SD650-N V3 overview

Product features, technical specifications

Lenovo

ThinkSystem SD650-N V3 product overview

The ThinkSystem SD650-N V3 server is a fifth-generation Neptune DWC platform. An SD650-N V3 tray combines one CPU compute node and one NVIDIA H100 GPU node mounted on a shared 1U tray with a water loop covering all the major heat sources in the nodes.
The same GPU node is used in both the SD650-N V3 and SD665-N V3.

Features and specifications

Features	Descriptions
Form factor	1U DWC tray with two nodes
Node type	One CPU compute node (right node) and one GPU node (left node)
CPU	Two 4th Gen Intel Xeon Scalable processors
GPU	Four NVIDIA H100 SXM5 GPUs
Storage	• Up to two 2.5-inch 7 mm SATA/NVMe drives in the CPU node only • Up to one 2.5-inch 15 mm SATA/NVMe drive in the CPU node only • Up to one M.2 adapter in the CPU node only
DIMM	Sixteen DIMM slots in the CPU node • 32 or 64 GB ECC RDIMMs or 128 GB 3DS RDIMMs • Up to 1 TB of memory with 64 GB RDIMMs in the CPU node • Up to 2 TB of memory with 128 GB 3DS RDIMMs in the CPU node
Networking	• A single 1 Gb Ethernet port with RJ45 connector – shared between the operating system and XCC • Two 25 Gb SFP28 ports. One port is shared between the operating system and XCC

Note: For the latest specifications, refer to the SD650-N V3 product guide on Lenovo Press: https://lenovopress.lenovo.com/

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Networking	• A single 1 Gb Ethernet port with RJ45 connector – shared between the operating system and XCC • Two 25 Gb SFP28 ports. One port is shared between the operating system and XCC
PCIe slots	Two PCIe 5.0 x16 slots with a low-profile form factor on the front of the CPU node
Management interface	• XCC2 embedded • Support for LXCE • Support for LXCA • Optional external diagnostics handset with an LCD display

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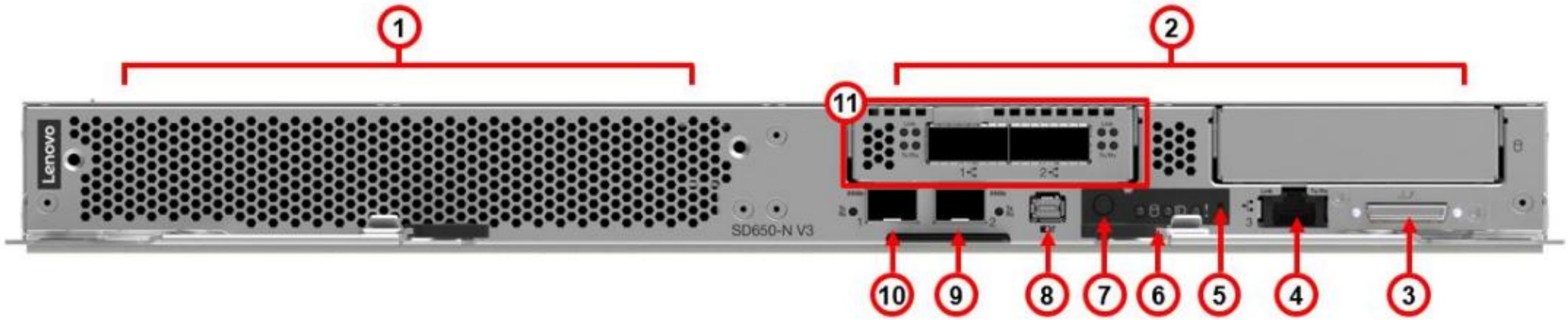
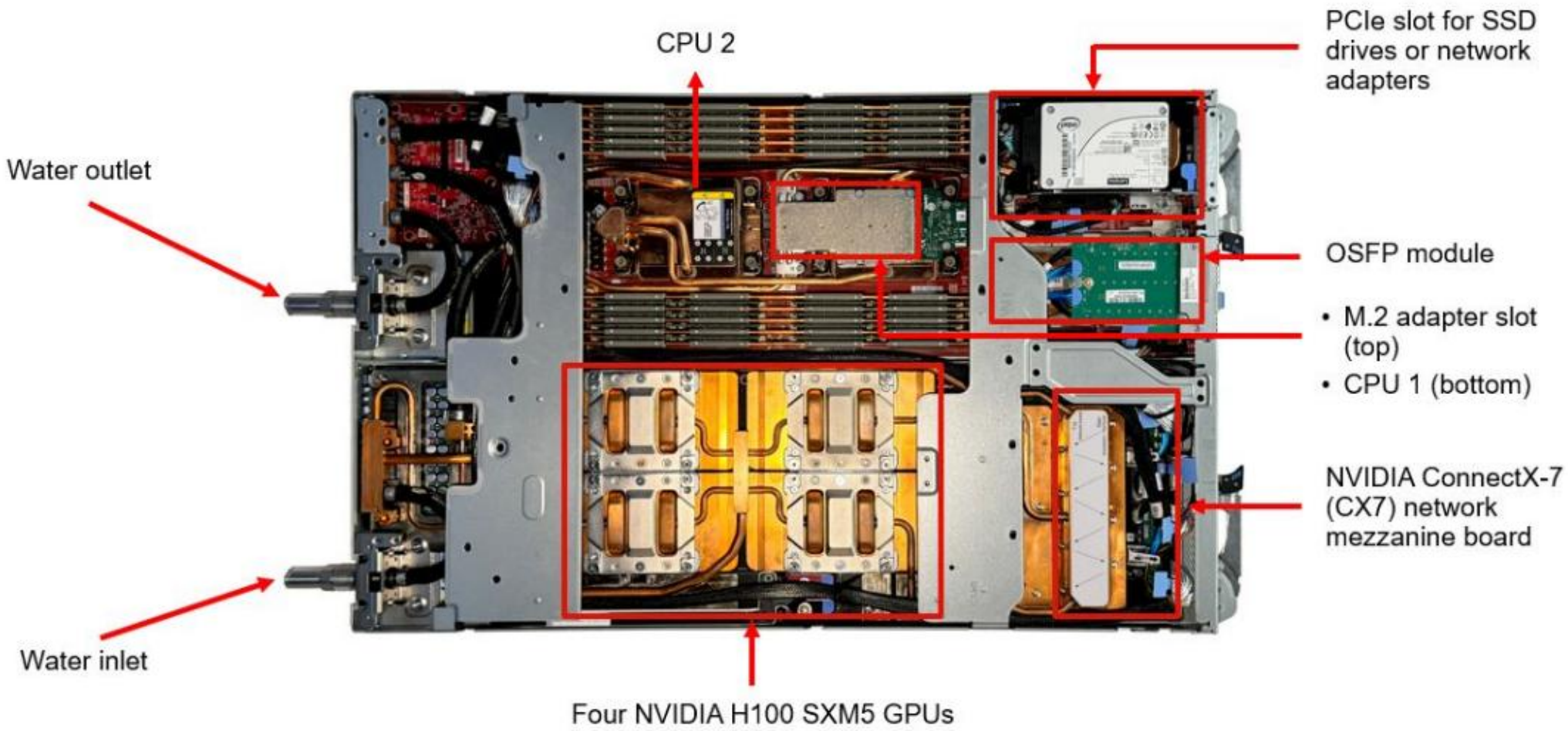
ThinkSystem SD650-N V3 front view

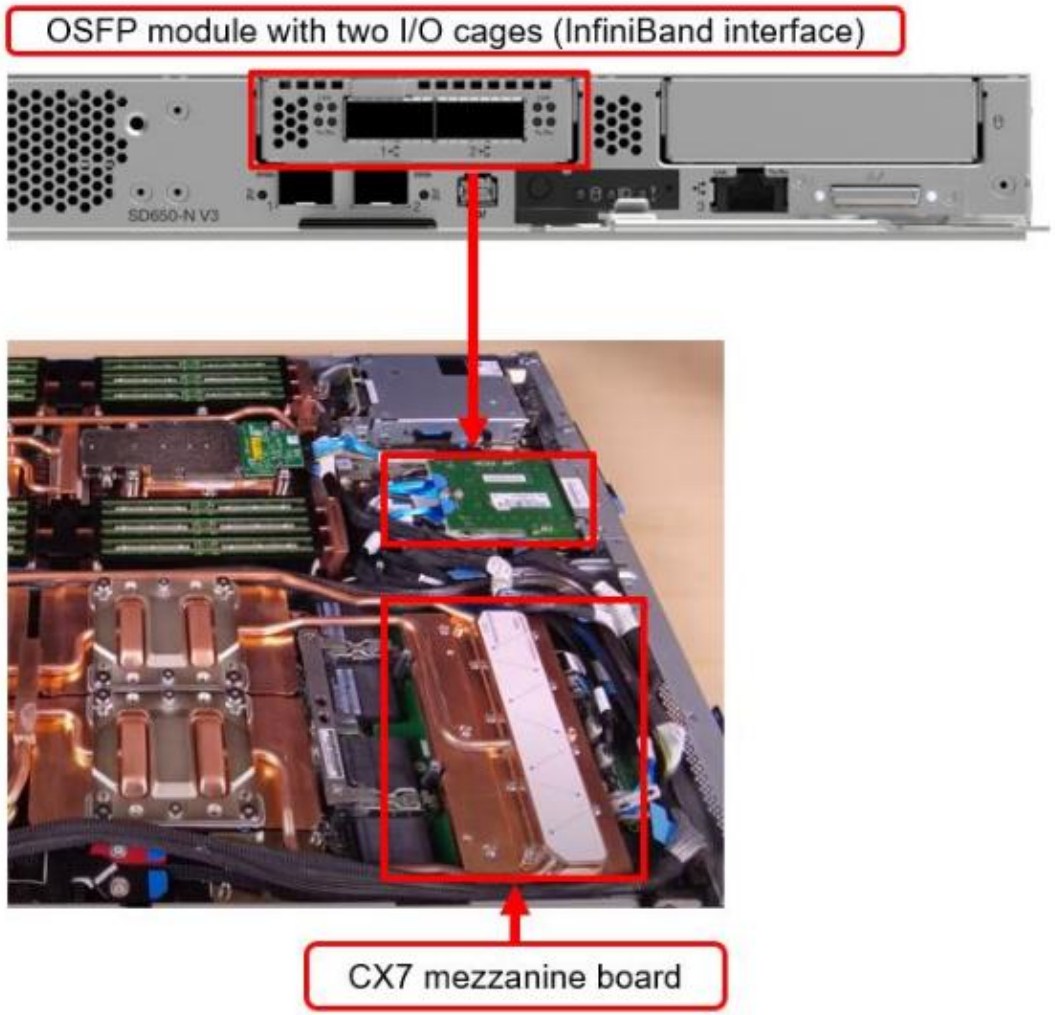


1. Left GPU node
2. Right CPU node
3. USB 3.0 console breakout cable connector
4. 1 Gb RJ45 Ethernet port with share-NIC feature for XCC
5. NMI button
6. Front operator panel LEDs
7. Node power button with LED
8. External diagnostic handset connector
9. 25 Gb SFP28 Ethernet port
10. 25 Gb SFP28 Ethernet port with share-NIC feature for XCC
11. OSFP module

ThinkSystem SD650-N V3 inside view

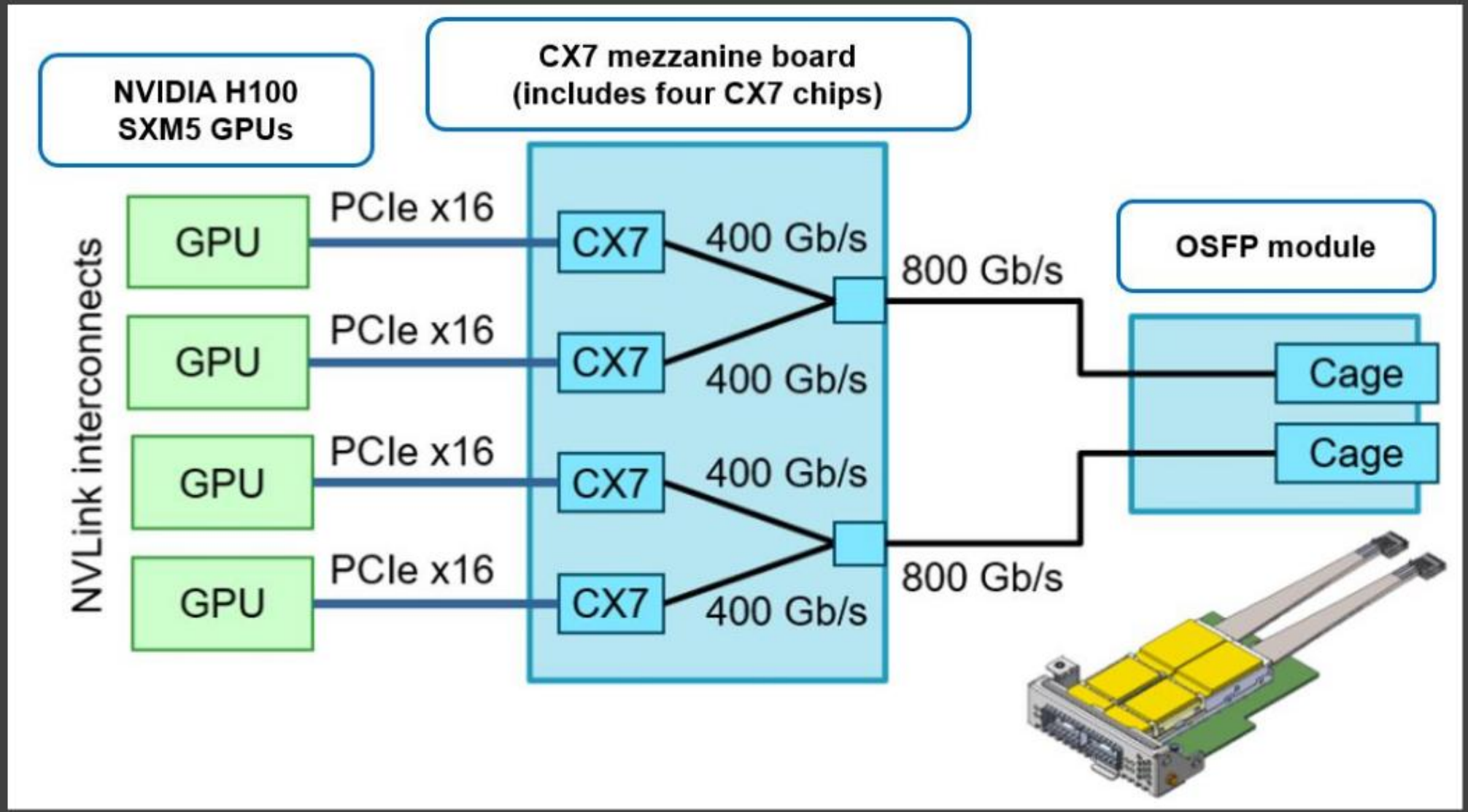


OSFP module



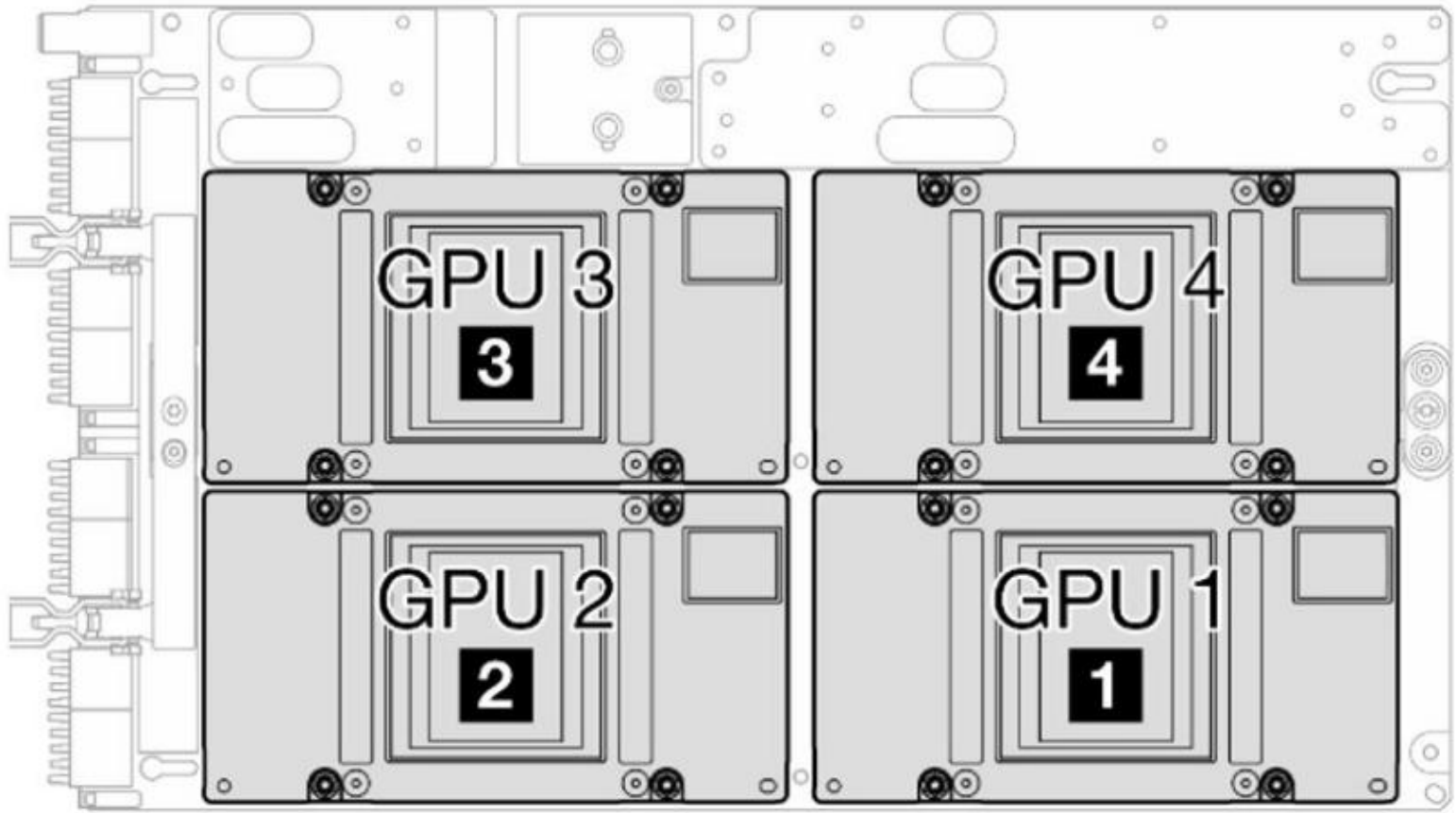
The SD650-N V3 supports an OSFP module in the CPU node for high speed I/O.
The OSFP module connects to the CX7 mezzanine board in the GPU node, and it contains two InfiniBand interface cages. Each cage supports up to an 800 Gb transceiver.

Click HERE to see the OSFP module and CX7 mezzanine board connection diagram.

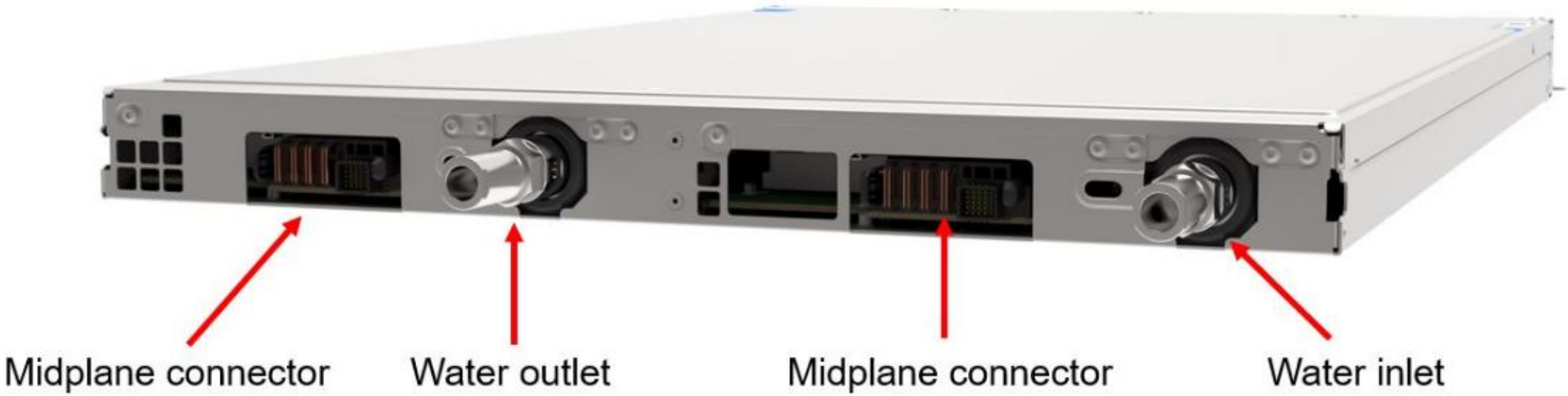

NVIDIA H100
SXM5 GPUs
CX7 mezzanine board
(includes four CX7 chips)
NVLink interconnects
GPU
GPU
GPU
GPU
PCIe x16
PCIe x16
PCIe x16
PCIe x16
CX7
CX7
CX7
CX7
400 Gb/s
400 Gb/s
400 Gb/s
400 Gb/s
800 Gb/s
800 Gb/s
OSFP module
Cage
Cage

SD650-N V3 GPU numbering

Front of the node



ThinkSystem SD650-N V3 rear view



Note: The SD650-N V3, SD650 V3, and SD650-I V3 have the same rear view.

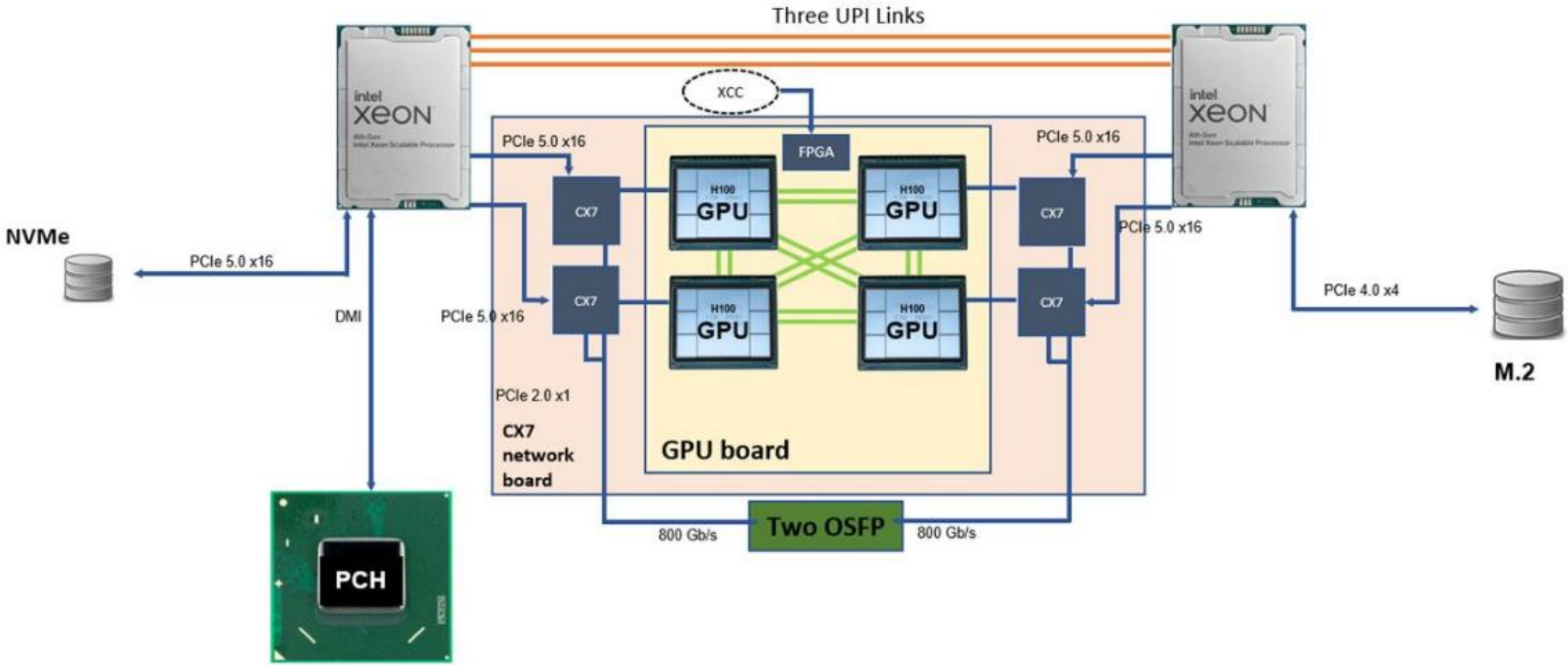
ThinkSystem SD650-N V3 front configurations

Two PCIe adapters in the CPU node configuration

One PCIe adapter and one drive tray in the CPU node configuration

Note: The SD650-N V3 SSD drives are not hot-swappable. Before replacing a drive, power off the node, remove the trays from the enclosure, and remove the top cover.

ThinkSystem SD650-N V3 block diagram



ThinkSystem SD650-N V3 breakout cable

As with the SD650 V3, the SD650-N V3 supports a local console through a KVM breakout cable. The cable connects to the port on the front of the CPU node.