ThinkSystem SD665 V3 product overview

Product description and front, rear, and inside views

ThinkSystem SD665 V3 server product overview

The SD665 V3 (MT 7D9P) is based on the Lenovo Neptune™ direct water cooling (DWC) platform. The SD665 V3 has a 1U2N form factor design, which means there are two SD665 V3 node plates on each 1U full wide tray. Each tray is installed in the 6U DW612S enclosure. The SD665 V3 can be fitted with up to two AMD EPYC processors (codename: Genoa).
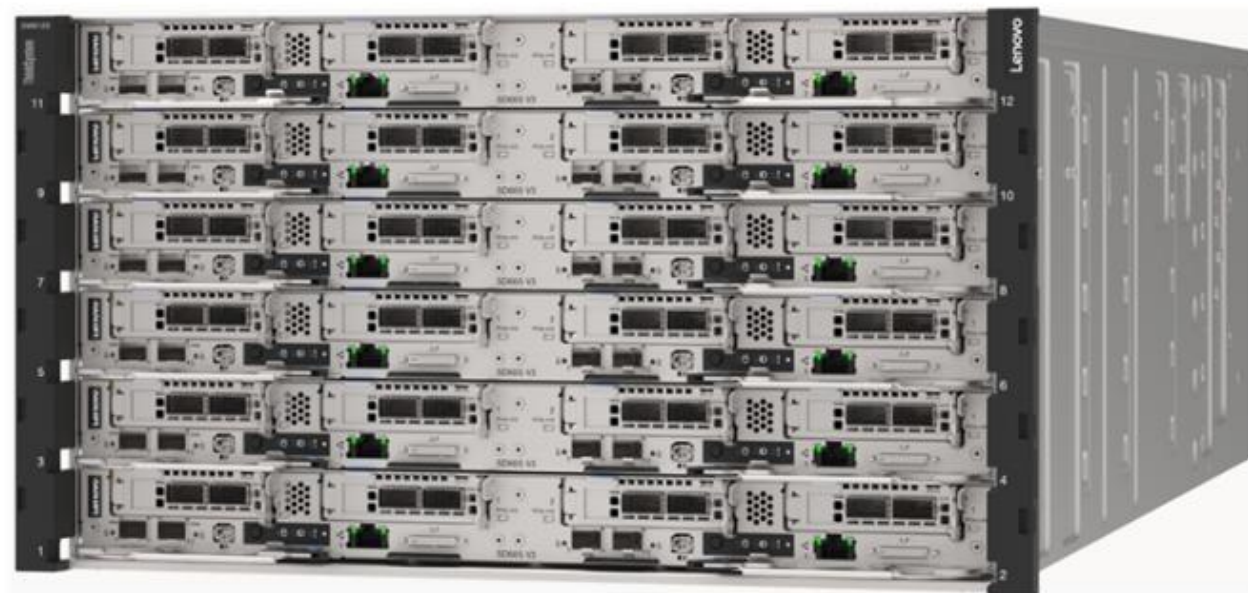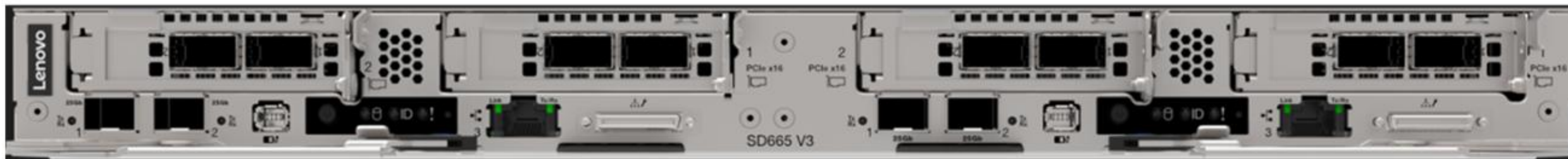
SD665 V3 front view

Slot 2: PCIe 5.0 x16

Slot 1: PCIe 5.0 x16

Left Node

Right Node

SD665 V3

Two SFP28 25 Gb ports

External diagnostics connector (Pong connector)

1 GbE RJ45 port

KVM breakout cable connector

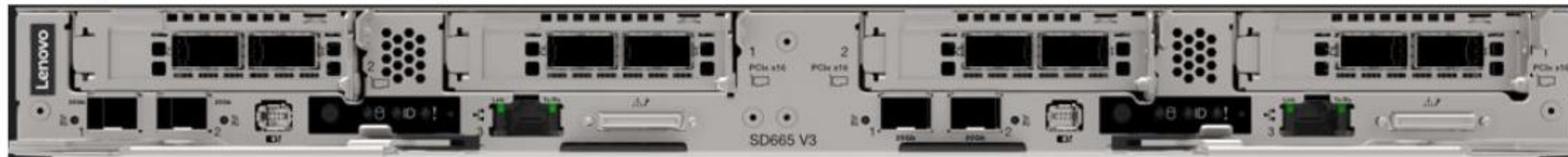Front LCD Panel

NMI Button

Power LED/Button

Drive activity LED
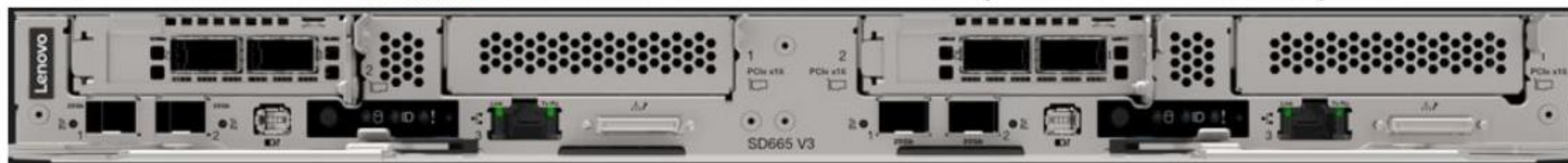
Identification LED

System error LED

SD665 V3 front configuration

The SD665 V3 supports three different front configurations with a mix of PCIe adapters and storage:
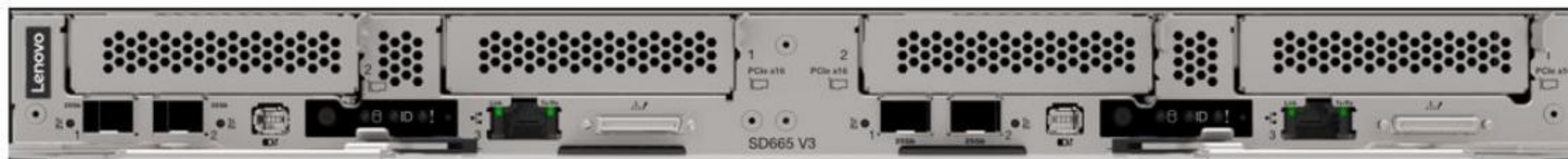
• Four low-profile PCIe x16 adapters

• Two 15 mm or four 7 mm NVMe/SATA SSD drives with two low-profile PCIe x16 adapters
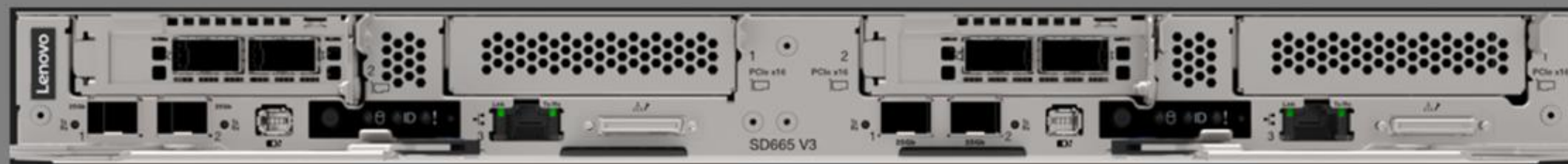

• Four 15 mm or eight 7 mm NVMe/SATA SSD drives

Click HERE to see the drive numbering.

Drive numbering

| 7 mm drive | Slot 2 | SSD 1 | Slot 2 | SSD 1 |
| | | SSD 0 | | SSD 0 |

| 15 mm drive | Slot 2 | SSD 0 | Slot 2 | SSD 0 |

| 7 mm drive | SSD 3 | SSD 1 | SSD 3 | SSD 1 |
| | SSD 2 | SSD 0 | SSD 2 | SSD 0 |

| 15 mm drive | SSD 2 | SSD 0 | SSD 2 | SSD 0 |
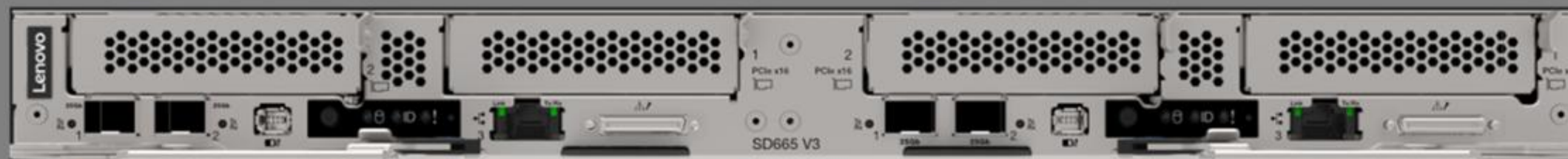
SD665 V3 rear view

Midplane connector, also known as the power interposer board (PIB)

Water outlet

Midplane connector, also known as the power interposer board (PIB)

Water inlet

Lenovo

SD665 V3 inside view

PCIe x16 for slot 2 or drives

PCIe x16 for NVMe drives

CPU cold plate

PCIe x16 for slot 1 or SATA drives

Water inlet

Node 1
- Slot 2
- Slot 1

Node 2
- Slot 2
- Slot 1

M.2 connector

M.2 adapter

CPU 1 with 12 DIMMs

CPU 2 with 12 DIMMs

Water outlet
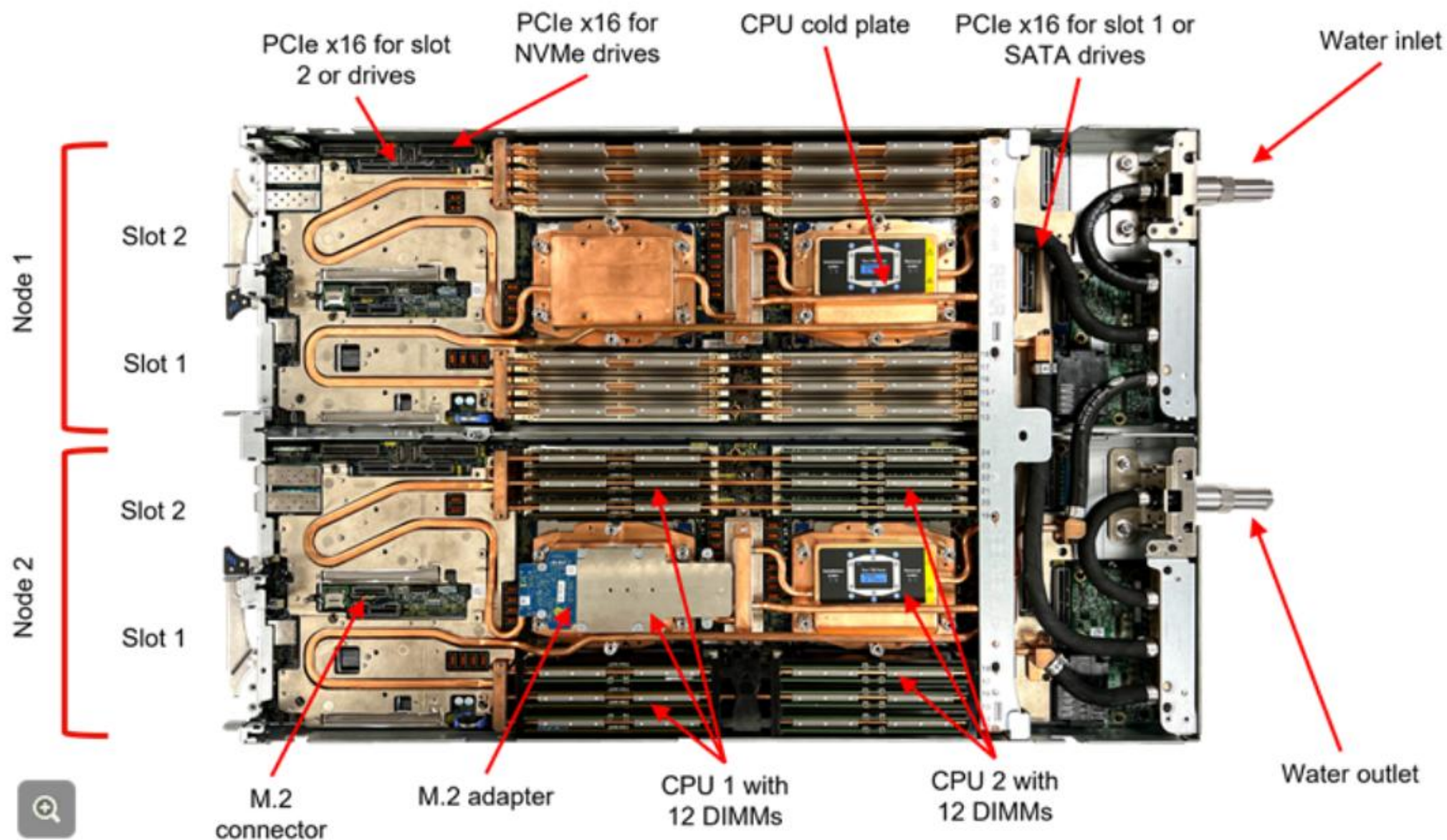
SharedIO feature

The SD665 V3 supports the SharedIO (Shared I/O) feature, also known as NVIDIA Multi-Host technology, which allows for a single network connection to be shared between the two nodes in a tray. With this feature, an NVIDIA adapter (feature BKSL, BKSP, or BKSK) is installed in one node in a tray, and a SharedIO cable (feature BPZG) is used to connect the adapter to a PCIe connector on the other node in the tray. This enables the two nodes to share the adapter's network connection, allowing the user to enjoy significant savings on the cost of both the adapters and the switch ports.

Configuration rules:

- SharedIO requires the use of a SharedIO cable (feature BPZG)
- The adapter must be installed in slot 2 of node 2. The cable connects the adapter to the onboard connector for slot 2 of node 1
- Slot 1 of each node can be configured for storage – either two 7 mm drives or one 15 mm drive per node

Note: The ConnectX-7 NDR200/HDR adapter (feature BKSL) and the ConnectX-6 HDR/200GbE adapter (feature BKSK) can be used either as standalone adapters (a maximum of two per node, four per server tray) or as part of a SharedIO configuration (a maximum of one per server tray).

Lenovo

Socket Direct feature

The SD665 V3 also supports the Socket Direct feature, which allows an adapter installed in a node to be connected to both processors in that node at the same time. Socket Direct enables direct PCIe access to both processors, eliminating the need for network traffic having to traverse the inter-process bus. This optimizes overall system performance and maximum throughput for the most demanding applications and markets.

In the SD665 V3, this is achieved by installing the NVIDIA adapter in slot 2 (connected to CPU 1) and using a Socket Direct cable (feature BPZH) to connect the adapter to the PCIe connector for slot 1 (connected to CPU 2).

Configuration rules:

- Socket Direct requires the use of a Socket Direct cable (feature BPZH)
- The adapter must be installed in slot 2 on each node, and the cable connects the adapter to the onboard connector for slot 1
- Slot 1 must remain empty if Socket Direct is configured
- Socket Direct only operates at PCIe 4.0 speed, but as the adapter operates at PCIe 4.0 speed on each link, the total matches PCIe 5.0 speed

Node mixing in the DW612S enclosure

Both AMD and Intel nodes can be installed in the DW612S enclosure. The AMD platform node tray (SD665 V3 / SD665-N V3) is longer than the Intel platform node tray (SD650 V3 / SD650-I V3).

If both platforms are to be used in the same chassis, it is recommended that SD665 V3 or SD665-N V3 nodes are installed below SD650 V3 or SD650-I V3 nodes.

Intel platform

AMD platform