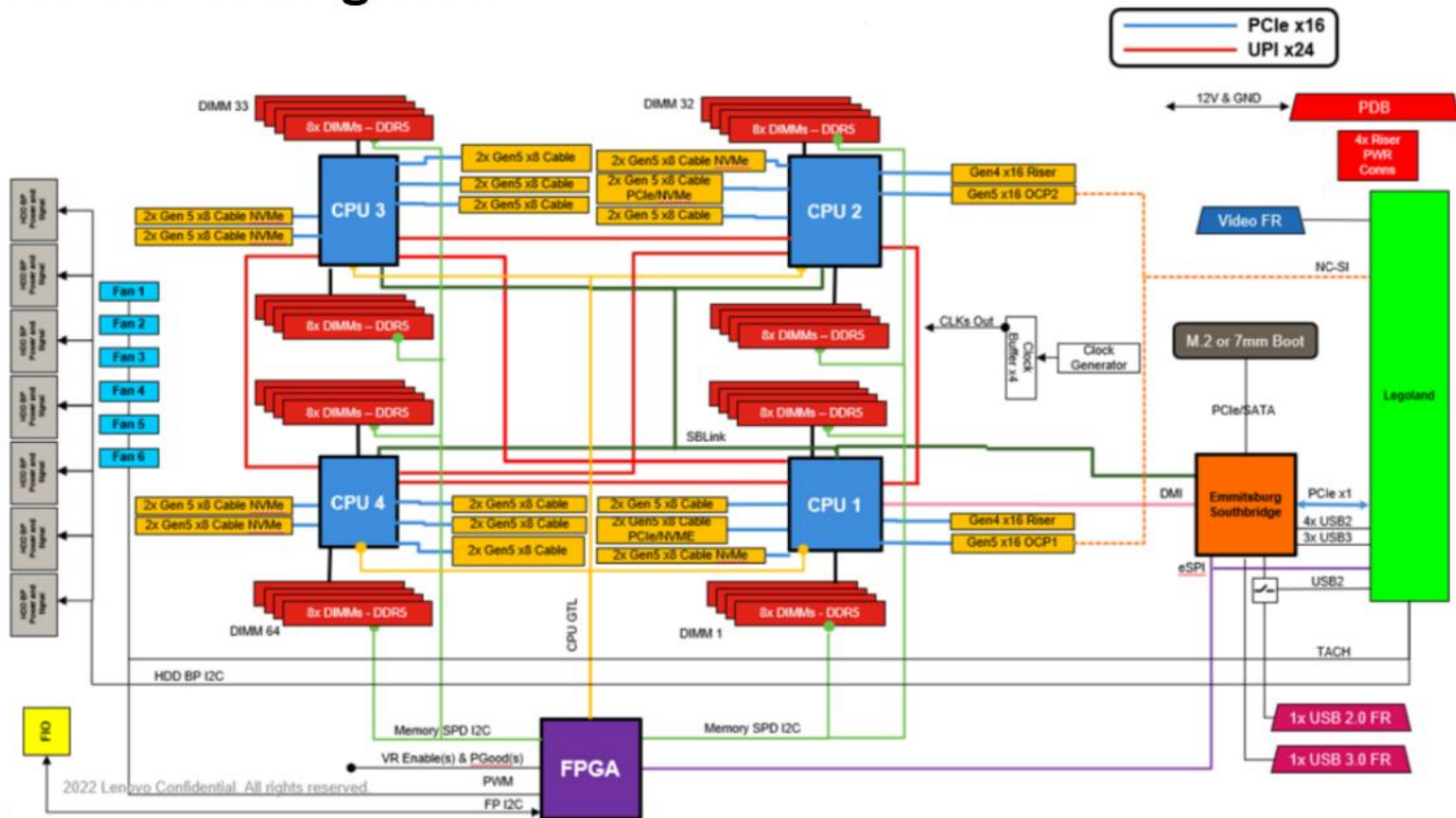


System configurations and diagrams

The SR860 V3 system block diagram and hardware configurations

Lenovo

System block diagrams



SR860 V3 storage adapter – compact form factor

The SR860 V3 supports the following compact form factor (CFF) SAS HBA:

- ThinkSystem 4350-8i/16i PCIe 3.0 SAS HBA
- ThinkSystem 440-8i/16i PCIe 4.0 SAS HBA



4350-8i



4350-16i



440-8i



440-16i

SR860 V3 storage adapter – small form factor

The SR860 V3 supports the following small form factor (SFF) RAID adapters:

- ThinkSystem RAID 5350-8i/9350-8i/16i PCIe 3.0 adapter
- ThinkSystem RAID 540-8i/16i/940-8i/16i/32i PCIe 4.0 adapter



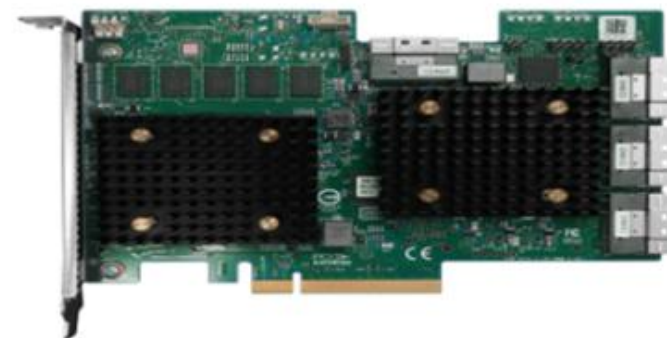
5350-8i



9350-16i



540-16i

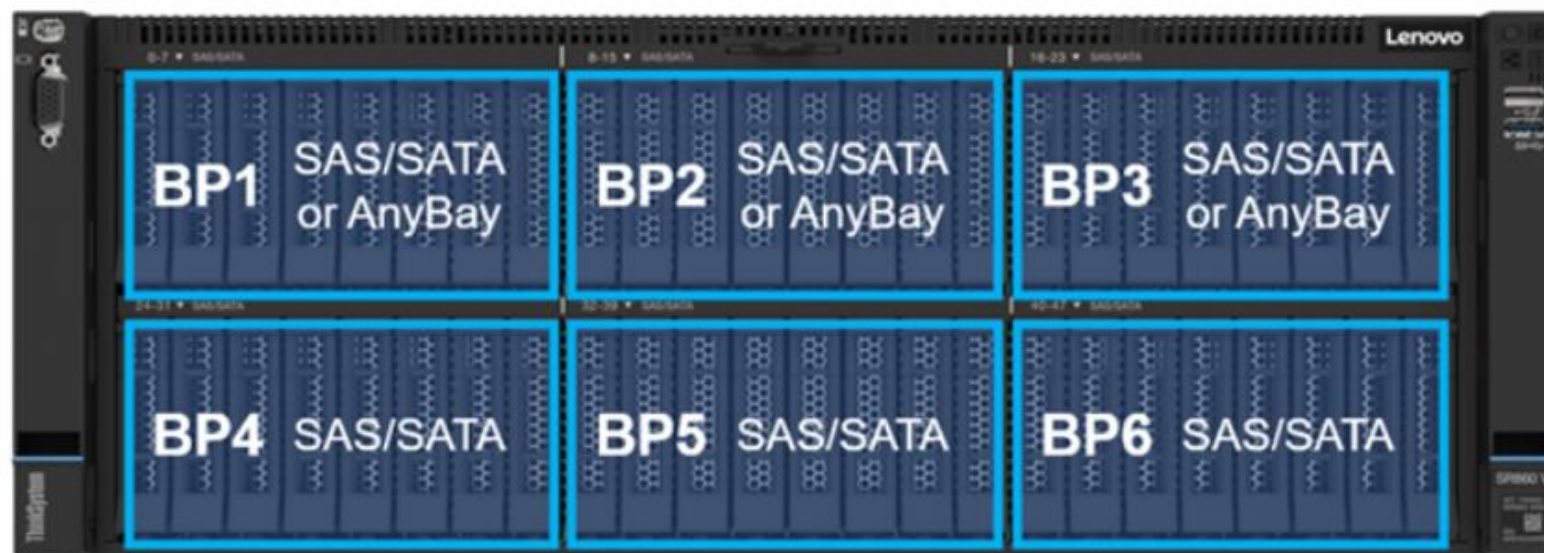


940-32i

Note: For more information about supported SAS HBA and RAID adapter numbers and slots, refer to the [Lenovo Press Product Guide](#).

Drive backplane

Drive backplane (BP) installation rules and order.



Installation priority	Backplane type	Backplane replacement priorities
1	2.5-inch AnyBay eight-bay drive backplane	1, 3, 2, 4, 5, 6
2	2.5-inch SAS/SATA eight-bay drive backplane	1, 2, 3, 4, 5, 6

AnyBay drive backplane configurations

- Support for up to 24 2.5-inch NVMe Gen4/Gen5 drives (Top bay only)
- Support for up to 48 2.5-inch SAS4/SAS3/SATA3 drives
- Support for up to six eight-bay 2.5-inch AnyBay backplanes
- Support for the ThinkSystem RAID and HBA portfolio of 8i, 16i, and 32i adapters
- Support for up to four RAID batteries



Added SAS4 and NVMe Gen4/Gen5 support

SAS/SATA drive backplane configurations

- Support for up to 48 2.5-inch SAS3/SATA3 drives
- Support for up to six eight-bay 2.5-inch SAS/SATA backplanes
- Support for the ThinkSystem RAID and HBA portfolio of 8i, 16i, and 32i adapters
- Support for up to four RAID batteries



Drive backplanes and corresponding drive bays

- Support for up to six drive backplanes
- Support for mixed storage backplane configurations
- AnyBay drive backplanes support SAS4 and NVMe Gen4/Gen 5 drives
- The bottom bay does not support NVMe drives

Drive backplane	Drive bays	Supported drive backplanes	Supported drives
Backplane 1	0 to 7	<ul style="list-style-type: none">• 2.5-inch AnyBay eight-bay drive backplane• 2.5-inch SAS/SATA eight-bay drive backplane	<ul style="list-style-type: none">• 2.5-inch SAS4/SAS3/SATA3 NVMe Gen4/Gen5 drives• 2.5-inch SAS3/SATA3 drives
Backplane 2	8 to 15		
Backplane 3	16 to 23		
Backplane 4	24 to 31	<ul style="list-style-type: none">• 2.5-inch AnyBay eight-bay drive backplane• 2.5-inch SAS/SATA eight-bay drive backplane	<ul style="list-style-type: none">• 2.5-inch SAS3/SATA3 drives
Backplane 5	32 to 39		
Backplane 6	40 to 47		

Drive bay combinations -1

The table shows the supported drive bay combinations (SAS/SATA or AnyBay drives) and lists the backplanes required for each drive bay combination.

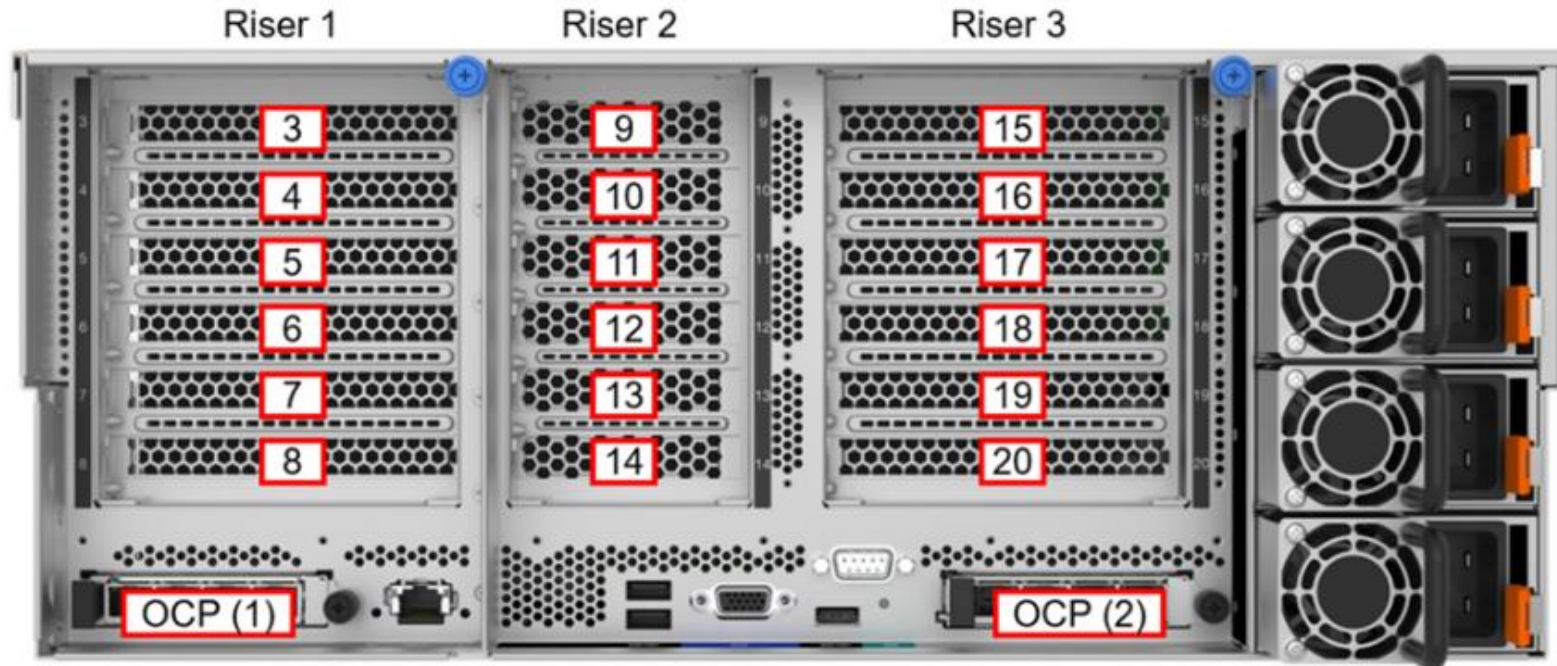
Total drives	Total NVMe	CPU support	SAS/SATA backplanes	AnyBay backplanes		Backplanes
			SAS/SATA drives	SAS/SATA drives	NVMe drives	
8	0	2 or 4	8	0	0	1 SAS/SATA
8	4	2	0	4	4	1 AnyBay
8	8	4	0	0	8	1 AnyBay
16	0	2 or 4	16	0	0	2 SAS/SATA
16	8	2	0	8	8	2 AnyBay
16	8	4	8	0	8	1 SAS/SATA + 1 AnyBay
16	16	4	0	0	16	2 AnyBay
24	0	2 or 4	24	0	0	3 SAS/SATA
24	8	2	8	8	8	1 SAS/SATA + 2 AnyBay
24	8	4	16	0	8	2 SAS/SATA + 1 AnyBay
24	16	4	8	0	16	1 SAS/SATA + 2 AnyBay
24	24	4	0	0	24	3 AnyBay

Drive bay combinations -2

Total drives	Total NVMe	CPU support	SAS/SATA backplanes	AnyBay backplanes		Backplanes
			SAS/SATA drives	SAS/SATA drives	NVMe drives	
32	0	2 or 4	32	0	0	4 SAS/SATA
32	8	2	16	8	8	2 SAS/SATA + 2 AnyBay
32	8	4	24	0	8	3 SAS/SATA + 1 AnyBay
32	16	4	16	0	16	2 SAS/SATA + 2 AnyBay
32	24	4	8	0	24	1 SAS/SATA + 3 AnyBay
40	0	2 or 4	40	0	0	5 SAS/SATA
40	8	2	24	8	8	3 SAS/SATA + 2 AnyBay
40	8	4	32	0	8	4 SAS/SATA + 1 AnyBay
40	16	4	24	0	16	3 SAS/SATA + 2 AnyBay
40	24	4	16	0	24	3 SAS/SATA + 3 AnyBay
48	0	2 or 4	48	0	0	6 SAS/SATA
48	8	2	32	8	8	4 SAS/SATA + 2 AnyBay
48	8	4	40	0	8	5 SAS/SATA + 1 AnyBay
48	16	4	32	0	16	4 SAS/SATA + 2 AnyBay
48	24	4	24	0	24	3 SAS/SATA + 3 AnyBay

Riser and slot support

The SR860 V3 supports up to 20 PCIe slots: 18 regular PCIe slots (either PCIe 4.0 or 5.0) plus two OCP 3.0 slots with PCIe 5.0 interfaces.



Slots in the
SR860 V3

PCIe slot configurations

Click the buttons to see the different PCIe slot configurations

**Four PCIe 4.0 and two
OCP PCIe 5.0 slots**

**12 PCIe 5.0, four PCIe 4.0, and
two OCP PCIe 5.0 slots**

**18 PCIe 4.0 and two OCP
PCIe 5.0 slots**





Four PCIe 4.0 and two OCP PCIe 5.0 slots

The four-slot configuration

- Each slot is connected to a processor
- Blue slots are PCIe 4.0, and green slots are PCIe 5.0



Riser 1 (FHFL)	Riser 2 (LP)	Riser 3 (FHFL)
Slot 3 ~ Slot 6: Empty	Slot 9 ~ Slot 14: Empty	Slot 15 ~ Slot 18: Empty
Slot 7: PCIe 4.0 x8 FHHL (CPU 1)		Slot 19: Gen4 x8 FHHL (CPU 2)
Slot 8: PCIe 4.0 x8 FHHL (CPU 1)		Slot 20: Gen4 x8 FHHL (CPU 2)
Slot 1: PCIe 5.0 x16 OCP 3.0 slot		Slot 2: PCIe 5.0 x16 OCP 3.0 slot

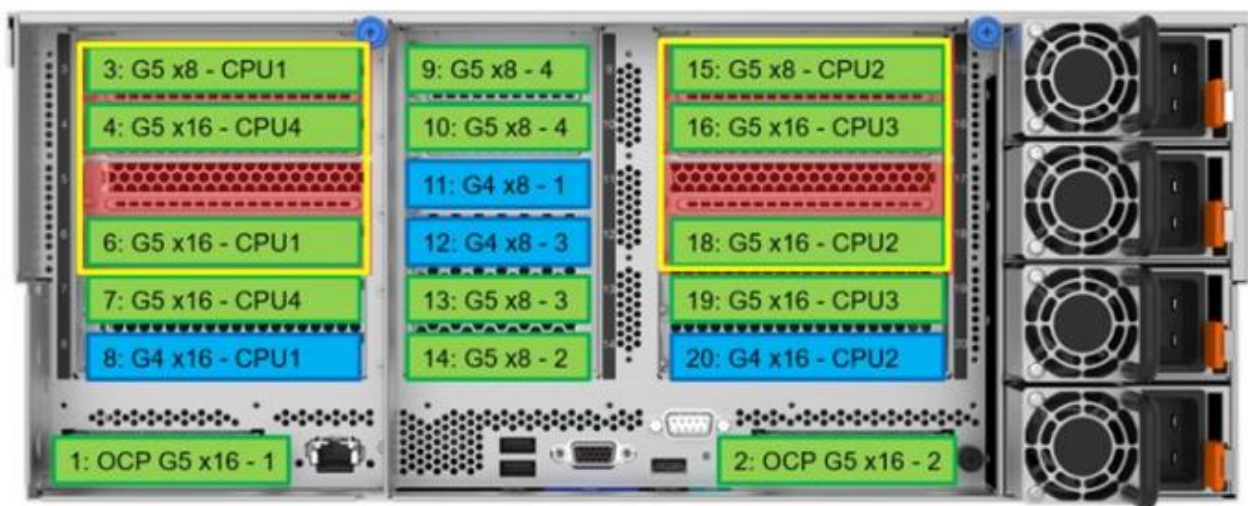
Note: The rear 7 mm hot-swap drive bay is installed in riser 3.



12 PCIe 5.0, four PCIe 4.0, and two OCP PCIe 5.0 slots

The 16-slot configuration

- Each slot is connected to a processor
- Blue slots are PCIe 4.0, green slots are PCIe 5.0, and slots shown in a yellow box support double-width GPUs



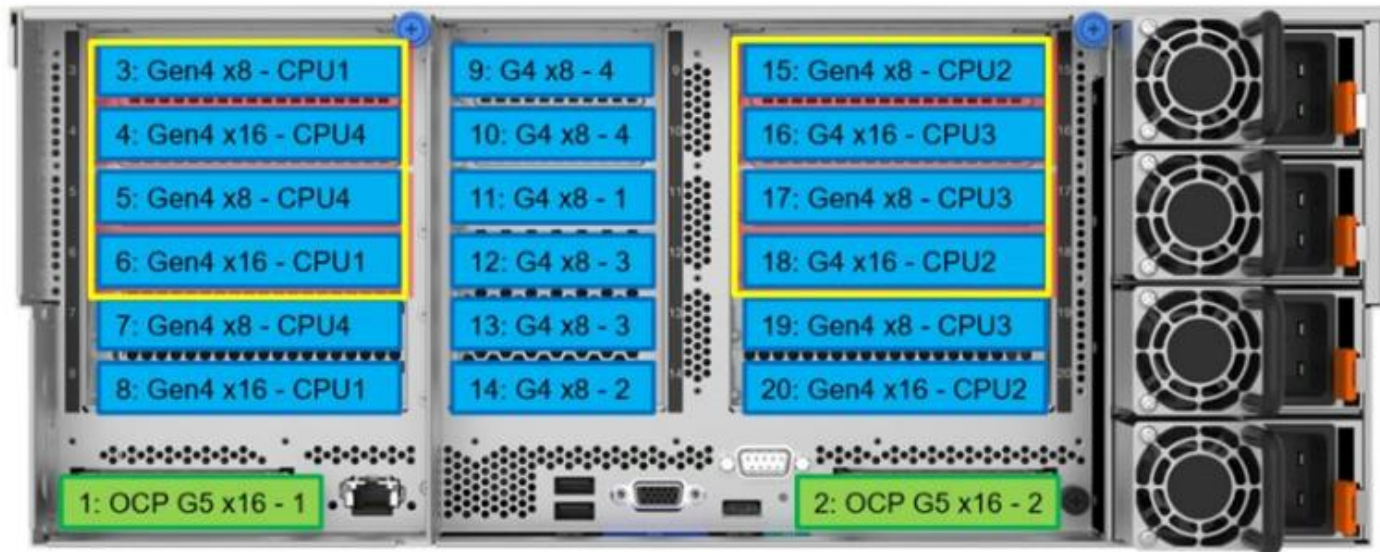
Riser 1 (FHFL)	Riser 2 (LP)	Riser 3 (FHFL)
Slot 3: PCIe 5.0 x8 FHFL (CPU 1) (Not available if slot 4 has double-width GPU)	Slot 9: PCIe 5.0 x8 HHHL (CPU 4)	Slot 15: PCIe 5.0 x8 FHFL (CPU 2) (Not available if slot 16 has double-width GPU)
Slot 4: PCIe 5.0 x16 FHFL (CPU 4) (Support for a double-width GPU)	Slot 10: PCIe 5.0 x8 HHHL (CPU 4)	Slot 16: PCIe 5.0 x16 FHFL (CPU 3) (Support for a double-width GPU)
Slot 5: Empty	Slot 11: PCIe 4.0 x8 HHHL (CPU 1)	Slot 17: Empty
Slot 6: PCIe 5.0 x16 FHFL (CPU 1) (Support for a double-width GPU)	Slot 12: PCIe 4.0 x8 HHHL (CPU 3)	Slot 18: PCIe 5.0 x16 FHFL (CPU 2) (Support for a double-width GPU)
Slot 7: PCIe 5.0 x16 FHHL (CPU 4)	Slot 13: PCIe 5.0 x8 HHHL (CPU 3)	Slot 19: PCIe 5.0 x16 FHHL (CPU 3)
Slot 8: PCIe 4.0 x16 FHHL (CPU 1)	Slot 14: PCIe 5.0 x8 HHHL (CPU 2)	Slot 20: PCIe 4.0 x16 FHHL (CPU 2) (Not available if a 7 mm drive cage is selected)
Slot 1: PCIe 5.0 x16 OCP 3.0 slot		Slot 2: PCIe 5.0 x16 OCP 3.0 slot



18 PCIe 4.0 and two OCP PCIe 5.0 slots

The 18-slot configuration

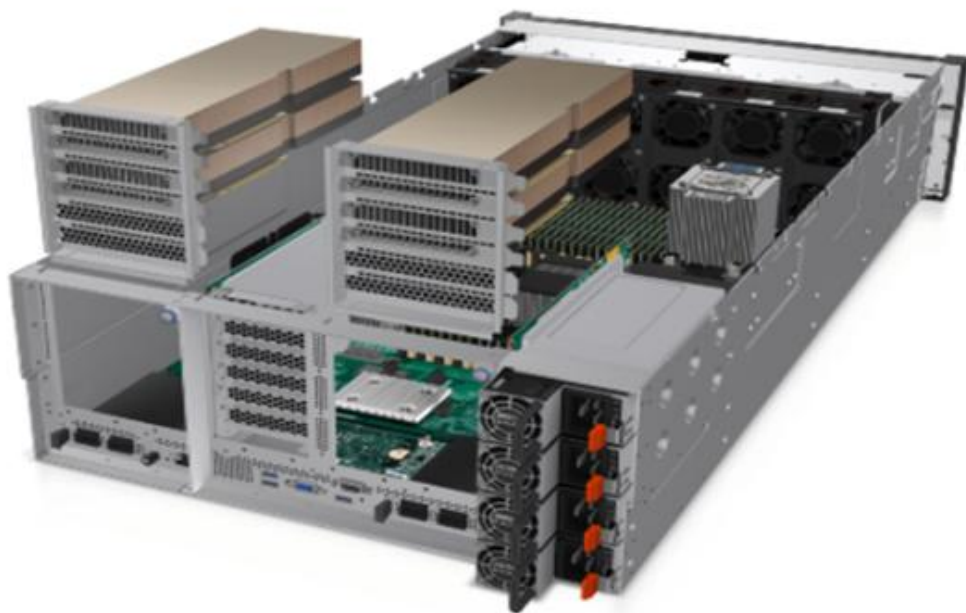
- Each slot is connected to a processor
- Blue slots are PCIe 4.0, green slots are PCIe 5.0, and slots shown in a yellow box support double-width GPUs



Riser 1 (FHFL)	Riser 2 (LP)	Riser 3 (FHFL)
Slot 3: PCIe 4.0 x8 FHFL (CPU 1) (Not available if slot 4 has double-width GPU)	Slot 9: PCIe 4.0 x8 HHHL (CPU 4)	Slot 15: PCIe 4.0 x8 FHFL (CPU 2) (Not available if slot 16 has double-width GPU)
Slot 4: PCIe 4.0 x16 FHFL (CPU 4) (Support for a double-width GPU)	Slot 10: PCIe 4.0 x8 HHHL (CPU 4)	Slot 16: PCIe 4.0 x16 FHFL (CPU 3) (Support for a double-width GPU)
Slot 5: PCIe 4.0 x8 FHFL (CPU 4) (Not available if slot 6 has double-width GPU)	Slot 11: PCIe 4.0 x8 HHHL (CPU 1)	Slot 17: PCIe 4.0 x8 FHFL (CPU 3) (Not available if slot 18 has double-width GPU)
Slot 6: PCIe 4.0 x16 FHFL (CPU 1) (Support for a double-width GPU)	Slot 12: PCIe 4.0 x8 HHHL (CPU 3)	Slot 18: PCIe 4.0 x16 FHFL (CPU 2) (Support for a double-width GPU)
Slot 7: PCIe 4.0 x8 FHHL (CPU 4)	Slot 13: PCIe 4.0 x8 HHHL (CPU 3)	Slot 19: PCIe 4.0 x8 FHHL (CPU 3)
Slot 8: PCIe 4.0 x16 FHHL (CPU 1)	Slot 14: PCIe 4.0 x8 HHHL (CPU 2)	Slot 20: PCIe 4.0 x16 FHHL (CPU 2) (Not available if a 7 mm drive cage is selected)
Slot 1: PCIe 5.0 x16 OCP 3.0 slot		Slot 2: PCIe 5.0 x16 OCP 3.0 slot

GPU adapters

- The DW GPU base supports two standard heat sinks for the front processors and two low-profile winged heat sinks for the rear processors.
- Processors on servers with DW GPUs and full-length adapters are limited to a maximum TDP of 270 W.



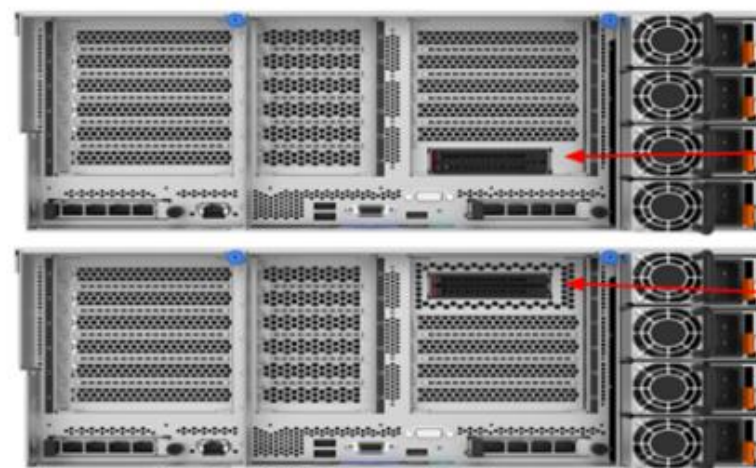
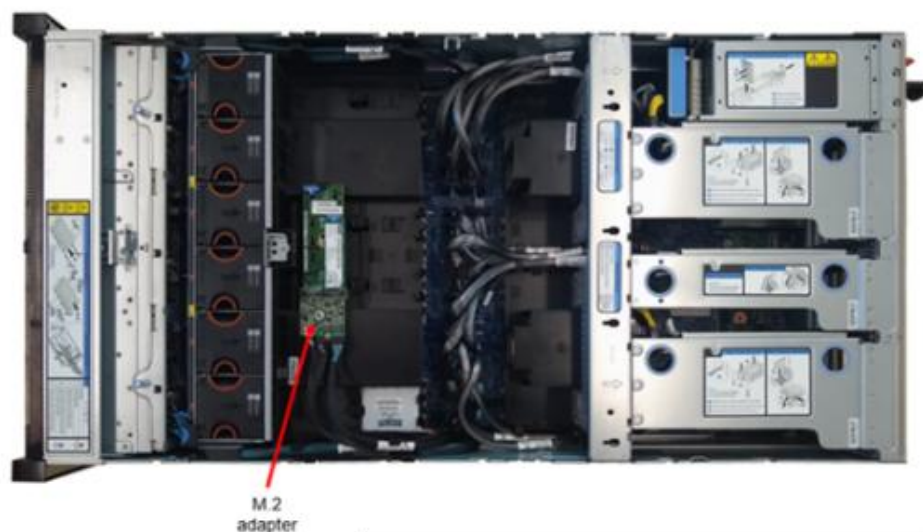
Supports up to four double-width 350 W GPUs or eight single-width 75 W GPUs.

GPU slots are located in Riser1 and Riser 3

Note: When adding GPUs to an existing server, double-width GPUs are only supported when the server is configured in the factory with full-length slots and low-profile heat sinks on the rear processors. Field upgrades of the heat sinks and slots are not available.

M.2 and 7 mm drive support

- The SR860 V3 supports one or two M.2 form-factor SATA or NVMe drives for use as an operating system boot solution or as additional storage. The M.2 drives are installed into an M.2 module which is mounted on the air baffle.
- The SR860 V3 supports two 7 mm drives, either both SATA or both NVMe, at the rear of the server. These drives occupy one or two PCIe slots.
- RAID support is implemented using VROC SATA or VROC NVMe. Additional adapters are neither required nor supported.



Two 7 mm drive bays in slot 20

Two 7 mm drive bays in slot 16 and 17

Note: The M.2 module and 7 mm drive enclosure connect to the same ports on the system board. As a result, they cannot both be installed on the same server.

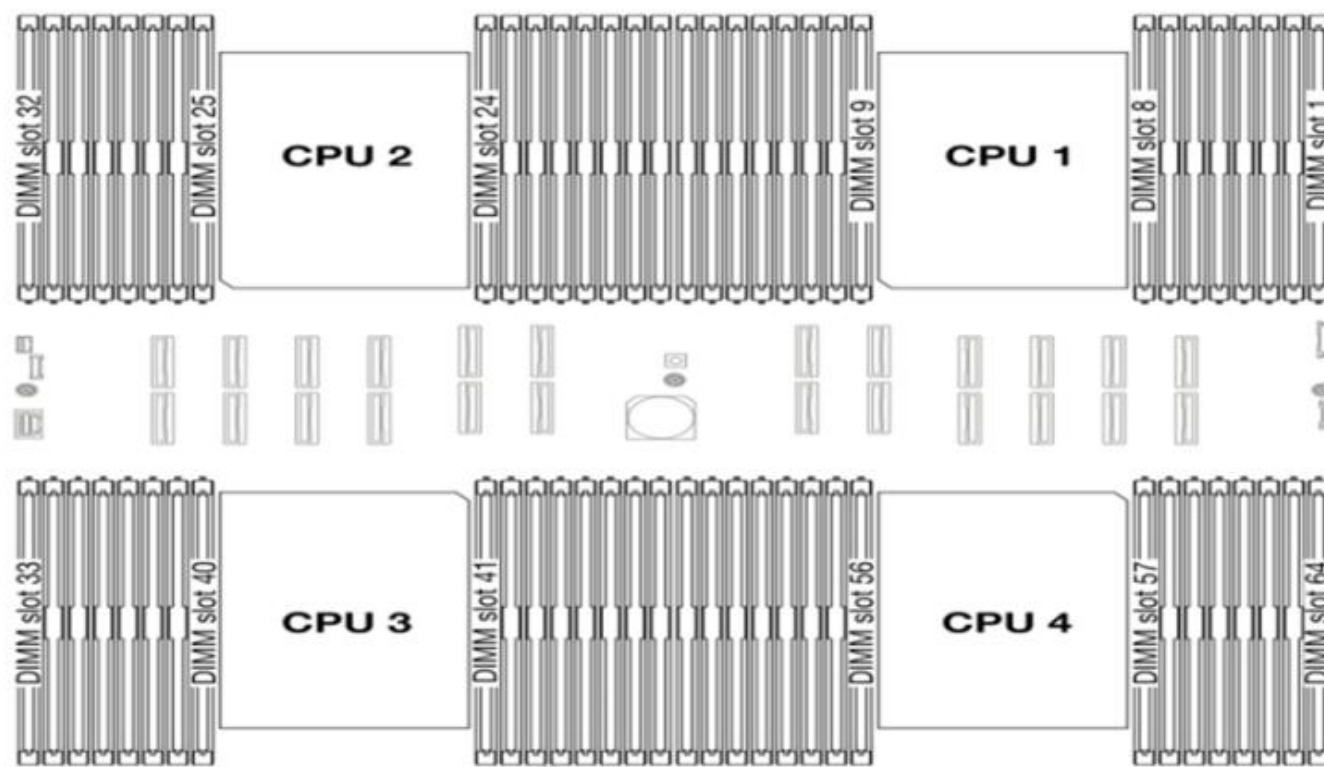
Memory options

- The SR860 V3 supports 16 DIMMs per processor. Each processor has eight memory channels with two DIMMs per channel (2DPC). There is support for 1DPC at 4800 MHZ and 2DPC at 4400 MHZ.
- The SR860 V3 only supports quantities of 1, 2, 4, 6, 8, 12, or 16 DIMMs per processor.
- The server supports three types of DIMMs: 9x4 RDIMMs, RDIMMs, and 3DS RDIMMS. The mixing of DIMM types is not supported.
- The mixing of 128 GB 3DS RDIMMs and 256 GB 3DS RDIMMs is supported, mixing of DIMM rank counts is supported. Follow the required installation order when installing DIMMs.
- The SR860 V3 supports two memory modes: independent memory mode and memory mirroring mode

Note: For detailed memory configuration and installation rules, refer to the memory installation rules section of the SR860 V3 User Guide on [Lenovo Pubs](#).

Memory slot and channel identification

The following figure shows the layout of the memory modules and processors. Click [HERE](#) to see the memory slot and channel identification.



Server front



Processor	CPU 1															
Controller	iMC1				iMC0				iMC2				iMC3			
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.	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Processor	CPU 2															
Controller	iMC1				iMC0				iMC2				iMC3			
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.	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17
Processor	CPU 3															
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.	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
Processor	CPU 4															
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.	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64