

Features and specifications

Product features, technical specifications

Lenovo

Features and specifications

Components	Specification
Form factor	8U rack (two 4U chassis that are cabled together)
Processor	<ul style="list-style-type: none">• Eight 4th Generation Intel Xeon Scalable Platinum processors (former code name: Sapphire Rapids or SPR) across two 4U chassis• Support for processors with up to 60 cores, core speeds of up to 2.9 GHz, and TDP ratings of up to 350 W• Four Intel Ultra Path Interconnect (UPI) links at 16 GT/s each• Eight processors connected in a mesh topology• Support for up to four Intel embedded accelerators: QAT, DLB, IAA, and DSA
Chipset	Intel C741 "Emmitsburg" chipset, part of the platform code-named Eagle Stream (EGS)
Memory	<ul style="list-style-type: none">• Up to 128 DIMM slots (16 DIMMs per processor) across two 4U chassis• Each processor has eight memory channels, with two DIMMs per channel• Support for Lenovo TruDDR5 RDIMMs and 3DS RDIMMs• DIMMs operate at up to 4800 MHz at 1 DPC and 4400 MHz at 2 DPC• Persistent memory is not supported
PCI Expansion slots	<p>Up to 14 PCIe slots, plus one OCP 3.0 Gen 4 slot on the primary and secondary chassis system boards – support for PCIe 3.0 and 4.0.</p> <ul style="list-style-type: none">• Six front FHHL PCIe 5.0 x16 slots (three per 4U chassis)• Up to eight rear FHHL PCIe 4.0 x16 slots (four per 4U chassis)

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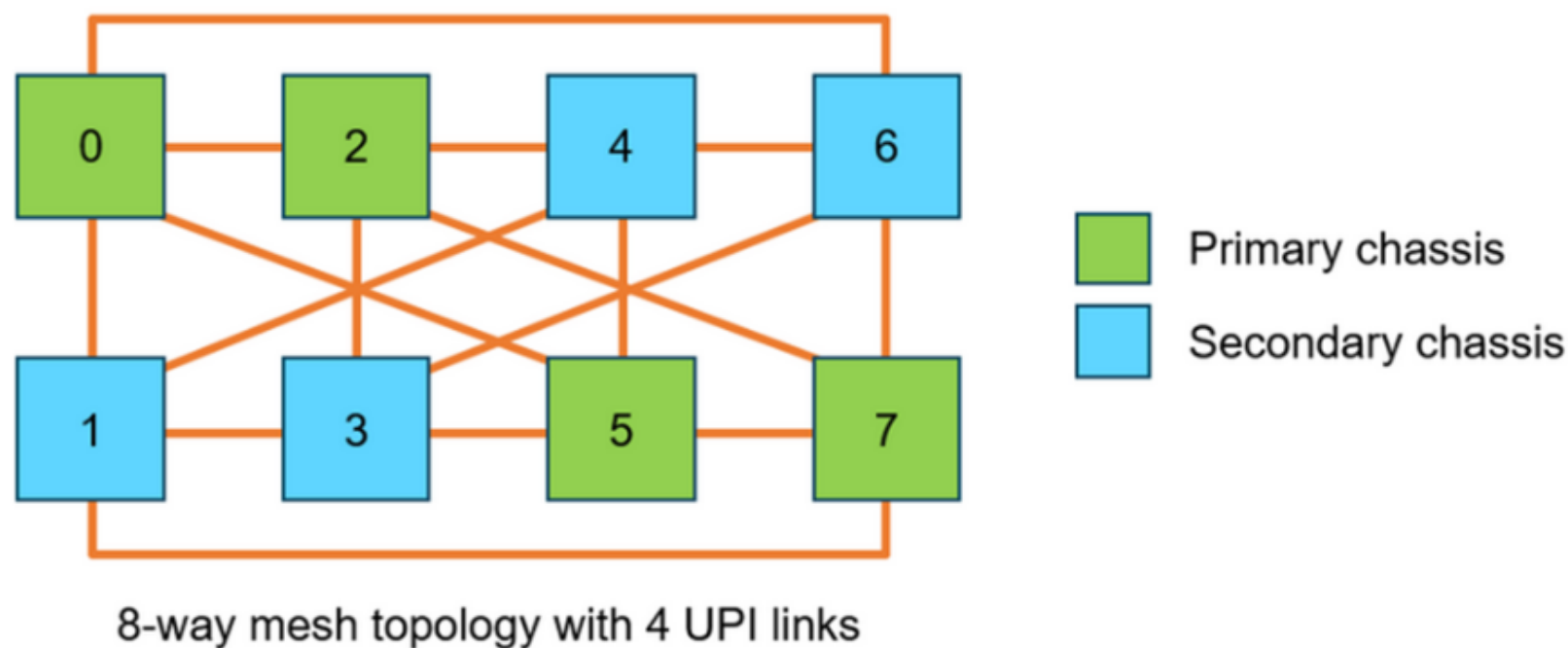
Components	Specification
Maximum internal storage	2.5-inch drives: <ul style="list-style-type: none">• 491.52 TB using 16 30.72 TB 2.5-inch SAS/SATA SSDs EDSFF drives: <ul style="list-style-type: none">• 245.76 TB using 16 15.36 TB EDSFF PCIe 5.0 NVMe SSDs
Storage controller	<ul style="list-style-type: none">• Up to 16 onboard PCIe 5.0 NVMe ports (RAID functions provided using Intel VROC)• 12 Gb SAS/SATA RAID adapters• 12 Gb SAS/SATA HBA (non-RAID)• Onboard dedicated slots for M.2 drives (for OS boot support, including hypervisor support)
Cooling	<ul style="list-style-type: none">• 24 hot-swap dual-rotor 60 mm fans (all standard) – 12 fans installed in each 4U chassis• Fans are N+2 rotor redundant (which means that the server can tolerate two rotor failures in each of the two 4U chassis and continue full operation)• One additional fan integrated in each of the power supplies.
Networking	<ul style="list-style-type: none">• One dedicated OCP 3.0 SFF slot with a PCIe 4.0 x16 host interface – support for network adapters of up to 25 GbE• One port can optionally be shared with the XClarity Controller (XCC) management processor for Wake-on-LAN and NC-SI support
Management	XClarity Controller 2 (XCC2) embedded management based on the ASPEED AST2600 baseboard management controller (BMC)

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Components	Specification
	<ul style="list-style-type: none">One port can optionally be shared with the XClarity Controller (XCC) management processor for Wake-on-LAN and NC-SI support
Management	XClarity Controller 2 (XCC2) embedded management based on the ASPEED AST2600 baseboard management controller (BMC)
GPU	No GPU support
Power supply	<ul style="list-style-type: none">Eight or 12 hot-swap redundant 1800 W AC power supplies, depending on the configuration, with four or six installed in each chassisPower supplies are 80 PLUS Titanium certifiedPower supplies require 220 V power (110 V not supported)Power supplies are N+N redundant within each chassis
Operating systems supported	Red Hat Enterprise Linux, SUSE Linux Enterprise Server, VMware ESXi
Ports	<p>Front: One VGA video port, two USB 3.1 Gen 1 (5 Gb/s) port, one USB 2.0 port, one VGA video port, one DB-9 serial port, and one RJ-45 XClarity Controller (XCC) systems management port</p> <p>The serial port can be shared with XCC for serial redirection functions. The USB 2.0 port can be configured to support local systems management by using the XClarity Administrator mobile app on a mobile device connected via a USB cable.</p> <p>Rear: No ports</p>

System architecture

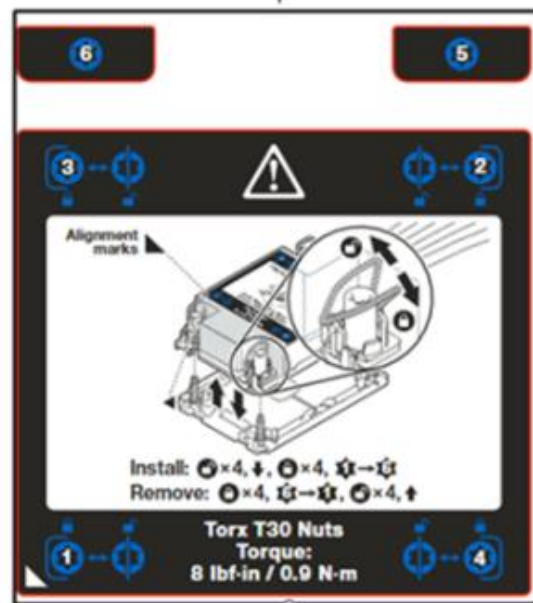
The eight SR950 V3 processors are connected using four UPI links in a mesh topology, as shown in the following figure. Each processor has two UPI links to processors in the same chassis and two UPI links to processors in the other chassis.



Note: The server requires that all eight processors be installed.

Processor and heat sink

Each processor is attached to a 2U heat sink plus two satellite heat sinks, as shown in the following figure. Each heat sink has a label which indicates the Torx T30 nut installation and removal sequences and the torque requirements.



For reference, the torque required to fully tighten the fasteners is 0.9 newton-meters, 8 inch-pounds.

Memory configuration rules

The SR950 V3 uses Lenovo TruDDR5 memory operating at up to 4800 MHz. The server supports up to 128 DIMMs with eight processors. The processors have eight memory channels and support two DIMMs per channel (2DPC). DIMMs operate at 4800 MHz at 1 DPC and 4400 MHz at 2 DPC.

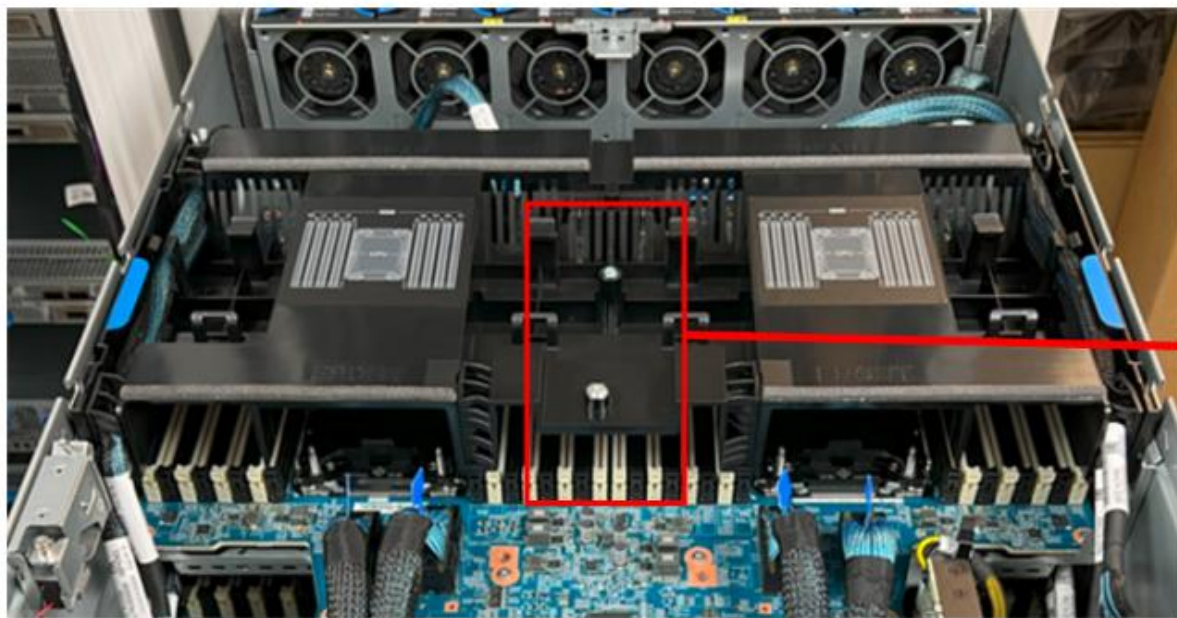
The SR950 V3 configuration rules are as follows:

- The SR950 V3 only supports quantities of 1, 2, 4, 6, 8, 12, or 16 DIMMs per processor. There is no support for other quantities.
- The SR950 V3 only supports RDIMMs and 3DS RDIMMs. There is no support for 9x4 RDIMMs, UDIMMs and LRDIMMs.
- There is no support for the mixing of DIMM types (RDIMMs with 3DS RDIMMs).
- The mixing of 128 GB 3DS RDIMMs and 256 GB 3DS RDIMMs is supported, but all DIMM slots must be populated evenly – eight 128 GB DIMMs and eight 256 GB DIMMs per processor.
- The mixing of DIMM rank counts is supported. Follow the required installation order and install the DIMMs with the higher rank counts first.
- The mixing of DIMM capacities is supported, but only two different capacities are supported across all processor channels. Follow the required installation order and install the larger DIMMs first.
- The SR950 V3 does not support Persistent memory.

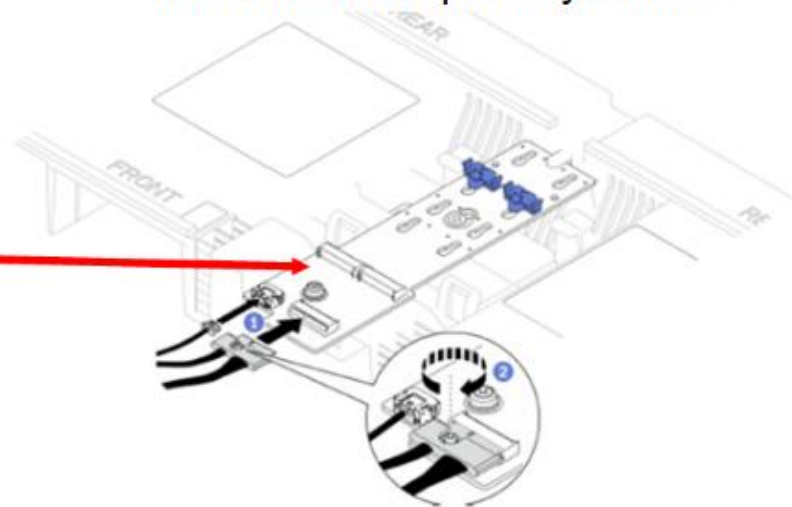
Internal storage

The SR950 V3 supports up to 16 2.5-inch SAS/SATA drive bays, or up to 16 E3.S EDSFF PCIe 5.0 NVMe drive bays. All drive bays are hot-swap and front-accessible.

The server also supports two internal M.2 NVMe drives for OS boot functions. The M.2 drives are mounted on an M.2 adapter that is installed in the lower (primary) chassis. This adapter supports NVMe drives and supports RAID-1 and RAID-0 with an integrated Marvell 88NR2241 NVMe RAID Controller.



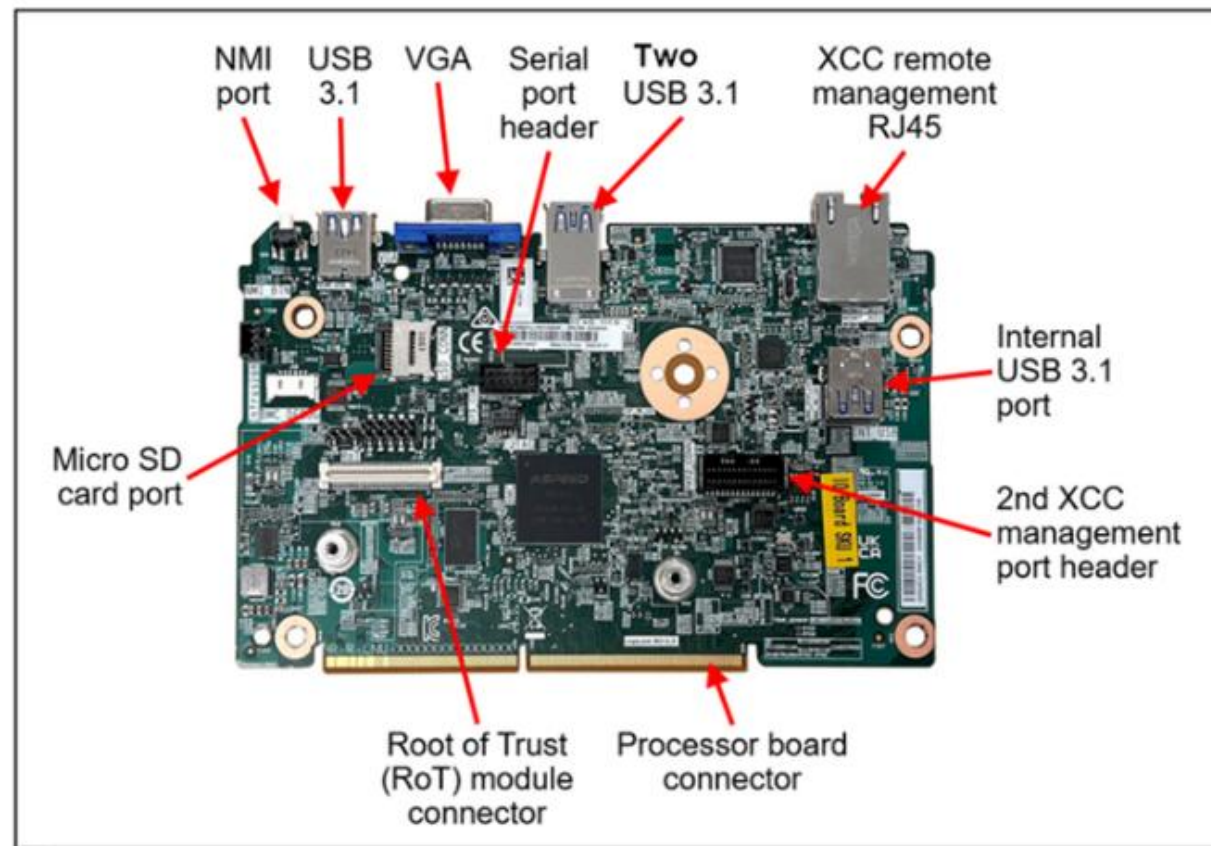
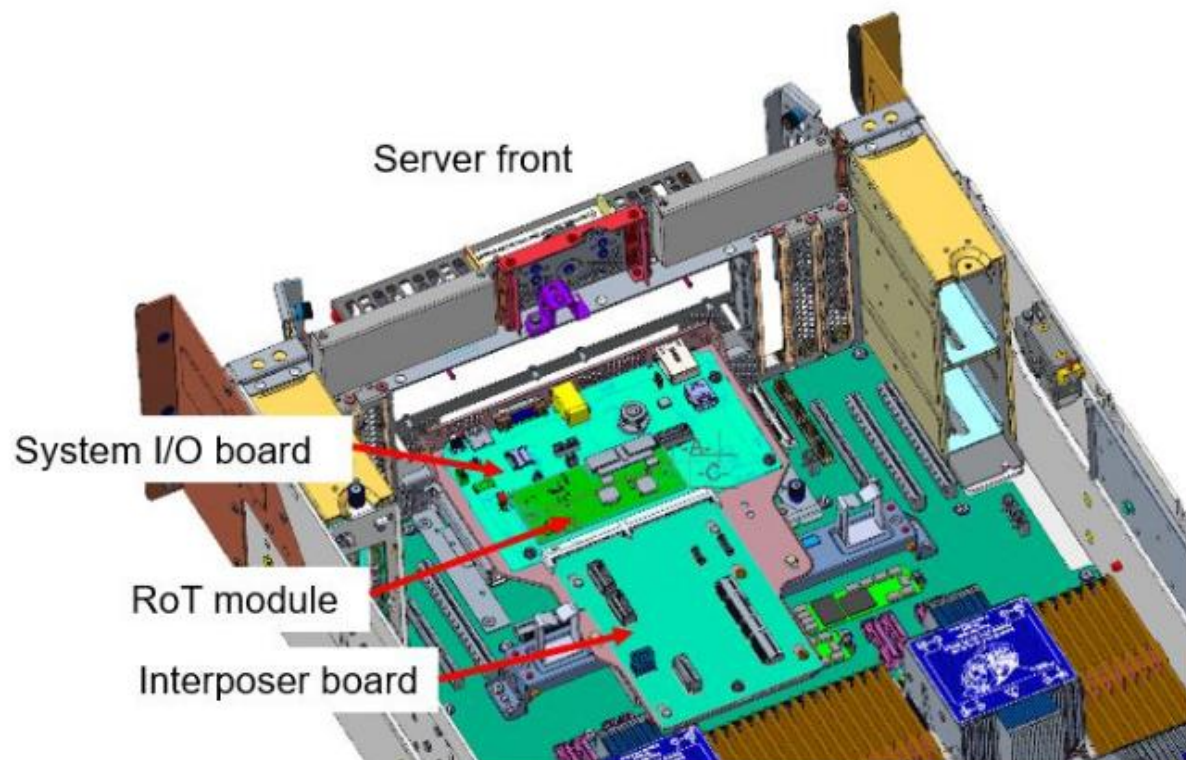
M.2 adapter installed on the upper air baffle of the primary chassis.



Note: The SR950 V3 also has four discrete onboard M.2 connectors, two in each chassis. However, these connectors are reserved and not supported.

System I/O board

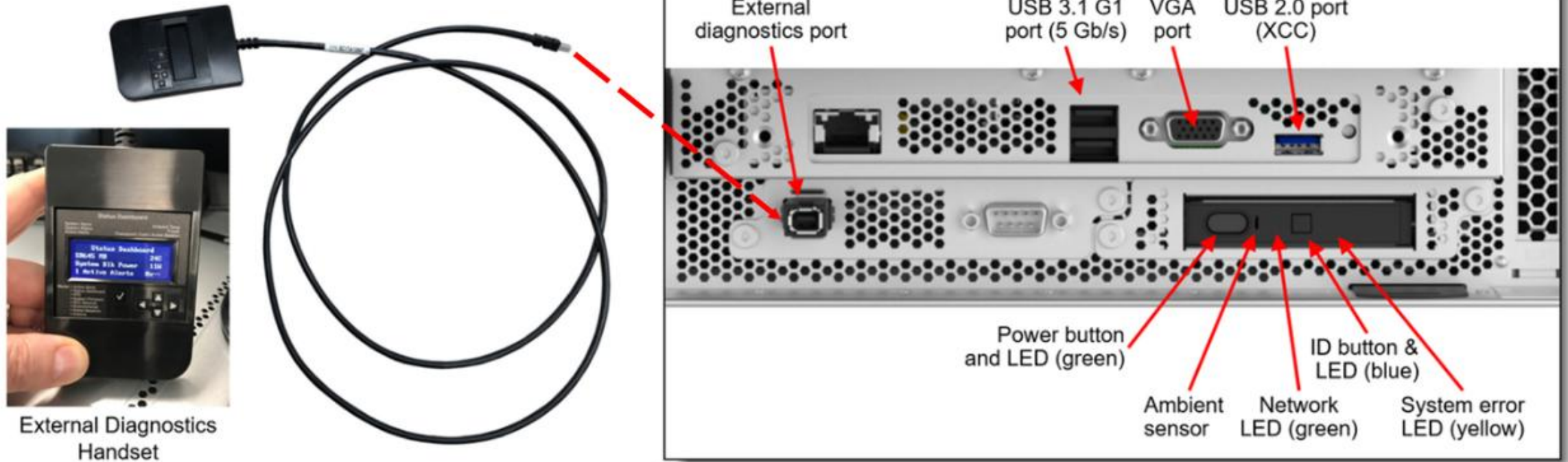
The SR950 V3 has a separate system I/O board that connects to the lower processor board through an interposer board. As shown in the following figure, the system I/O board contains all the connectors visible at the front of the server.



System I/O board

Local management

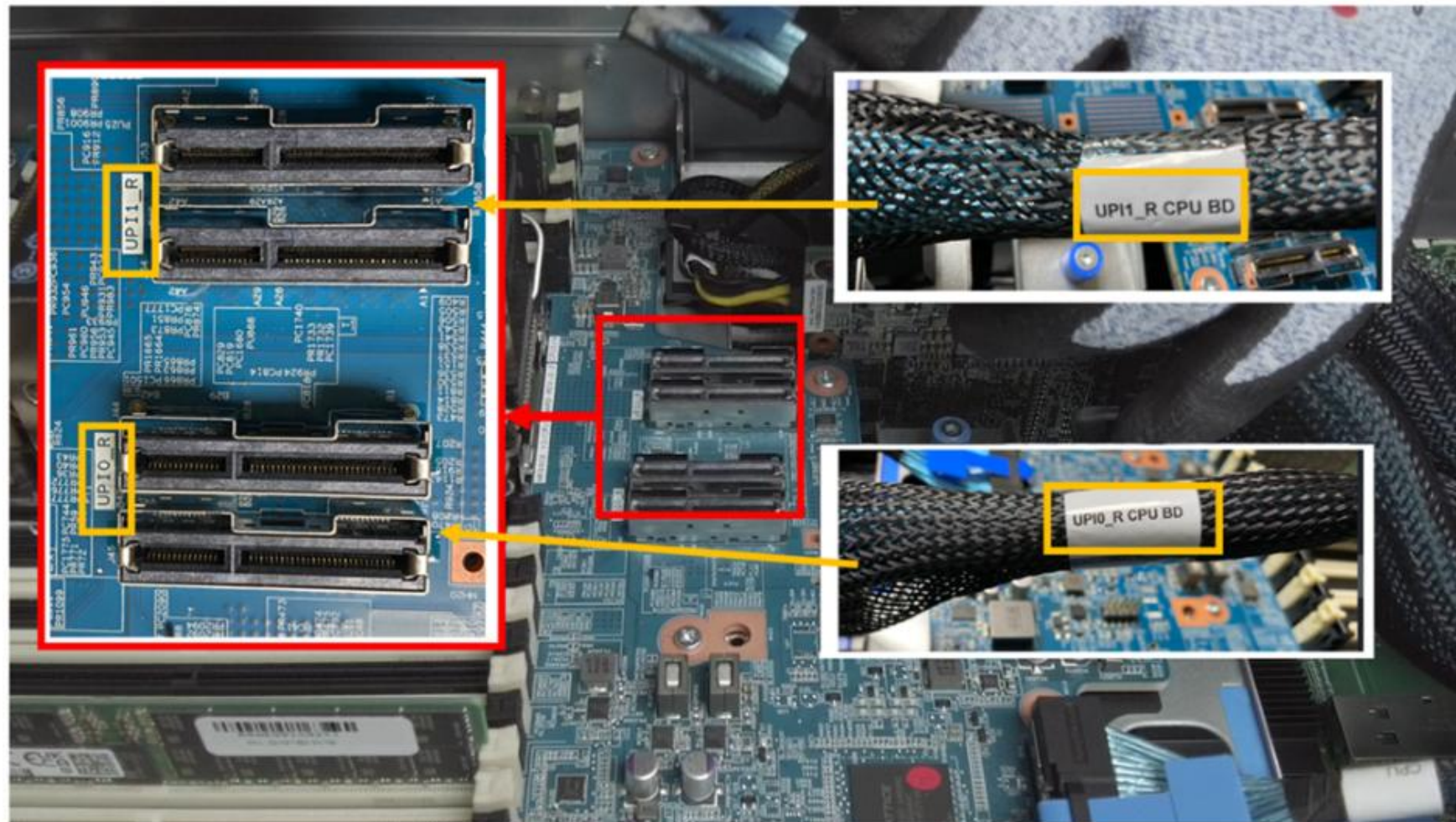
The server offers a front operator panel with key LED status indicators, as shown in the following figure.



Note: The Network LED only shows the network activity of the installed OCP network adapter.

Cables and connectors -1

There are more than 50 cable connectors in a standard 8U configuration. Each connector and cable has a corresponding label. Make sure to connect the cables to their corresponding connectors.



Cables and connectors -2

There are more than 50 cable connectors in a standard 8U configuration. Each connector and cable has a corresponding label. Make sure to connect the cables to their corresponding connectors.

