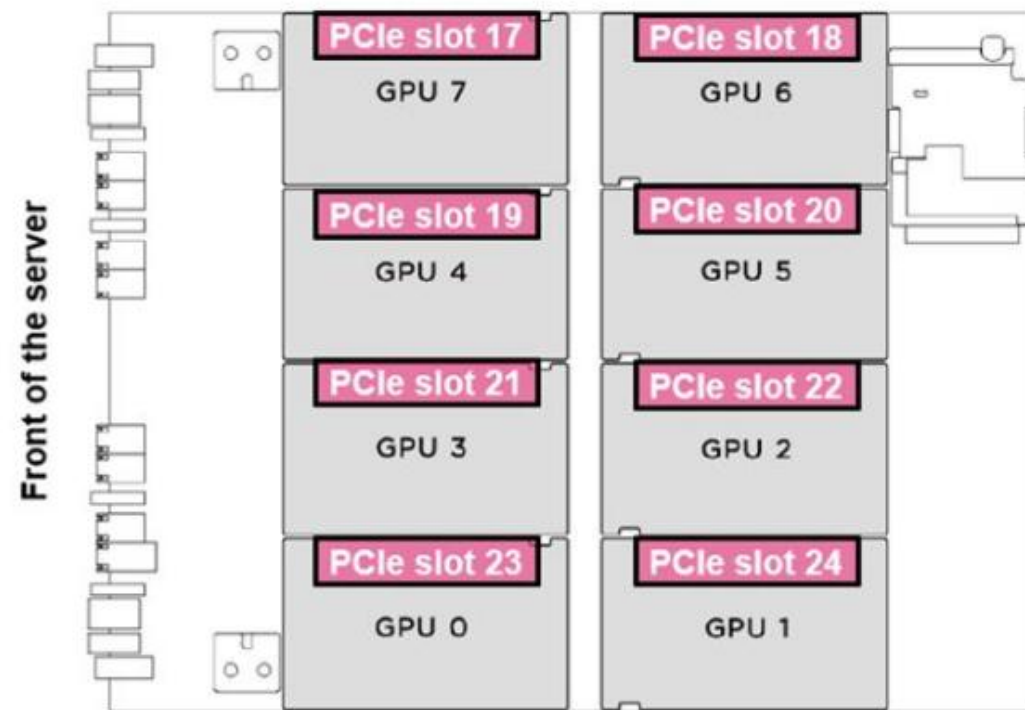
NVIDIA GPU numbering



# AMD GPU numbering



Front of the server



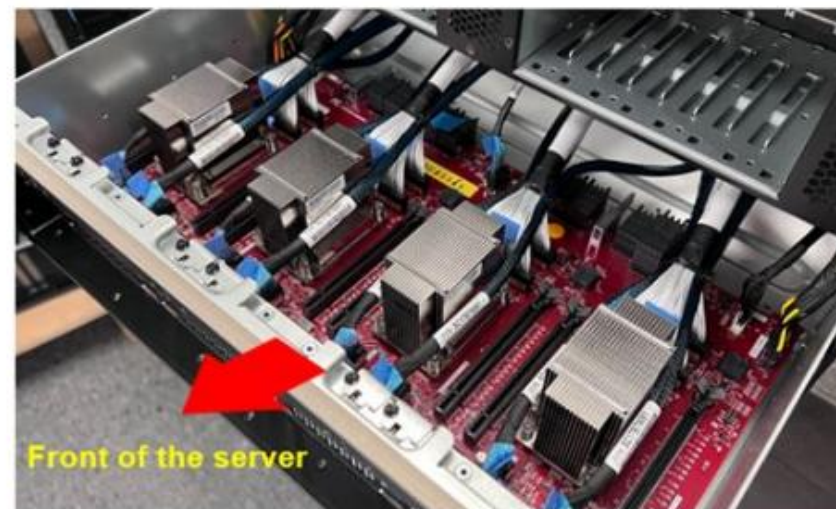
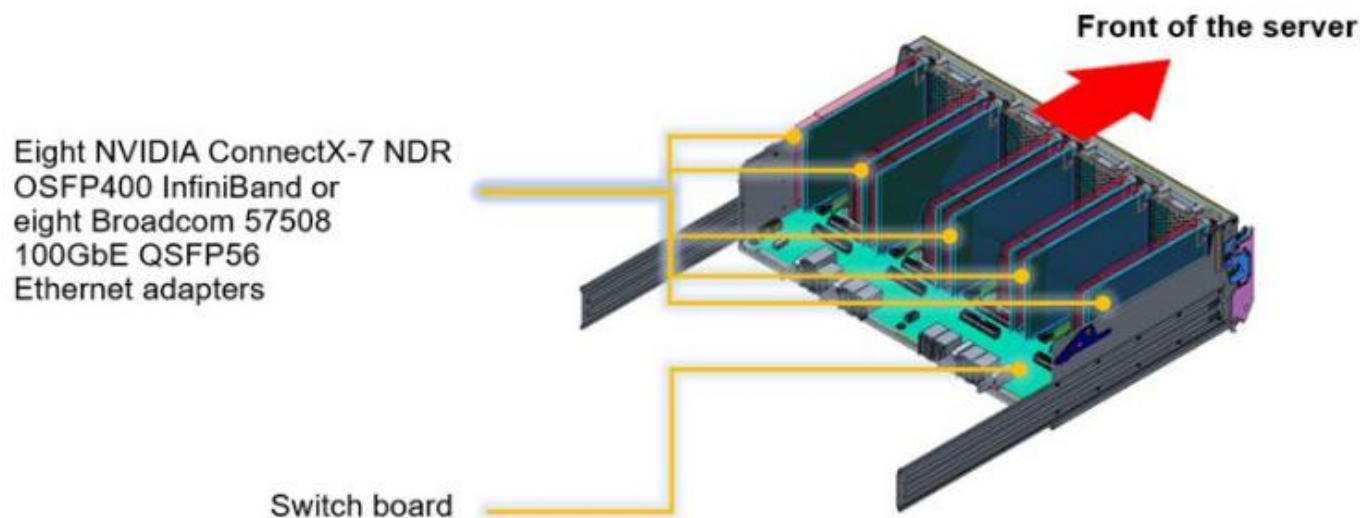
Front of the server

AMD GPU numbering

**Note:** Support for the AMD Instinct MI300X GPU is planned for Q4 2024.

## Switch board

The SR680a V3 has a switch board at the front for internal GPU to system board assembly PCIe lane signal connections. There is support for eight NVIDIA ConnectX-7 NDR OSFP400 InfiniBand or eight Broadcom 57508 100GbE QSFP56 Ethernet adapters installed on the switch board. For more information about the switch board adapters, refer to [Lenovo Press](#).



A switch board without PCIe adapters installed



## PCIe adapters

The SR680a V3 supports the following PCIe adapters:

- Eight [NVIDIA ConnectX-7 NDR InfiniBand OSFP400](#) adapters on the front switch board
- Eight [Broadcom 57508 100GbE QSFP56 Ethernet](#) adapters on the front switch board
- Up to one [NVIDIA BlueField-3 QSFP112](#) adapter in the rear compute shuttle
- Up to one [NVIDIA ConnectX-6 Lx 10/25GbE SFP28](#) adapter in the rear compute shuttle

For the latest list of PCIe adapters supported by the SR680a V3, refer to the SR680a V3 Product Guide on [Lenovo Press](#).

**Note:** The SR680a V3 does not support PCIe RAID or HBA adapters.

## DIMMs

The SR680a 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 SR680a V3 User Guide on the [Lenovo Docs](#) website
- Click [HERE](#) to see the SR680a V3 DIMM block diagram



# DIMMs

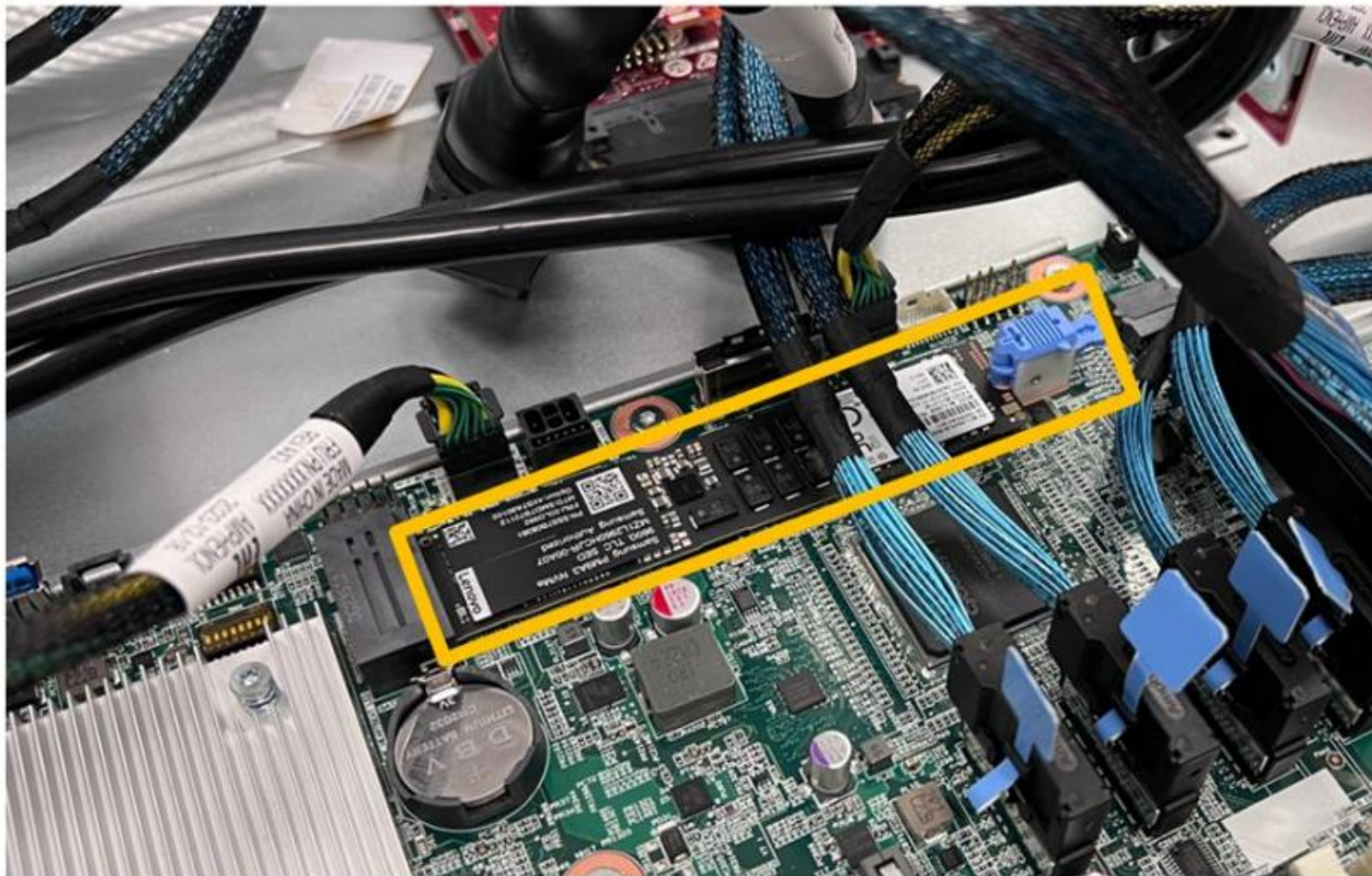
## SR680a V3 memory slot and channel identification



Processor	Processor 0															
Controller	iMC3				iMC2				iMC0				iMC1			
Channel	CH1		CH0		CH1		CH0		CH0		CH1		CH0		CH1	
Slot No.	0	1	0	1	0	1	0	1	1	0	1	0	1	0	1	0
DIMM No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Processor	Processor 1															
Controller	iMC3				iMC2				iMC0				iMC1			
Channel	CH1		CH0		CH1		CH0		CH0		CH1		CH0		CH1	
Slot No.	0	1	0	1	0	1	0	1	1	0	1	0	1	0	1	0
DIMM No.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

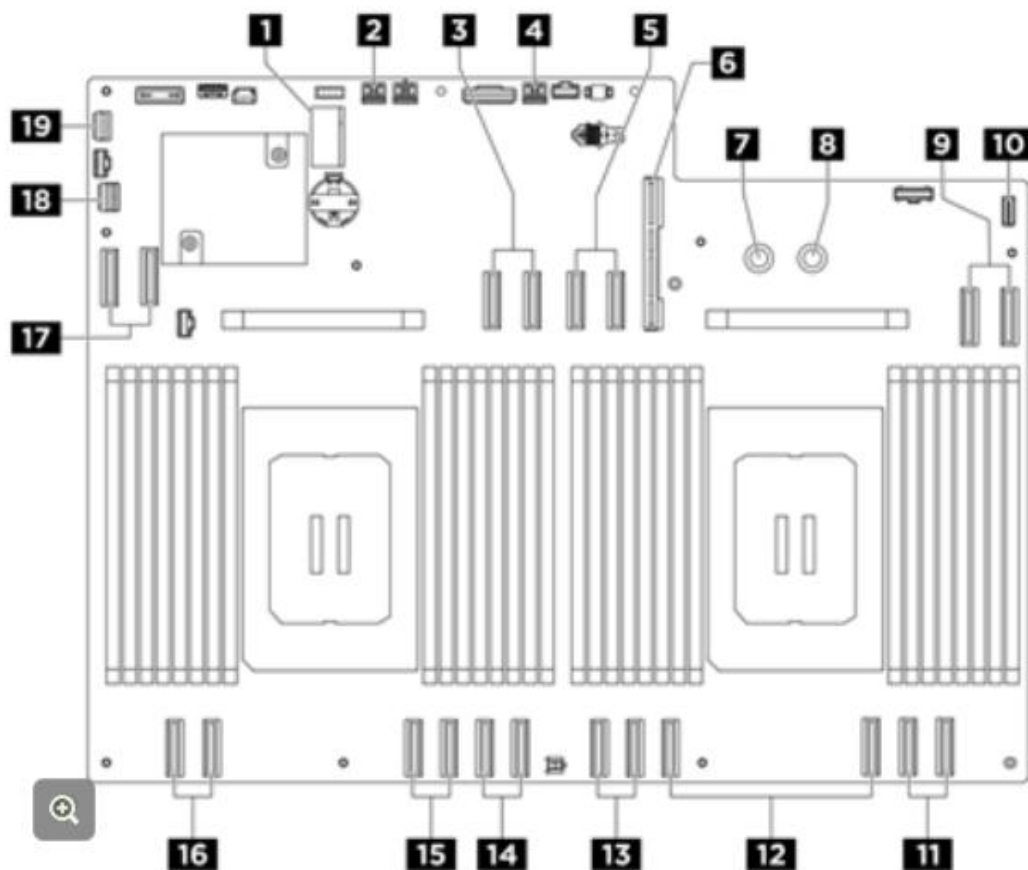
## M.2 adapters

The SR680a V3 supports two stacked M.2 NVMe drives that are directly attached to the processor board in the 2U compute shuttle.





# System board assembly connectors



Conn	Description	Conn	Description
1	M.2 slot 1 / M.2 slot 2	2	PCIe Riser 2 power and sideband connector
3	MCIO connector 4 / PCIe Riser 2 signal connectors	4	PCIe Riser 1 power and sideband connector
5	MCIO connector 8 / PCIe Riser 1 signal connectors	6	System I/O board connector (DC-SCM)
7	PDB_0V connector (PSU_GND)	8	PDB_12V connector (PSU_P12V)
9	MCIO connector 7	10	Integrated diagnostics panel connector
11	MCIO connector 6	12	MCIO connector 5
13	MCIO connector 10	14	MCIO connector 3
15	MCIO connector 2	16	MCIO connector 1
17	MCIO connector 9	18	PCIe switch sideband connector
19	Front USB / Mini Display Port connector		