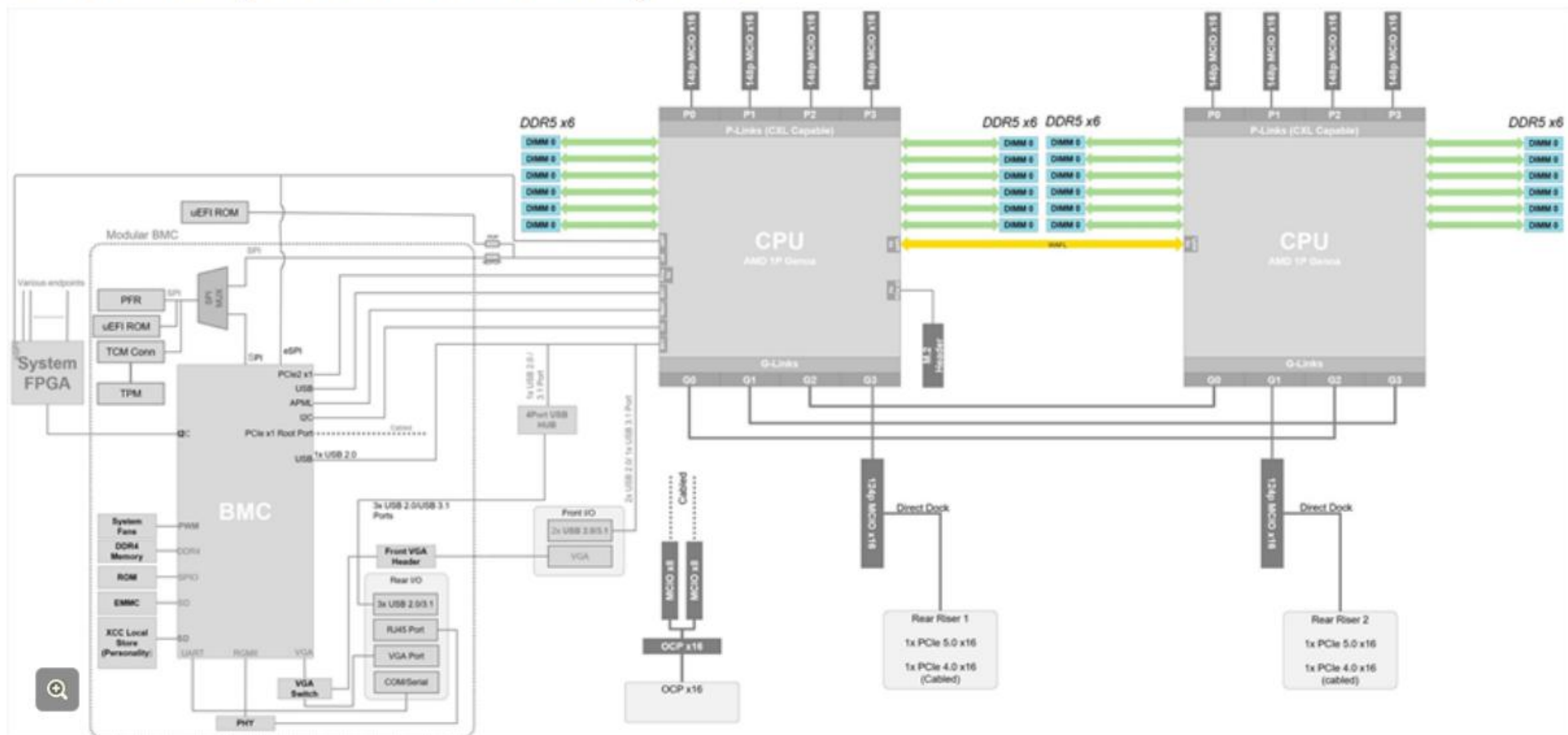


# System configurations and diagrams

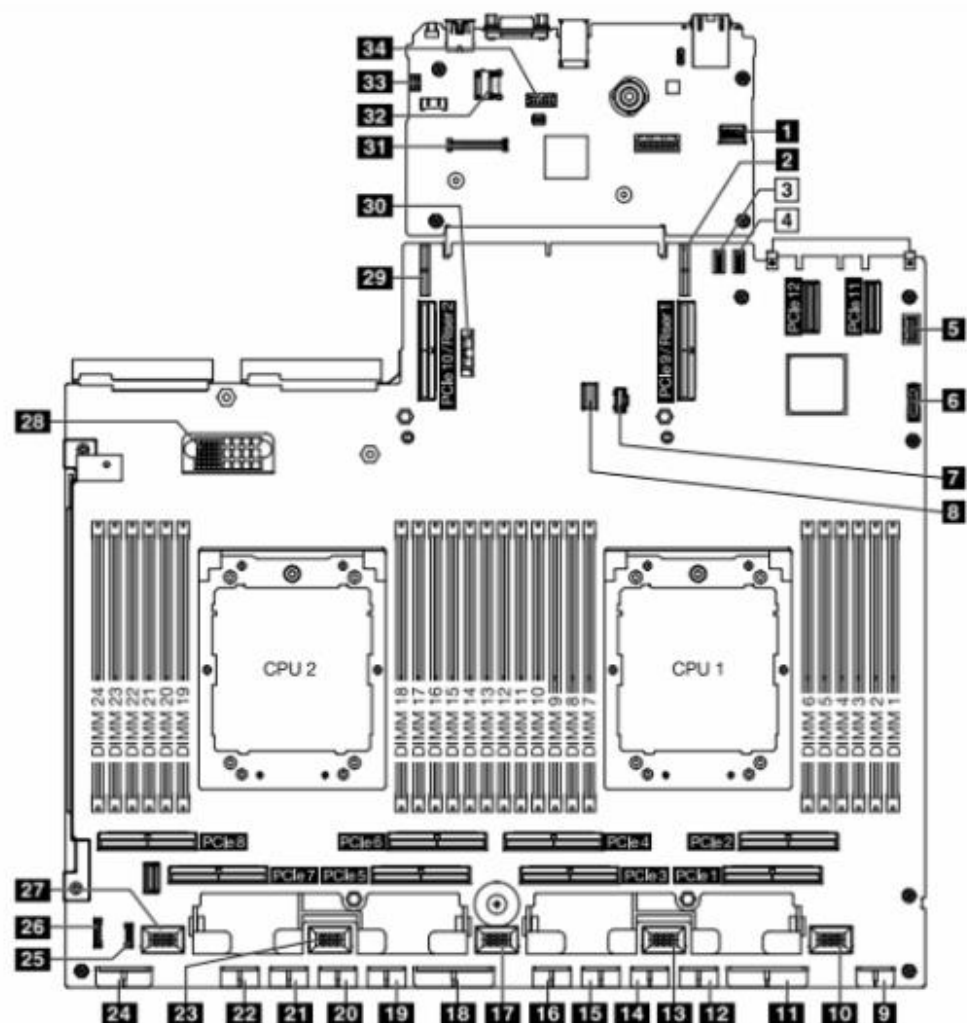
FRU replacement videos

**Lenovo**

# General system block diagram



# System board assembly connectors



- 1** Front SXM5 GPU management PCIe connector
- 2** Riser 1 power connector
- 3** Switch block 6 (SW6)
- 4** Switch block 5 (SW5)
- 5** Front VGA connector
- 6** Front USB connector
- 7** M.2 power connector
- 8** M.2 signal connector
- 9** Front riser power connector
- 10** Fan 1 connector
- 11** PCIe distribution board power connector

- 12** GPU 1 power connector
- 13** Fan 2 connector
- 14** GPU 2 power connector
- 15** GPU 3 power connector
- 16** GPU 4 power connector
- 17** Fan 3 connector
- 18** PCIe distribution board power connector
- 19** GPU 5 power connector
- 20** GPU 6 power connector
- 21** GPU 7 power connector
- 22** GPU 8 power connector
- 23** Fan 4 connector

- 24** Backplane power connector
- 25** LCD connector
- 26** Front operator panel connector
- 27** Fan 5 connector
- 28** PDB connector
- 29** Riser 2 power connector
- 30** 3V battery (CR2032)
- 31** Root of trust module connector
- 32** Micro SD connector
- 33** Intrusion switch connector
- 34** Serial port cable connector

## Standard 4-DW GPU model configurations

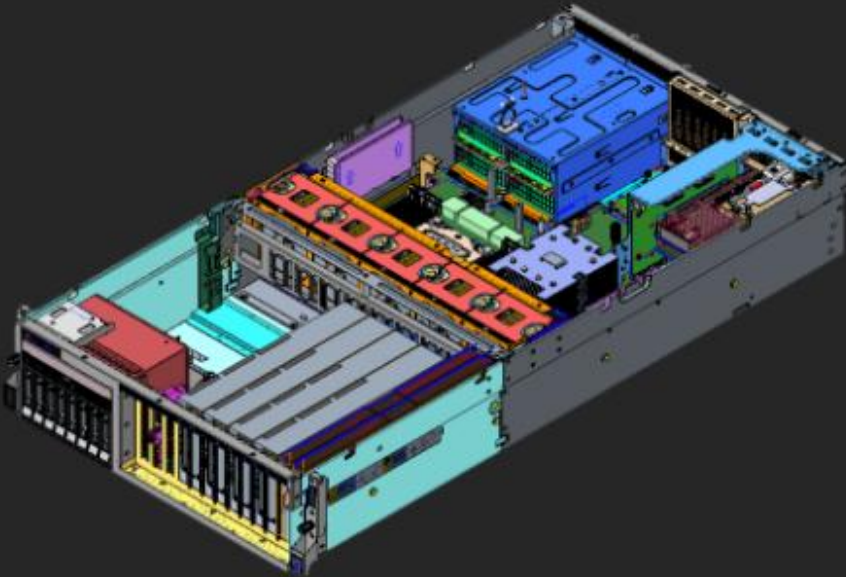
Click the links to see more information about 4-DW GP model configurations:

- [4-DW GPU Gen5 pass-through connection](#)
- [4-DW GPU with a PCIe switch adapter and Tri-Mode or AnyBay storage](#)

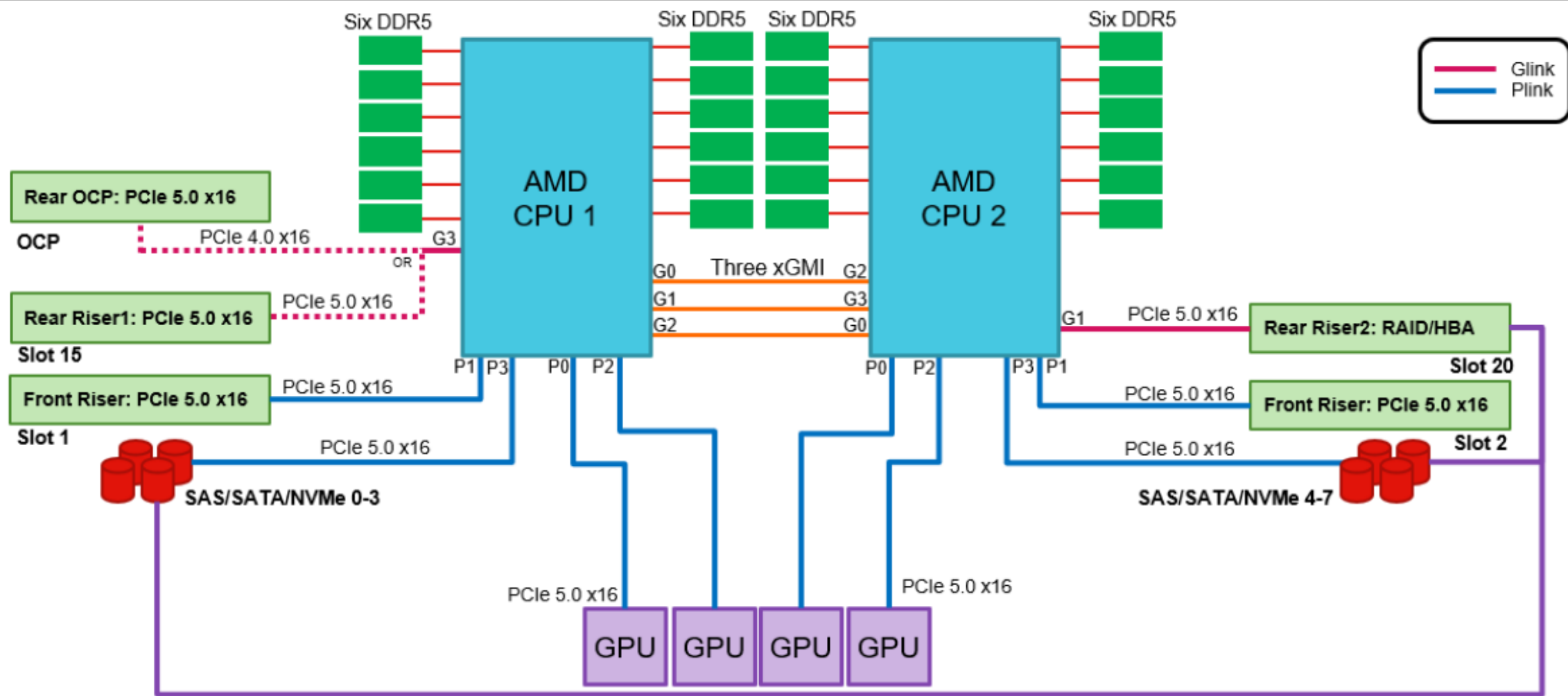




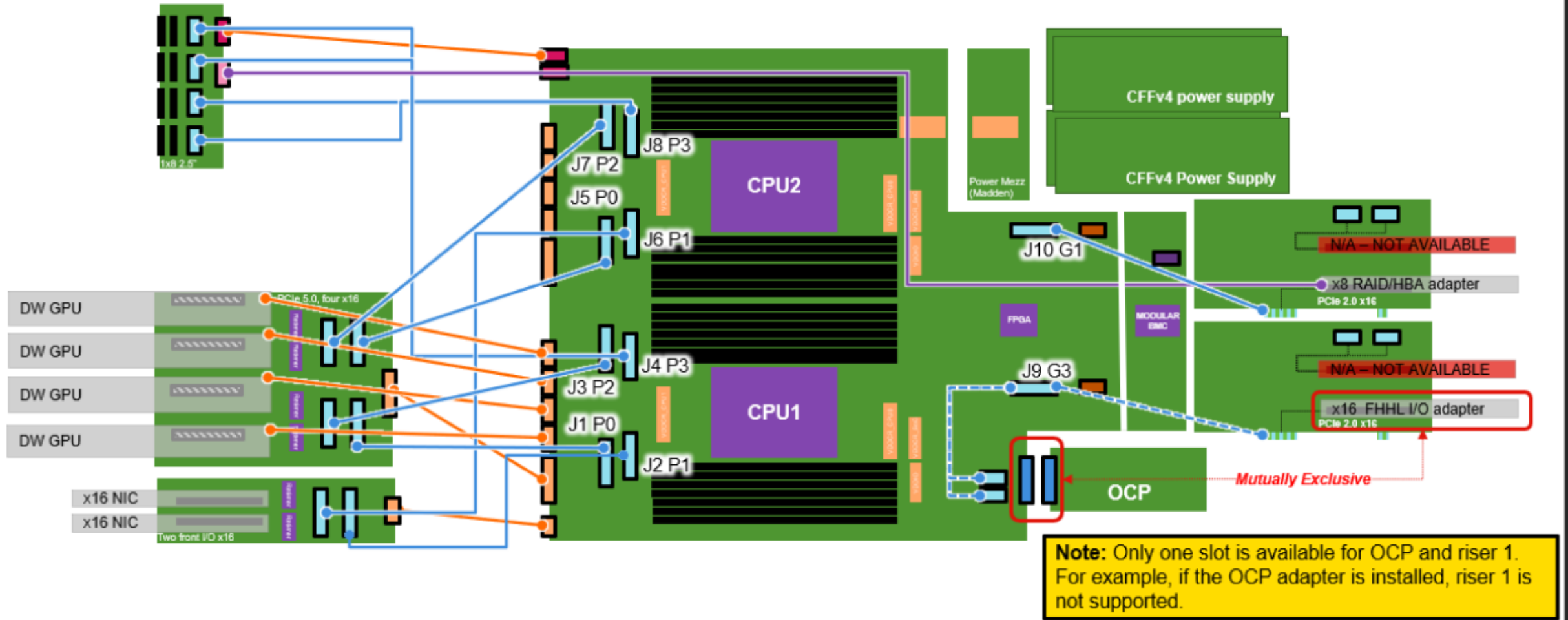
| 4-DW GPU Gen5 pass-through connection |                                                        |                                                           |
|---------------------------------------|--------------------------------------------------------|-----------------------------------------------------------|
| Type                                  | 1                                                      | 2                                                         |
| CPU                                   | Two CPUs                                               |                                                           |
| GPU                                   | Four DW x16 FHFL 350 W PCIe 5.0 GPUs                   |                                                           |
| Storage<br>(2.5-inch drives)          | Eight SATA 6 Gbps / SAS 12 Gbps / NVMe PCIe 5.0 drives |                                                           |
| I/O Front                             | Two PCIe 5.0 x16 (FHFL) adapters                       |                                                           |
| I/O Rear                              | OCP adapter (PCIe 4.0 x16)<br>Riser 1: not supported   | OCP adapter is not supported<br>Riser 1: One PCIe 5.0 x16 |
|                                       | Riser 2:<br>One PCIe 5.0 x16 (RAID/HBA for SAS/SATA)   |                                                           |



# System diagram

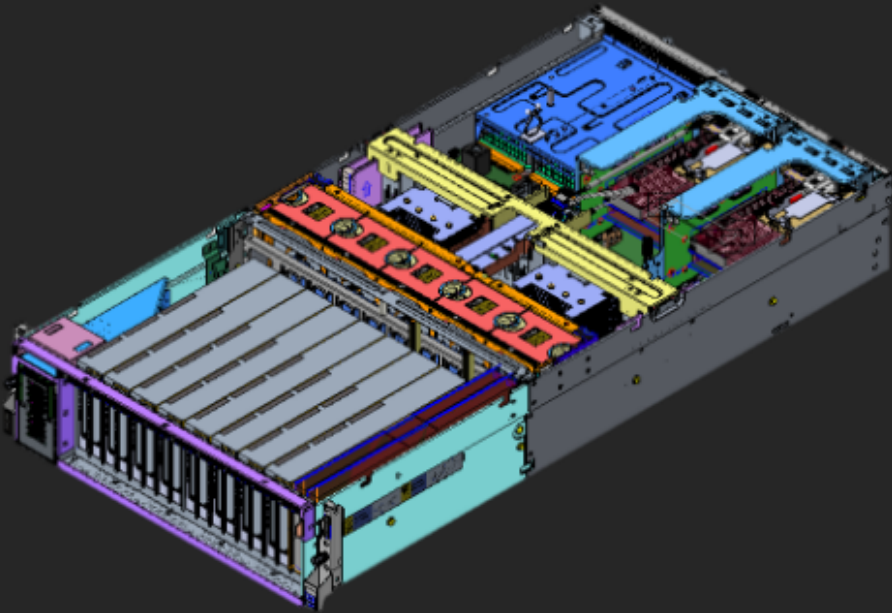


# Cable diagram



4-DW GPU with PCIe switch adapter and  
Tri-Mode or AnyBay storage

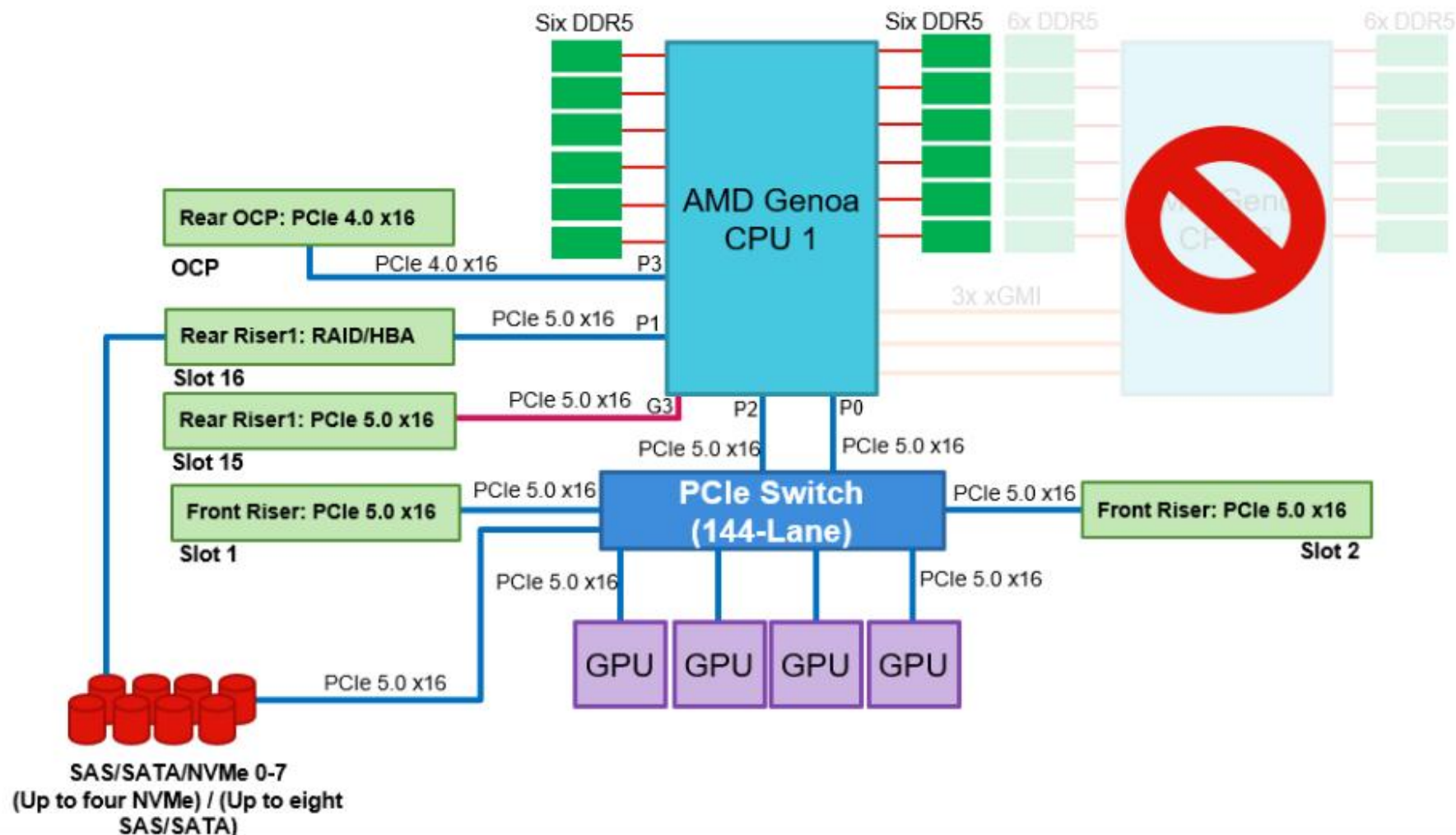
| Configuration type                 | 1                                                                           | 2                                                           |
|------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------|
| CPU                                | One CPU                                                                     |                                                             |
| GPU                                | Four DW x16 FHFL 350 W PCIe 5.0 GPUs                                        |                                                             |
| Storage<br>2.5-inch<br>NVMe drives | Eight SATA 6 Gbps / SAS<br>12 Gbps / U.3 (Tri-mode)                         | Eight SATA 6 Gbps / SAS<br>12 Gbps / four NVMe PCIe 5.0     |
| I/O front                          | Two PCIe 5.0 x16 (FHFL) adapters                                            |                                                             |
| I/O rear                           | OCP (PCIe 4.0 x16) adapter                                                  |                                                             |
|                                    | Riser 1:<br>One PCIe 5.0 x16<br>One PCIe 5.0 x16 (RAID/HBA<br>for Tri-Mode) | Riser 1:<br>One PCIe 5.0 x16<br>One PCIe 5.0 x16 (RAID/HBA) |



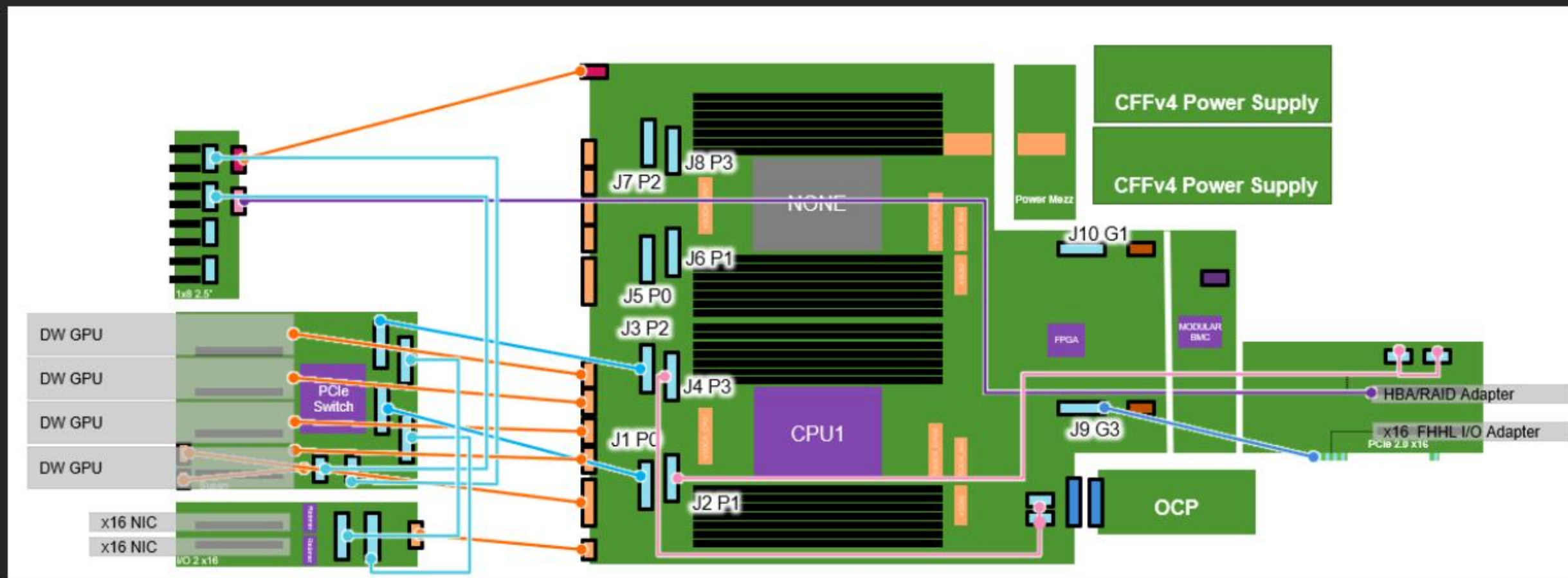
Click the numbers to see more information



# System diagram



# Cable diagram



## Standard 8-DW GPU model configurations

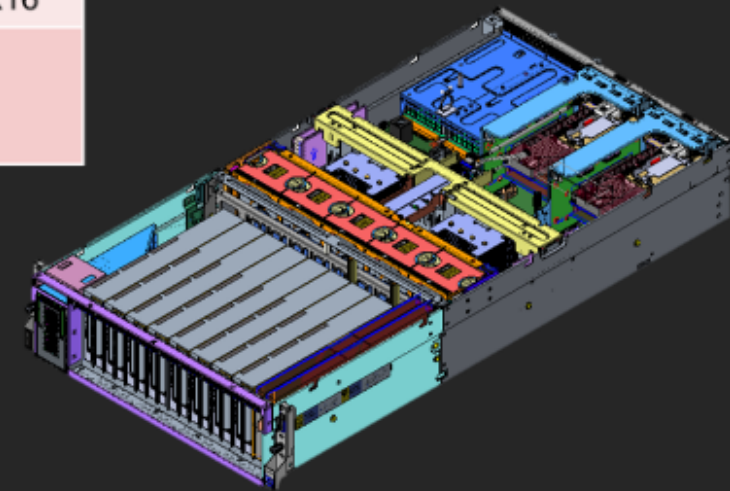
Click the links to see more information about 8-DW GP model configurations:

- [8-DW GPU Gen5 pass-through connection with EDSFF drives](#)
- [8-DW GPU with PCIe switch adapters and EDSFF drives](#)



## 8-DW GPU Gen5 pass-through connection with EDSFF drives

| Type            | 1                                               | 2                                 | 3                                | 4                                |
|-----------------|-------------------------------------------------|-----------------------------------|----------------------------------|----------------------------------|
| CPU             | Two CPUs                                        |                                   |                                  |                                  |
| GPU             | Up to eight DW FHFL 350 W PCIe 5.0 GPUs         |                                   |                                  |                                  |
| Storage (EDSFF) | Six E1.S (5.9 mm) PCIe 4.0 drives               | Six E1.S (5.9 mm) PCIe 4.0 drives | Four E3.S (1T) PCIe 5.0 drives   | Four E3.S (1T) PCIe 5.0 drives   |
| I/O Front       | Two PCIe 5.0 x16 (FHFL) adapters                | Two PCIe 5.0 x16 (FHFL) adapters  | Two PCIe 5.0 x16 (FHFL) adapters | Two PCIe 5.0 x16 (FHFL) adapters |
| I/O Rear        | OCP adapter (PCIe 4.0 x16)                      | Riser 1:<br>One PCIe 5.0 x16      | OCP adapter (PCIe 4.0 x16)       | Riser 1:<br>One PCIe 5.0 x16     |
|                 | Riser 2:<br>One PCIe 5.0 x16<br>One PCIe 4.0 x8 |                                   |                                  |                                  |



Click the numbers to see more information

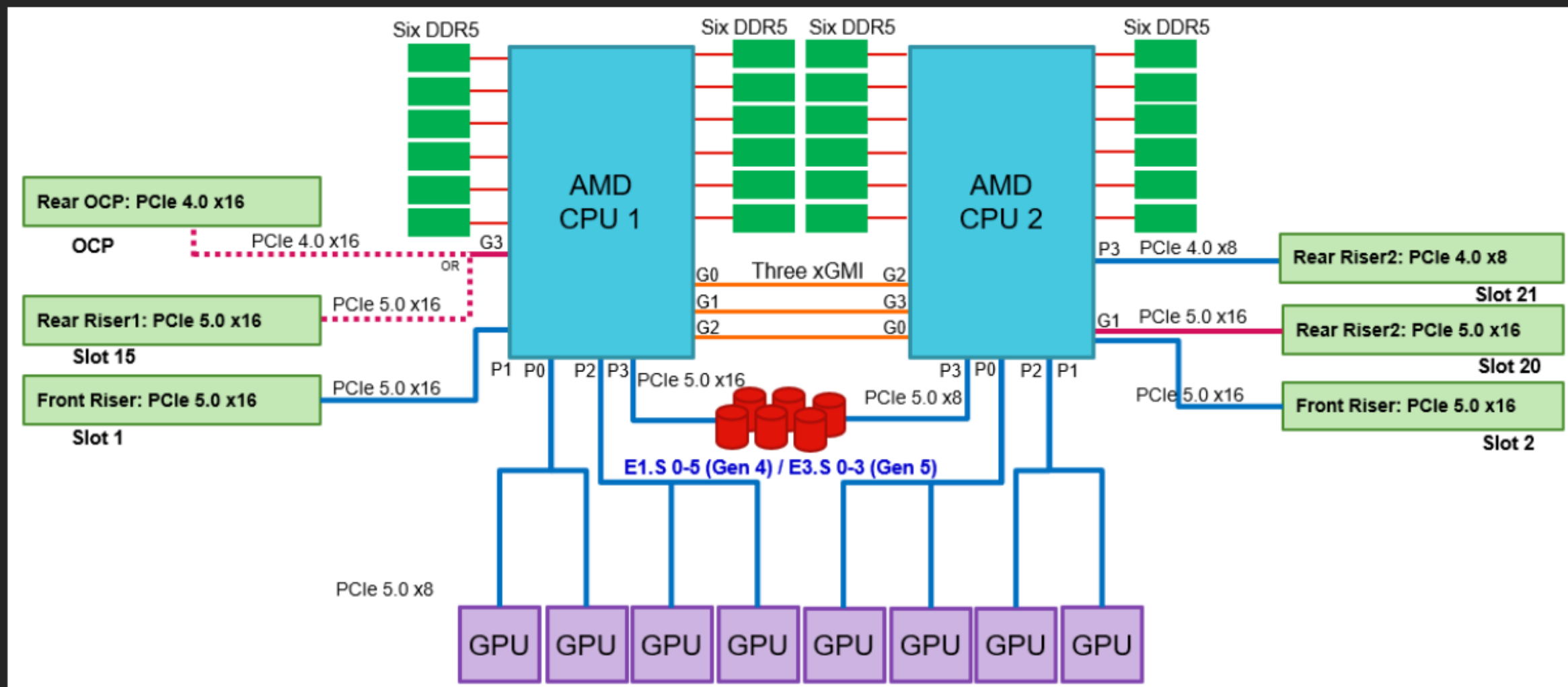


1

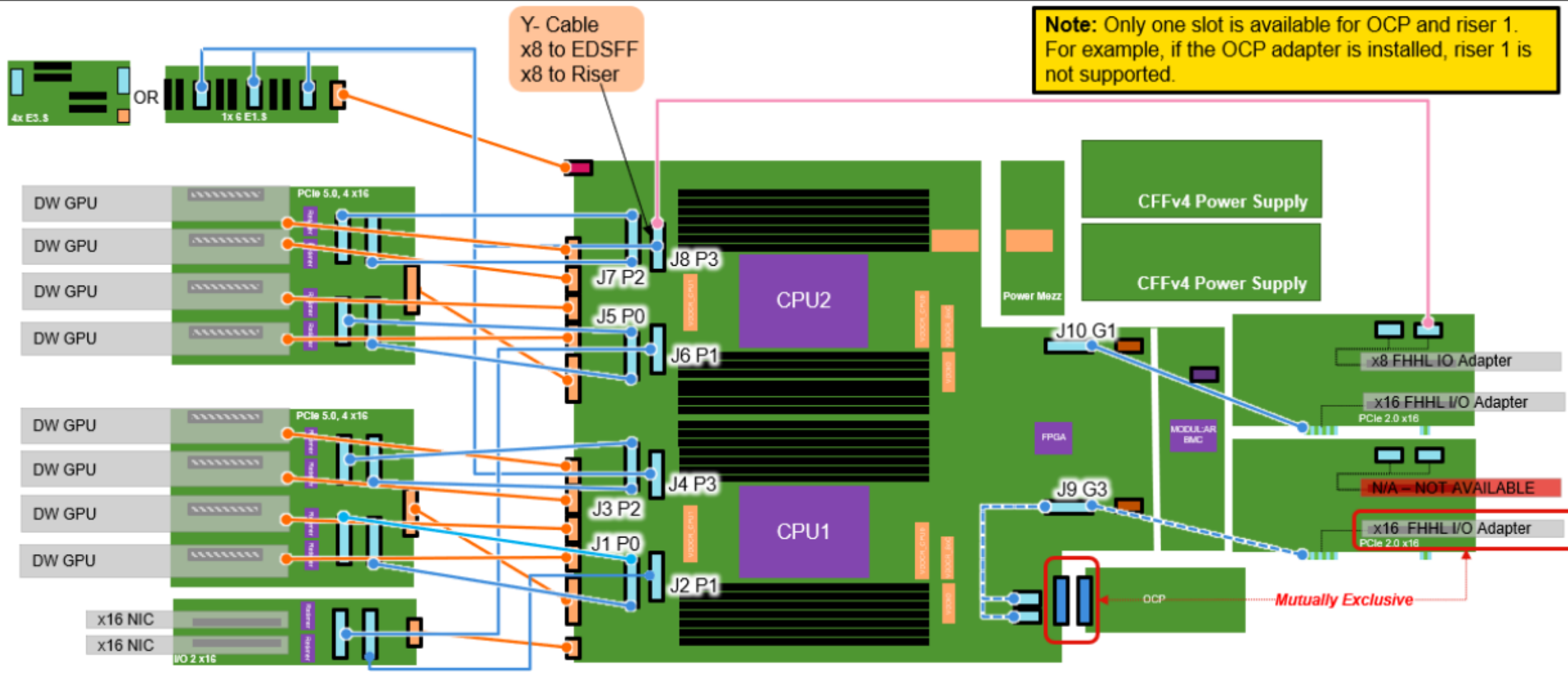
2

3

# System diagram

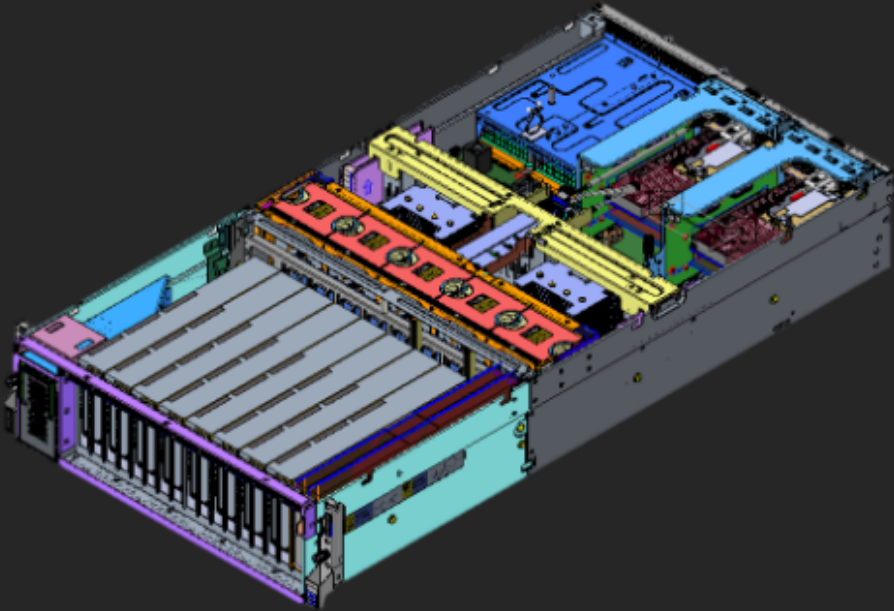


# Cable diagram

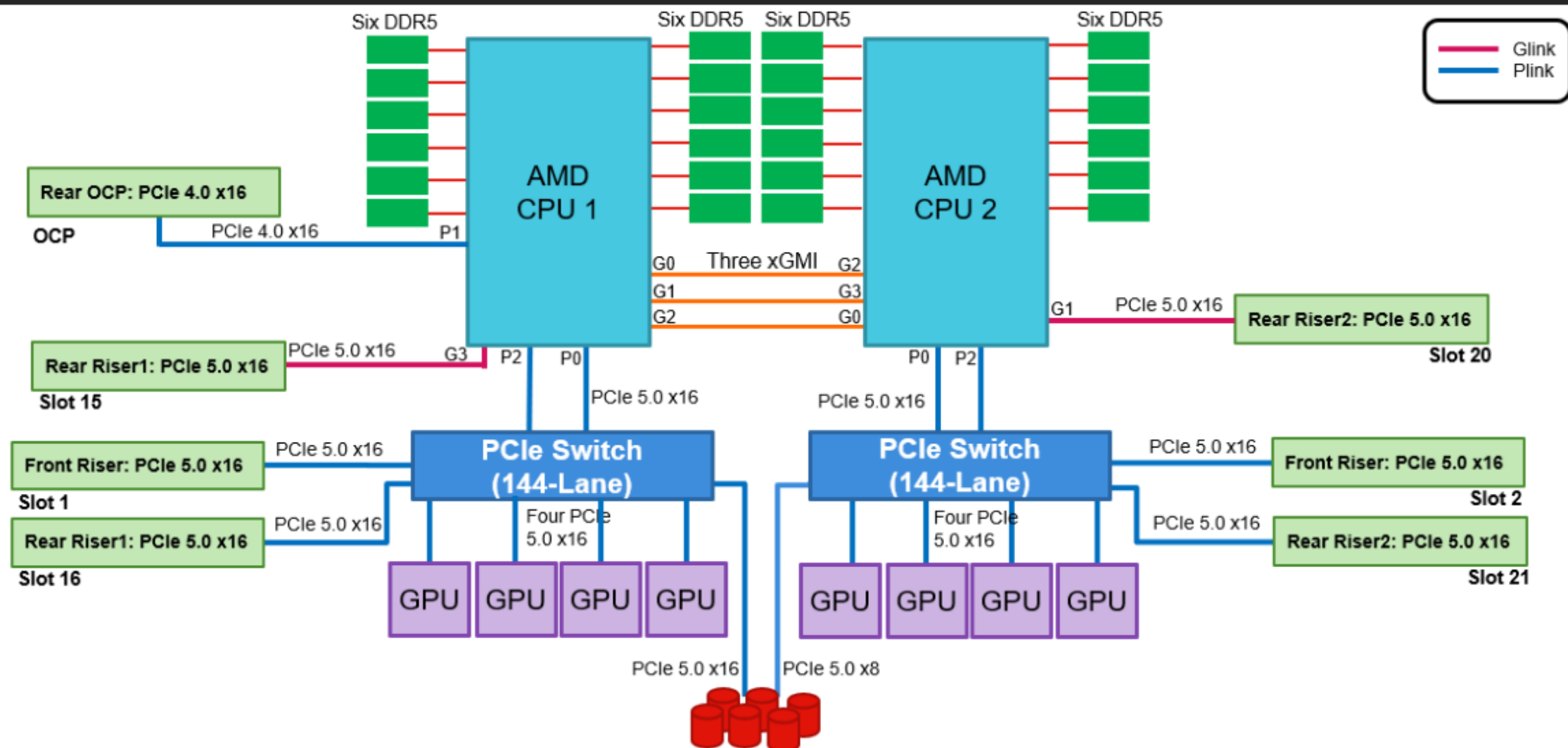


8-DW GPU with PCIe switch adapter and EDSFF drives

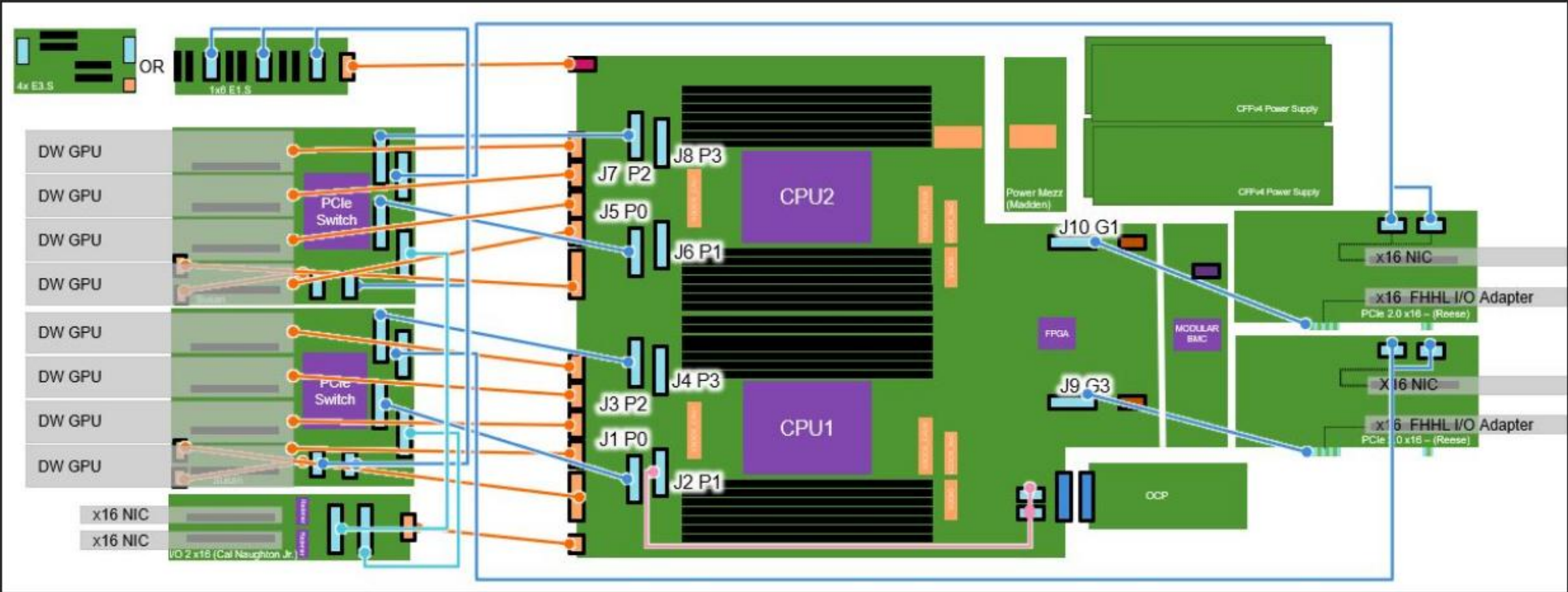
| Configuration type | 1                                                | 2                                |
|--------------------|--------------------------------------------------|----------------------------------|
| CPU                | Two CPUs                                         |                                  |
| GPU                | Eight DW x16 FHFL 350 W PCIe 5.0 GPUs            |                                  |
| Storage (EDSFF)    | Six E1.S (5.9 mm) drives (PCIe 4.0)              | Four E3.S (1T) drives (PCIe 5.0) |
| I/O Front          | Two PCIe 5.0 x16 (FHFL) adapters                 |                                  |
| I/O Rear           | OCP (PCIe 4.0 x16) adapter                       |                                  |
|                    | Riser 1:<br>One PCIe 5.0 x16<br>One PCIe 5.0 x16 |                                  |
|                    | Riser 2:<br>One PCIe 5.0 x16<br>One PCIe 5.0 x16 |                                  |



# System diagram



# Cable diagram



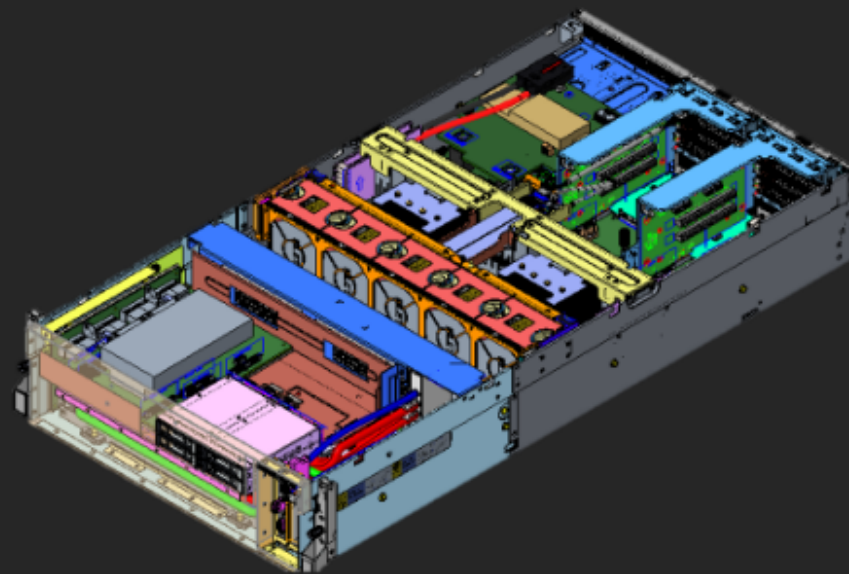
## SXM GPU model configurations

Click the links to see more information about SXM GPU model configurations:

- [SXM5 GPUs with PCIe switch board, one CPU](#)
- [SXM5 GPUs with PCIe switch board, two CPUs](#)
- [SXM5 GPUs with CX-7 module board, one CPU](#)
- [SXM5 GPUs with CX-7 module board, two CPUs](#)
- [SXM5 GPUs with CX-7 module board, one CPU, two front drives only](#)
- [SXM5 GPUs with CX-7 module board, one CPU, two OSFP 400 Gbps front I/O](#)
- [SXM5 GPUs with CX-7 module board, two CPUs, two OSFP 400 Gbps front I/O](#)
- [SXM5 GPUs with CX-7 module board, one CPU, two OSFP 400 Gbps front I/O, no rear PCIe adapters](#)

## SXM5 GPUs with PCIe switch board, one CPU

| Configuration type     | 1                                                                      | 2                              |
|------------------------|------------------------------------------------------------------------|--------------------------------|
| CPU                    | One CPU                                                                |                                |
| GPU                    | 4-Way NVIDIA H100 SXM5 GPU baseboard (PCIe 5.0) with PCIe switch board |                                |
| Storage (U.2/U.3/E3.S) | Four U.2/U.3 drives (PCIe 4.0)                                         | Four E3.S 1T drives (PCIe 5.0) |
| I/O Front              | Two PCIe 5.0 x16 (FHHL) adapters                                       |                                |
| I/O Rear               | OCP (PCIe 4.0 x16) adapter                                             |                                |
|                        | Riser 1:<br>One PCIe 5.0 x16<br>One PCIe 5.0 x16                       |                                |
|                        | Riser 2:<br>One PCIe 5.0 x16                                           |                                |



Click the numbers to see more information

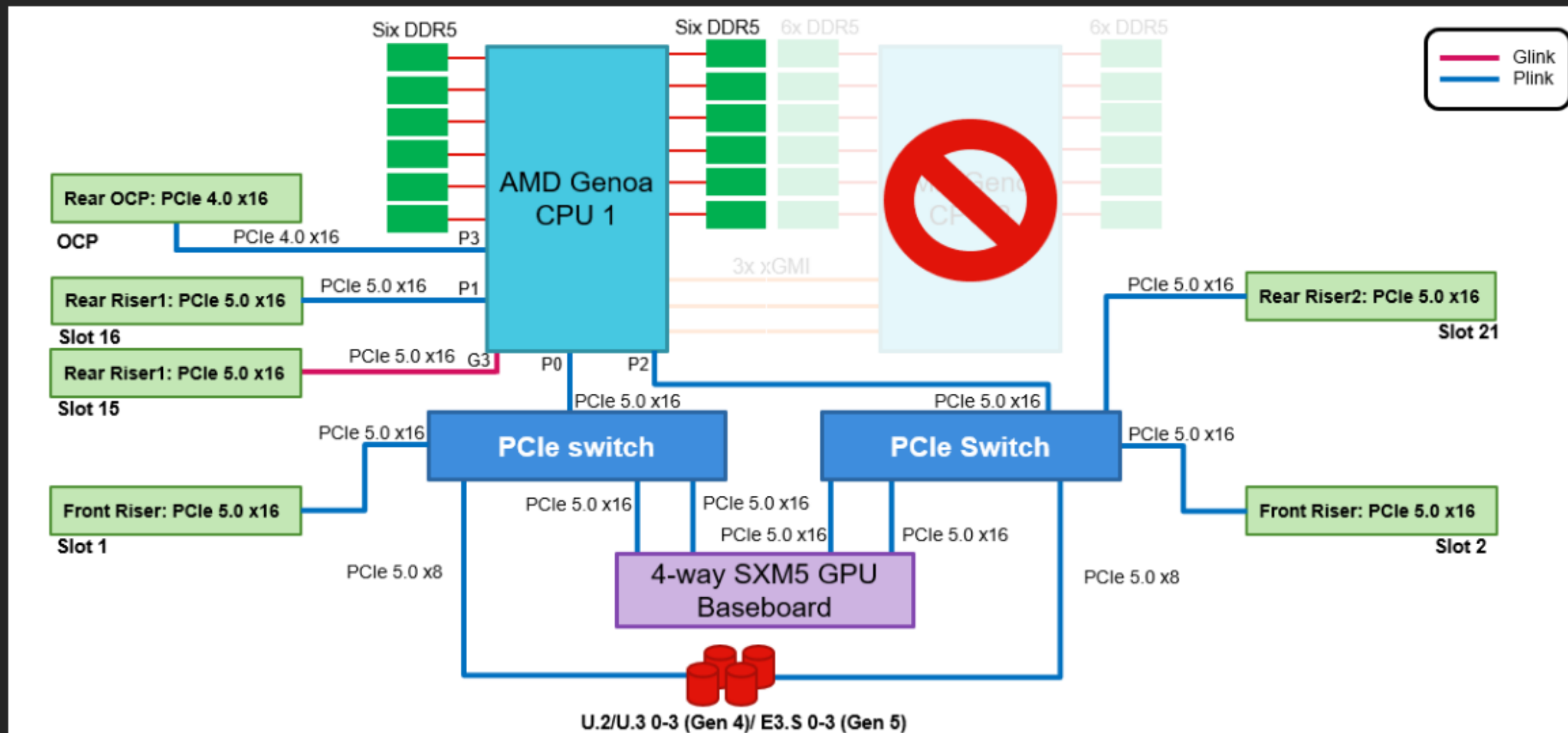


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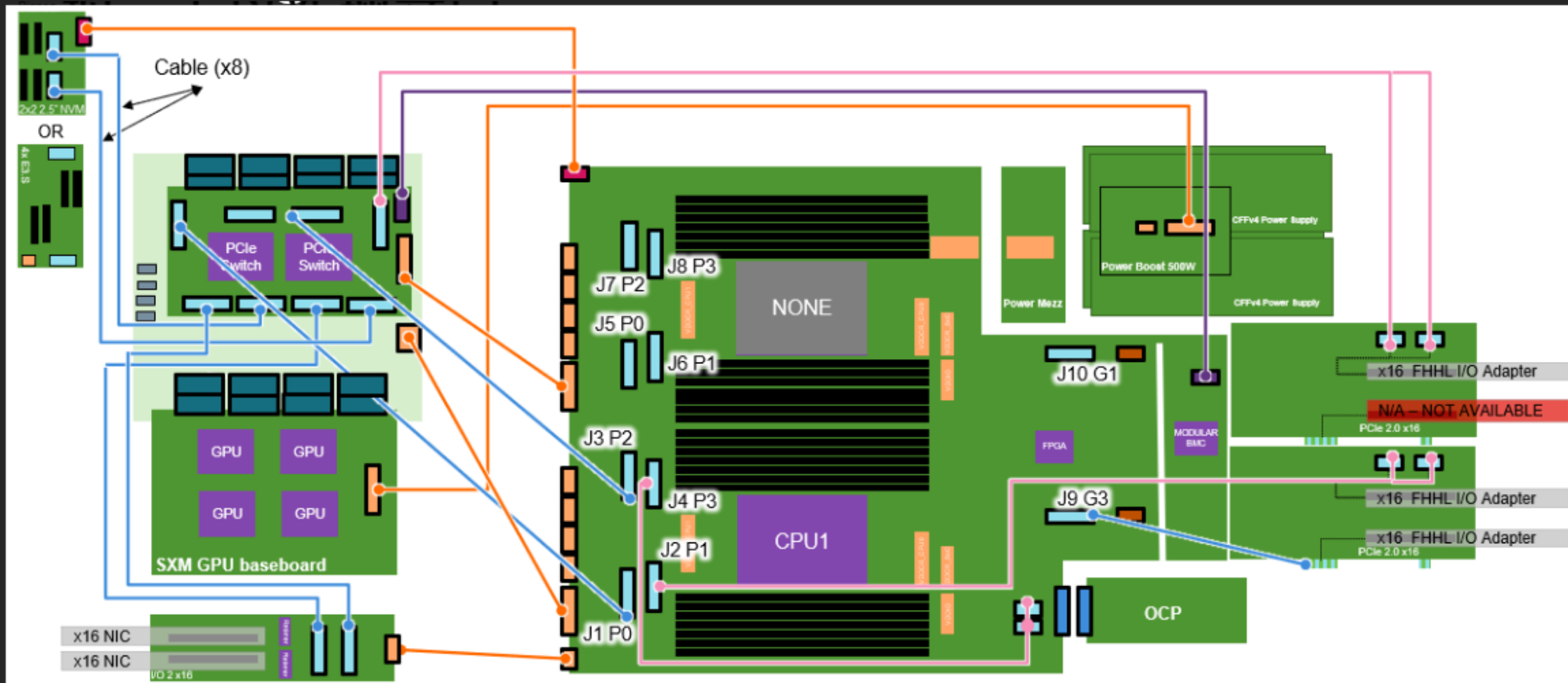
2

3

# System diagram



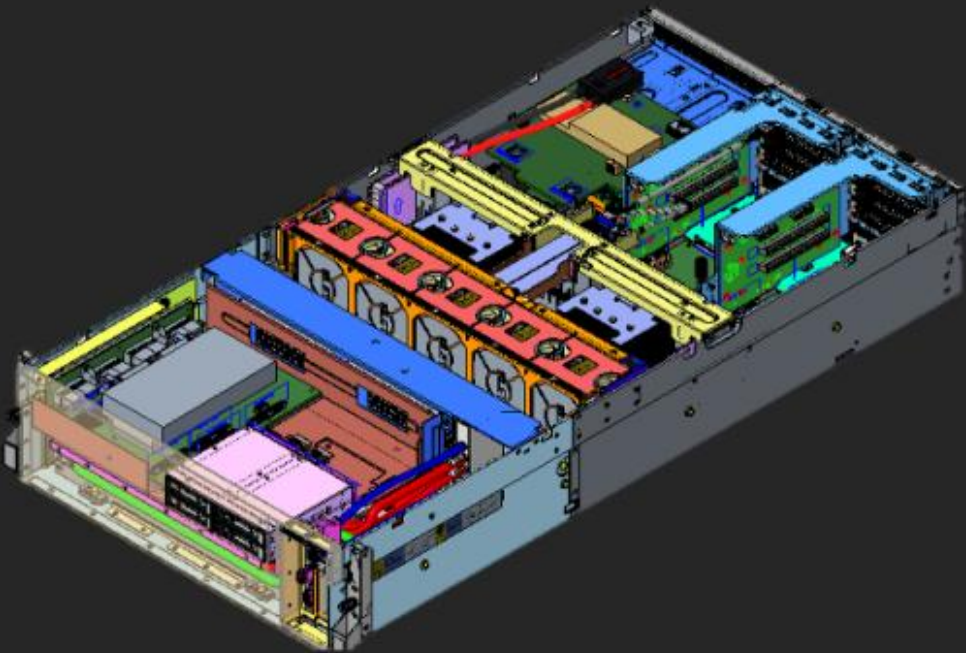
## Cable diagram





SXM5 GPUs with PCIe switch board, two CPUs

| Configuration type     | 1                                                                      | 2                              |
|------------------------|------------------------------------------------------------------------|--------------------------------|
| CPU                    | Two CPUs                                                               |                                |
| GPU                    | 4-Way NVIDIA H100 SXM5 GPU baseboard (PCIe 5.0) with PCIe switch board |                                |
| Storage (U.2/U.3/E3.S) | Four U.2/U.3 drives (PCIe 4.0)                                         | Four E3.S 1T drives (PCIe 5.0) |
| I/O Front              | Two PCIe 5.0 x16 (FHHL) adapters                                       |                                |
| I/O Rear               | OCP (PCIe 4.0 x16) adapter                                             |                                |
|                        | Riser 1:<br>One PCIe 5.0 x16<br>One PCIe 5.0 x16                       |                                |
|                        | Riser 2:<br>One PCIe 5.0 x16<br>One PCIe 4.0 x16 (SLT 21)              |                                |



Click the numbers to see more information

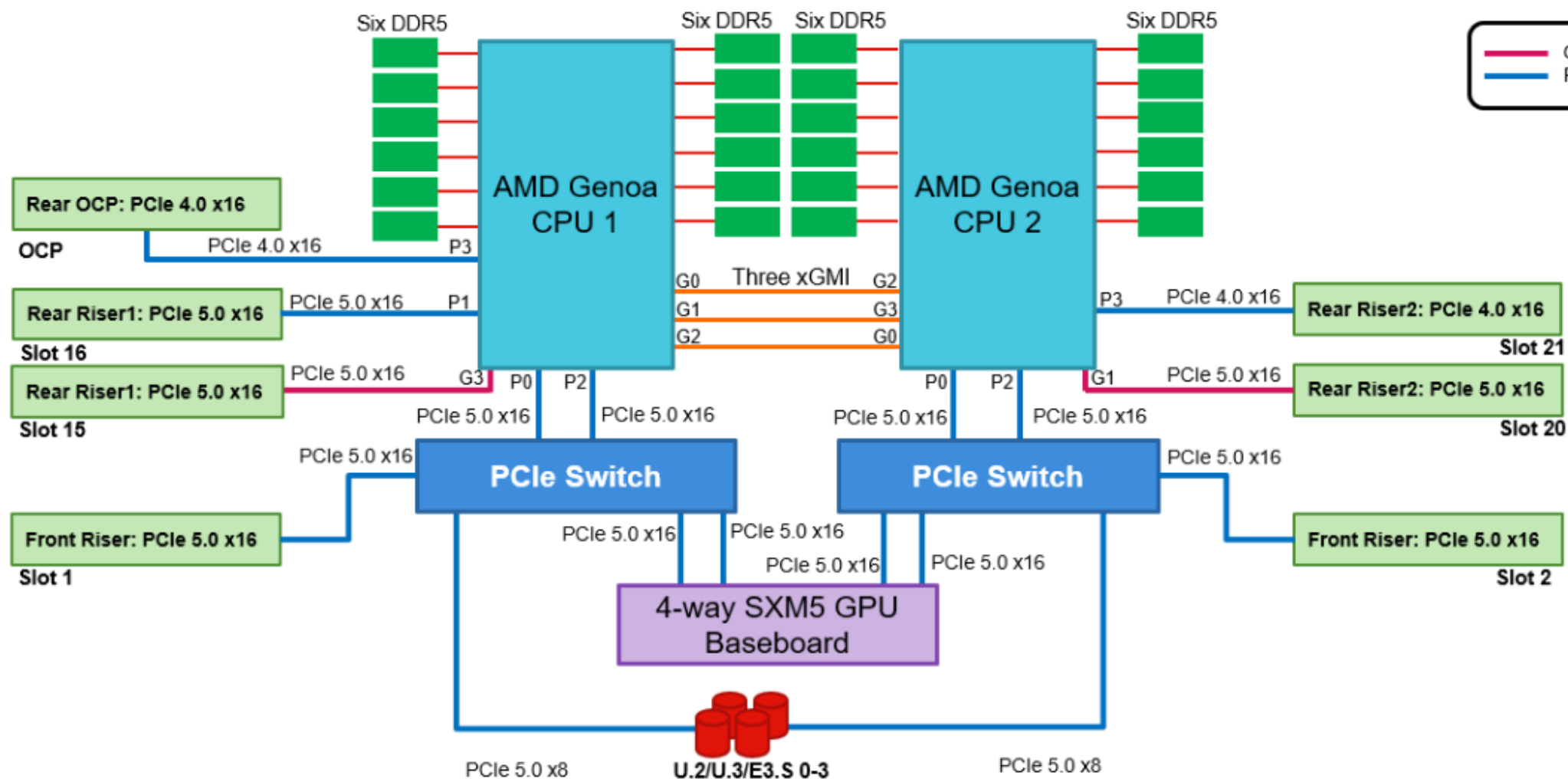


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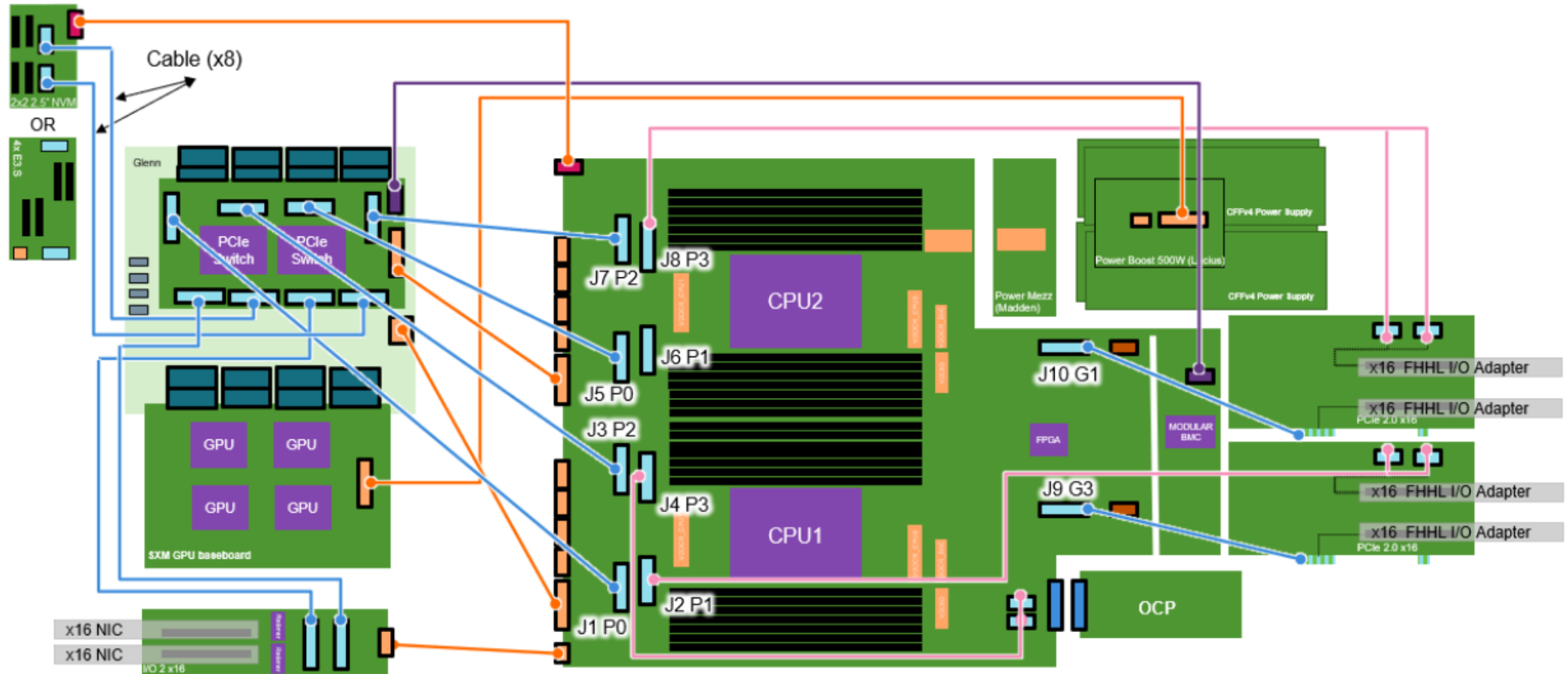
2

3

# System diagram

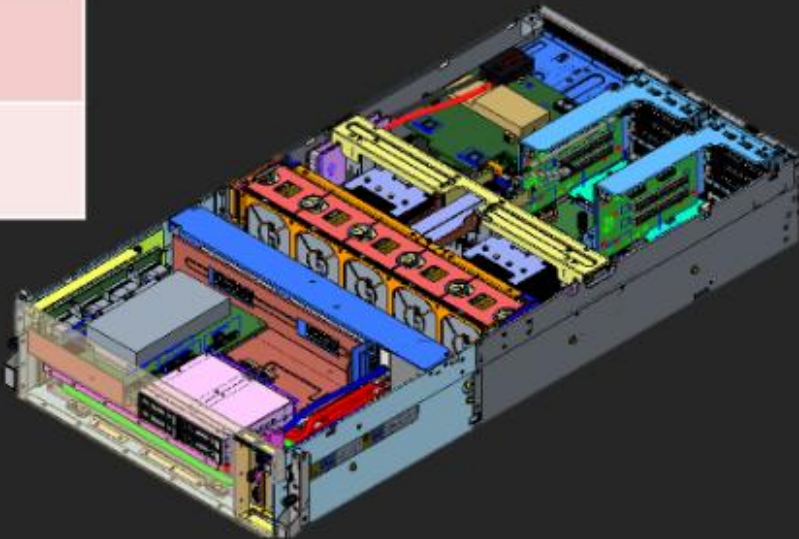


# Cable diagram





| SXM5 GPUs with CX-7 module board, one CPU |                                                                         |                    |                           |                                |
|-------------------------------------------|-------------------------------------------------------------------------|--------------------|---------------------------|--------------------------------|
| Configuration type                        | 1                                                                       | 2                  | 3                         | 4                              |
| CPU                                       | One CPU                                                                 |                    |                           |                                |
| GPU                                       | 4-Way NVIDIA H100 SXM5 GPU baseboard (PCIe 5.0) with CX-7 modular board |                    |                           |                                |
| Storage (U.2/U.3/E3.S)                    | Four U.2/U.3 drives (PCIe 3.0)                                          | N/A                | N/A                       | Four E3.S 1T drives (PCIe 4.0) |
| I/O Front                                 | Two OSFP 800 Gbps                                                       |                    |                           |                                |
| I/O Rear                                  | N/A                                                                     | OCP (PCIe 4.0 x16) | Riser 1: One PCIe 5.0 x16 | N/A                            |

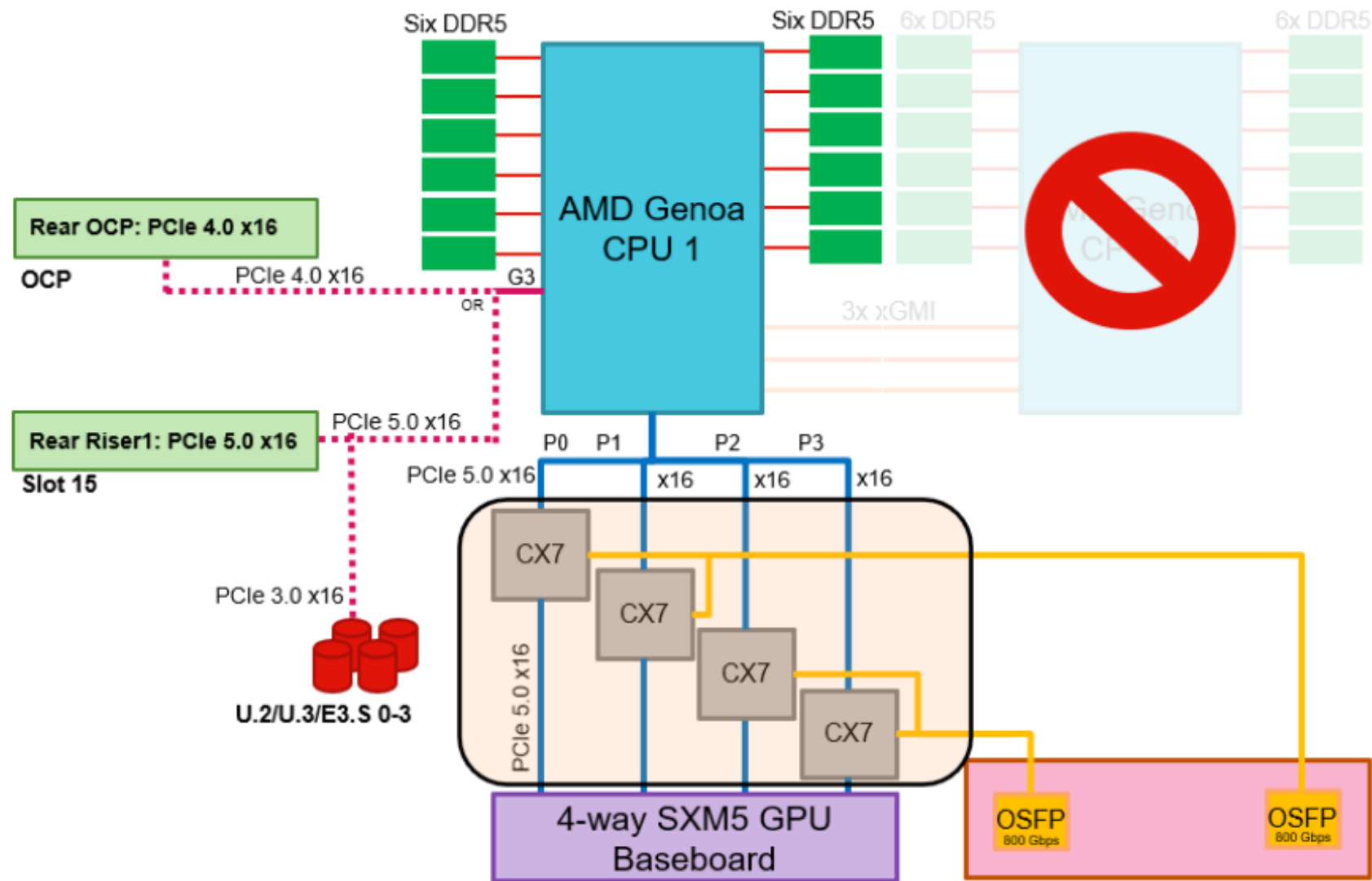


Click the numbers to see more information

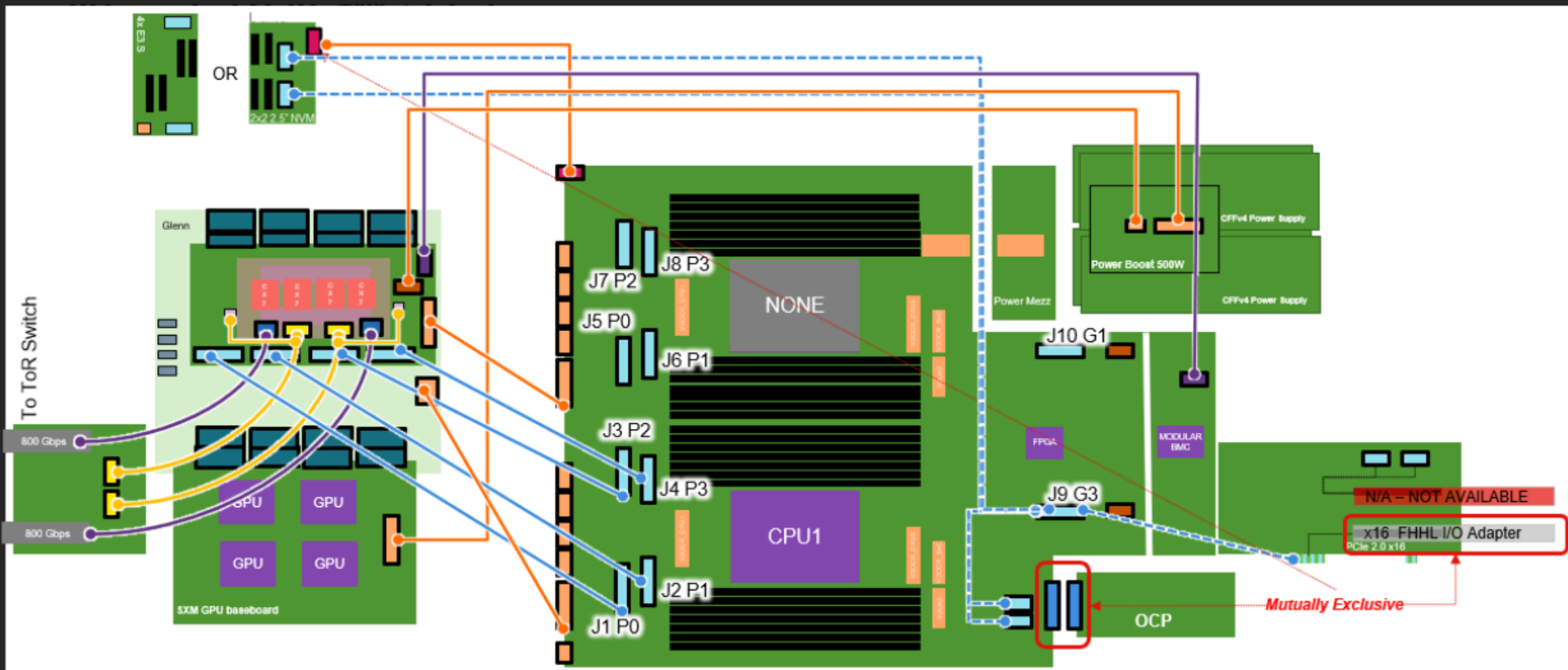


- 1
- 2
- 3

## System diagram



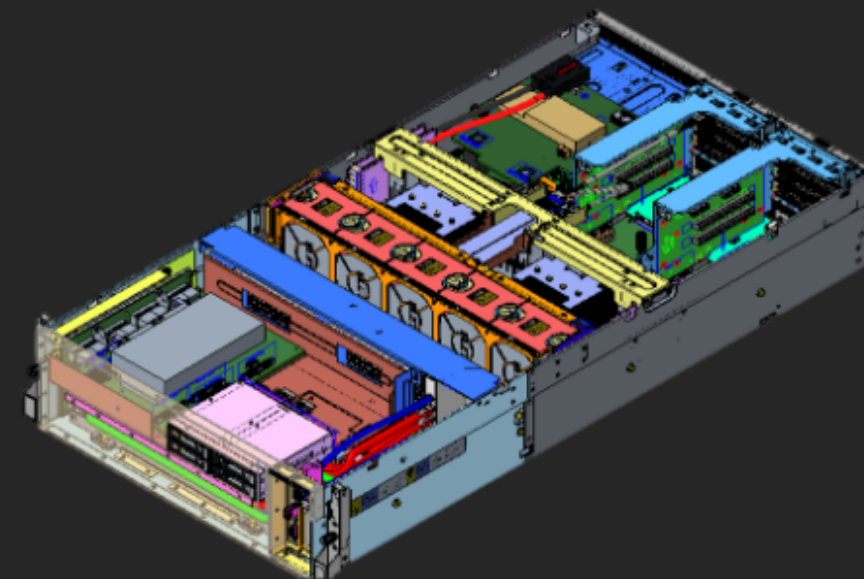
# Cable diagram





## SXM5 GPU with CX-7 module board, two CPUs

| Configuration type     | 1                                                                       | 2                              |
|------------------------|-------------------------------------------------------------------------|--------------------------------|
| CPU                    | Two CPUs                                                                |                                |
| GPU                    | 4-Way NVIDIA H100 SXM5 GPU baseboard (PCIe 5.0) with CX-7 modular board |                                |
| Storage (U.2/U.3/E3.S) | Four U.2/U.3 drives (PCIe 4.0)                                          | Four E3.S 1T drives (PCIe 5.0) |
| I/O Front              | Two OSFP 800 Gbps                                                       |                                |
| I/O Rear               | OCP (PCIe 4.0 x16)                                                      |                                |
|                        | Riser 1:<br>One PCIe 5.0 x16                                            |                                |
|                        | Riser 2:<br>One PCIe 5.0 x16<br>One PCIe 4.0 x16 (SLT 21)               |                                |



Click the numbers to see more information

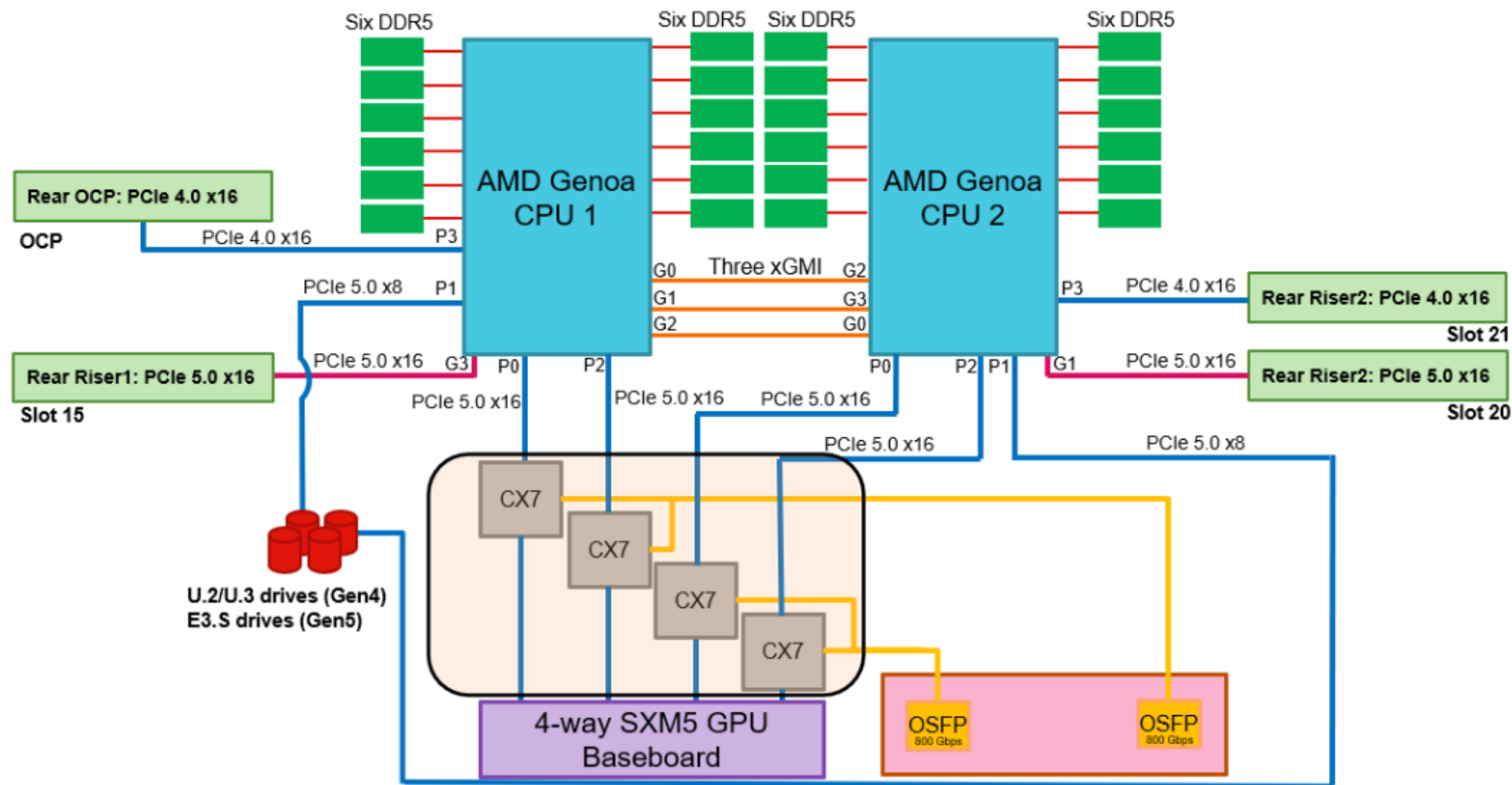


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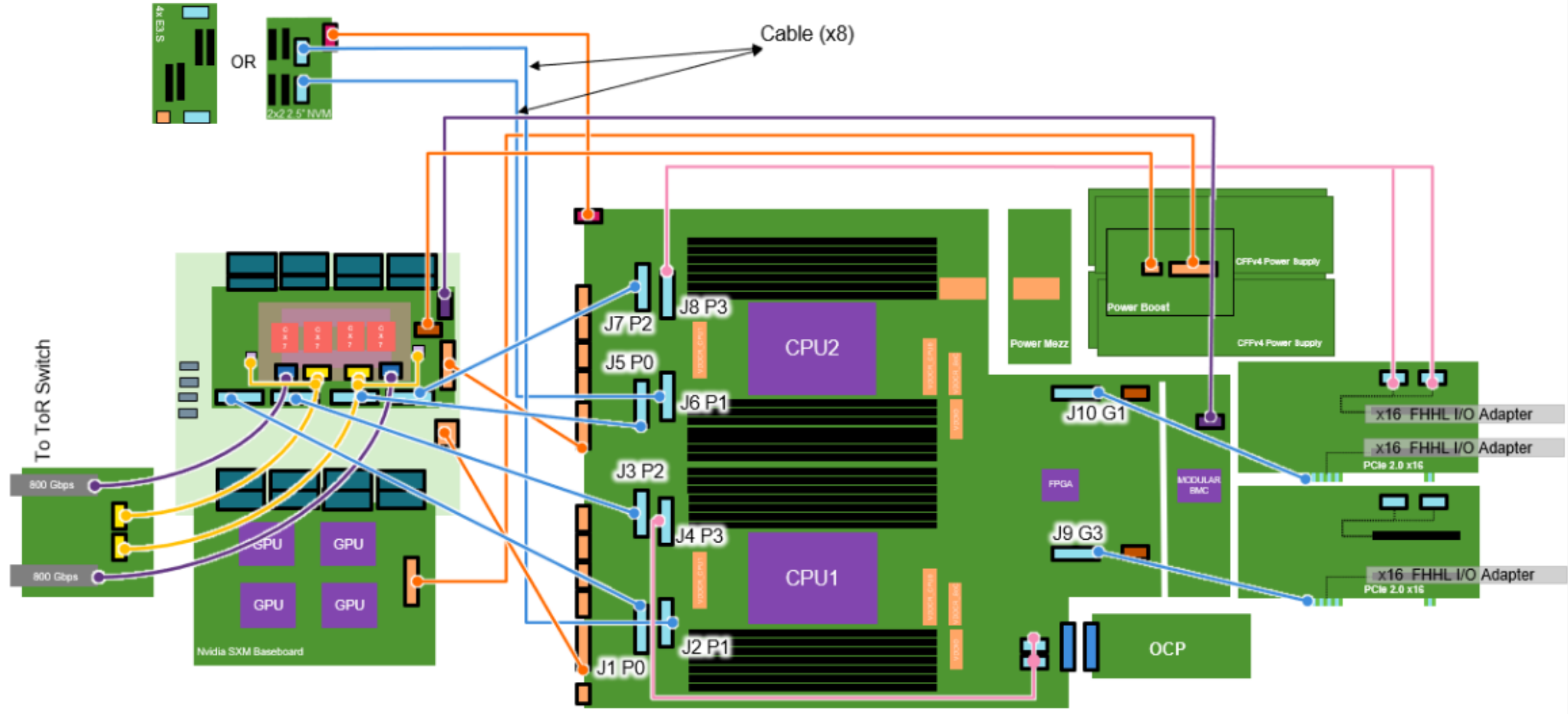
2

3

# System diagram

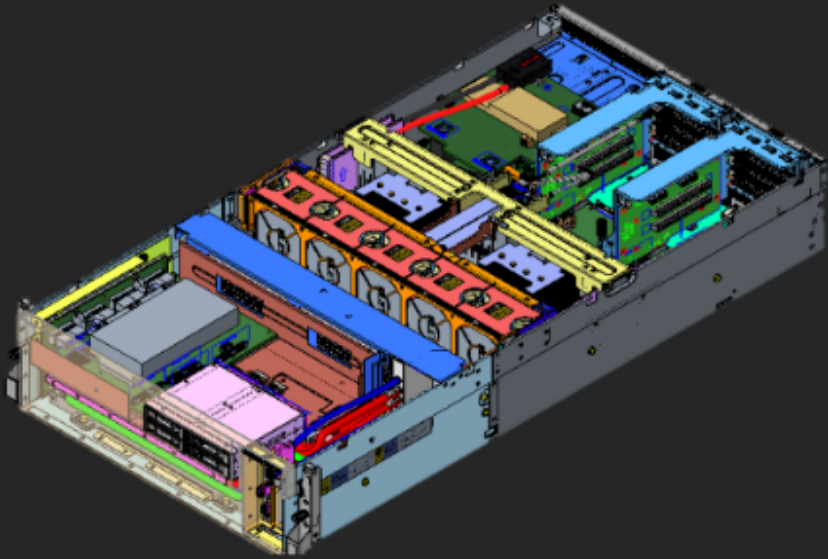


# Cable diagram



## SXM5 GPUs with CX-7 module board, one CPU, two front drives only

| Configuration type     | 1                                                                          | 2                             |
|------------------------|----------------------------------------------------------------------------|-------------------------------|
| CPU                    | One CPU                                                                    |                               |
| GPU                    | 4-Way NVIDIA H100 SXM5 GPU baseboard (PCIe 5.0) with CX-7 modular board    |                               |
| Storage (U.2/U.3/E3.S) | Two U.2/U.3 drives (PCIe 3.0)                                              | Two E3.S 1T drives (PCIe 4.0) |
| I/O Front              | Two OSFP 800 Gbps adapters                                                 |                               |
| I/O Rear               | OCP (PCIe 4.0 x8)<br><b>PCIe adapters on rear risers are not supported</b> |                               |



Click the numbers to see more information

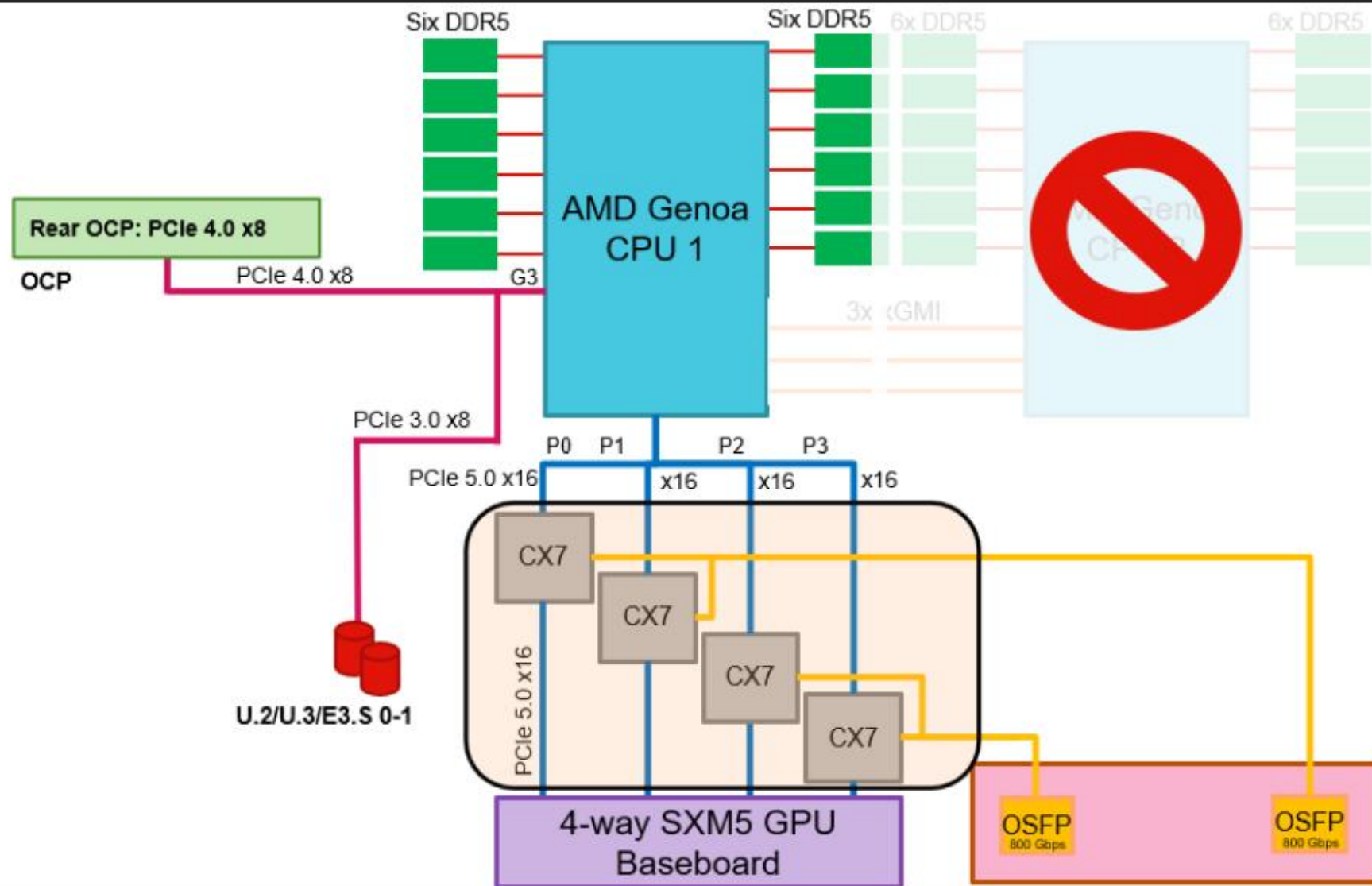


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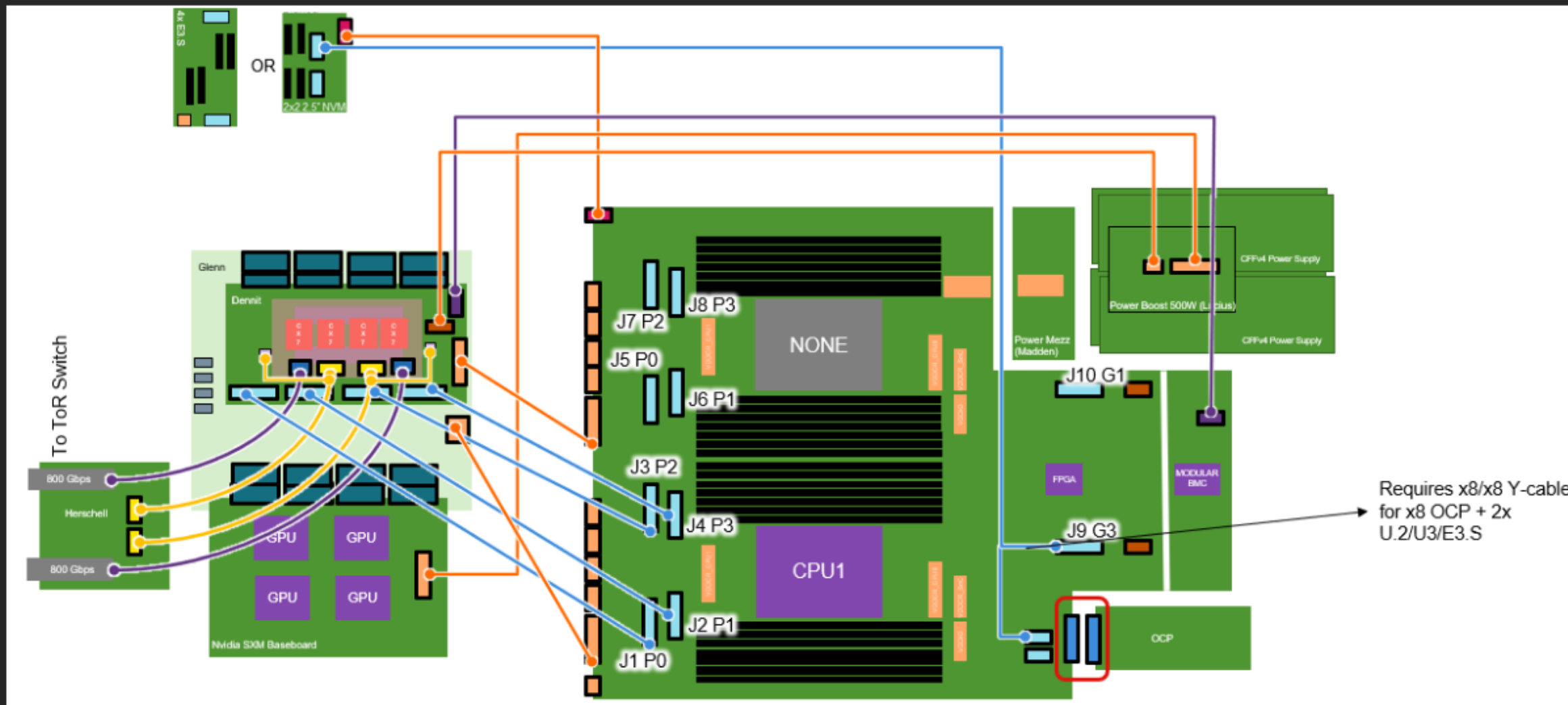
2

3

# System diagram

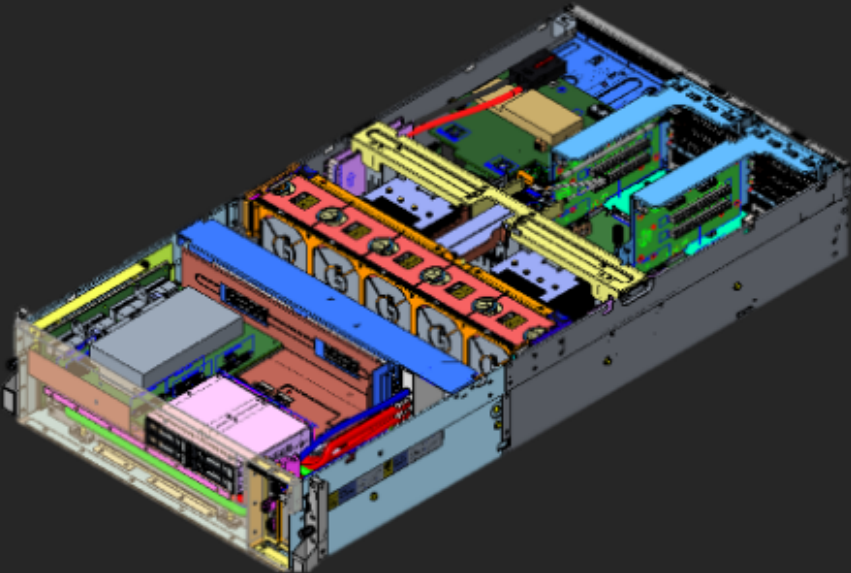


# Cable diagram





| SXM5 GPUs with CX-7 module board, one CPU,<br>two OSFP 400 Gbps front I/O |                                                                            |                         |                              |                                   |
|---------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------|------------------------------|-----------------------------------|
| Configuration type                                                        | 1                                                                          | 2                       | 3                            | 4                                 |
| CPU                                                                       | One CPU                                                                    |                         |                              |                                   |
| GPU                                                                       | 4-Way NVIDIA H100 SXM5 GPU baseboard (PCIe 5.0)<br>with CX-7 modular board |                         |                              |                                   |
| Storage (U.2/U.3/E3.S)                                                    | Four U.2/U.3 drives<br>(PCIe 3.0)                                          | N/A                     | N/A                          | Four E3.S 1T drives<br>(PCIe 4.0) |
| I/O Front                                                                 | Two OSFP 400 Gbps                                                          |                         |                              |                                   |
| I/O Rear                                                                  | N/A                                                                        | OCP z<br>(PCIe 4.0 x16) | Riser 1:<br>One PCIe 5.0 x16 | N/A                               |



Click the numbers to see more information

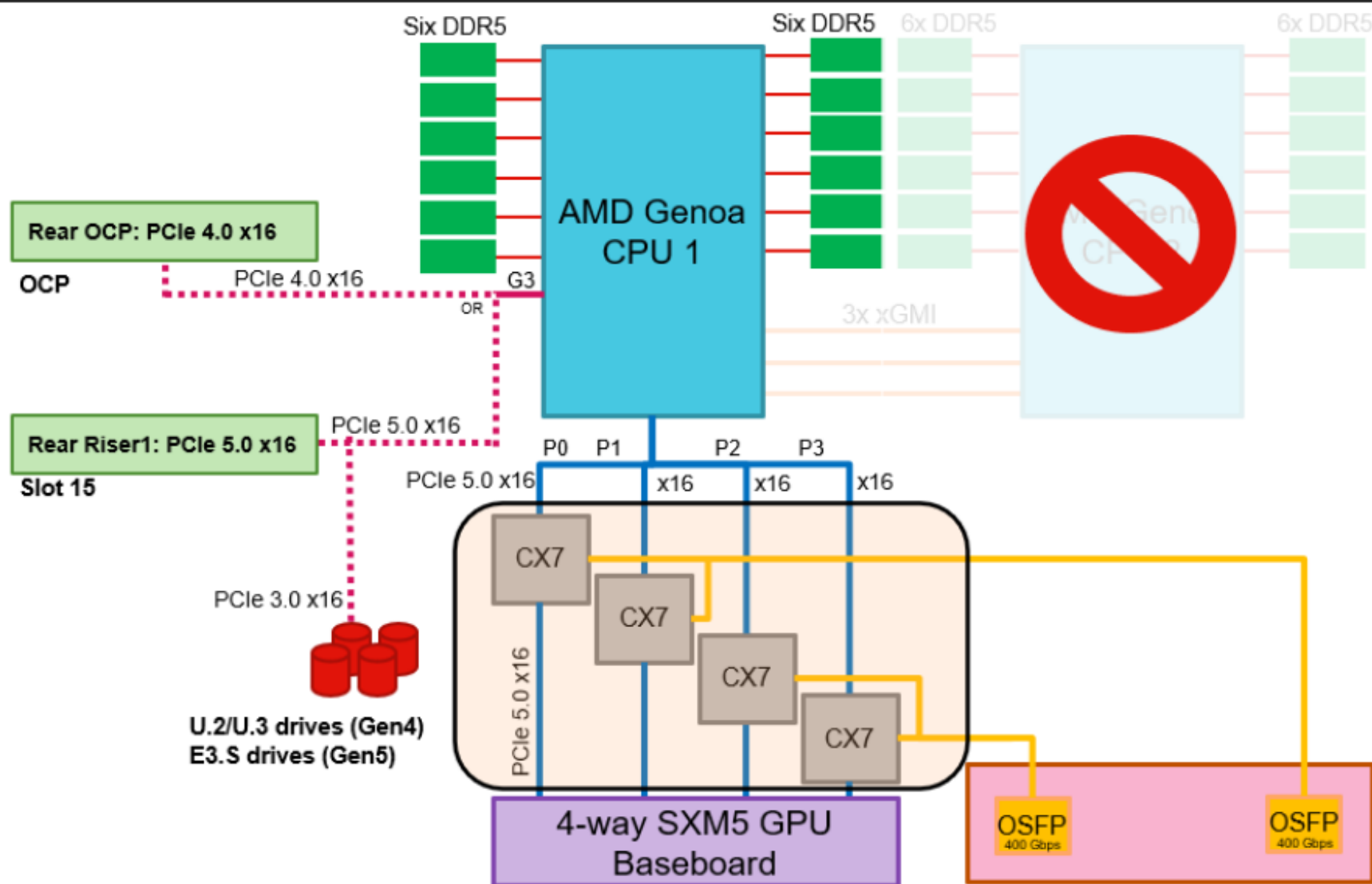


1

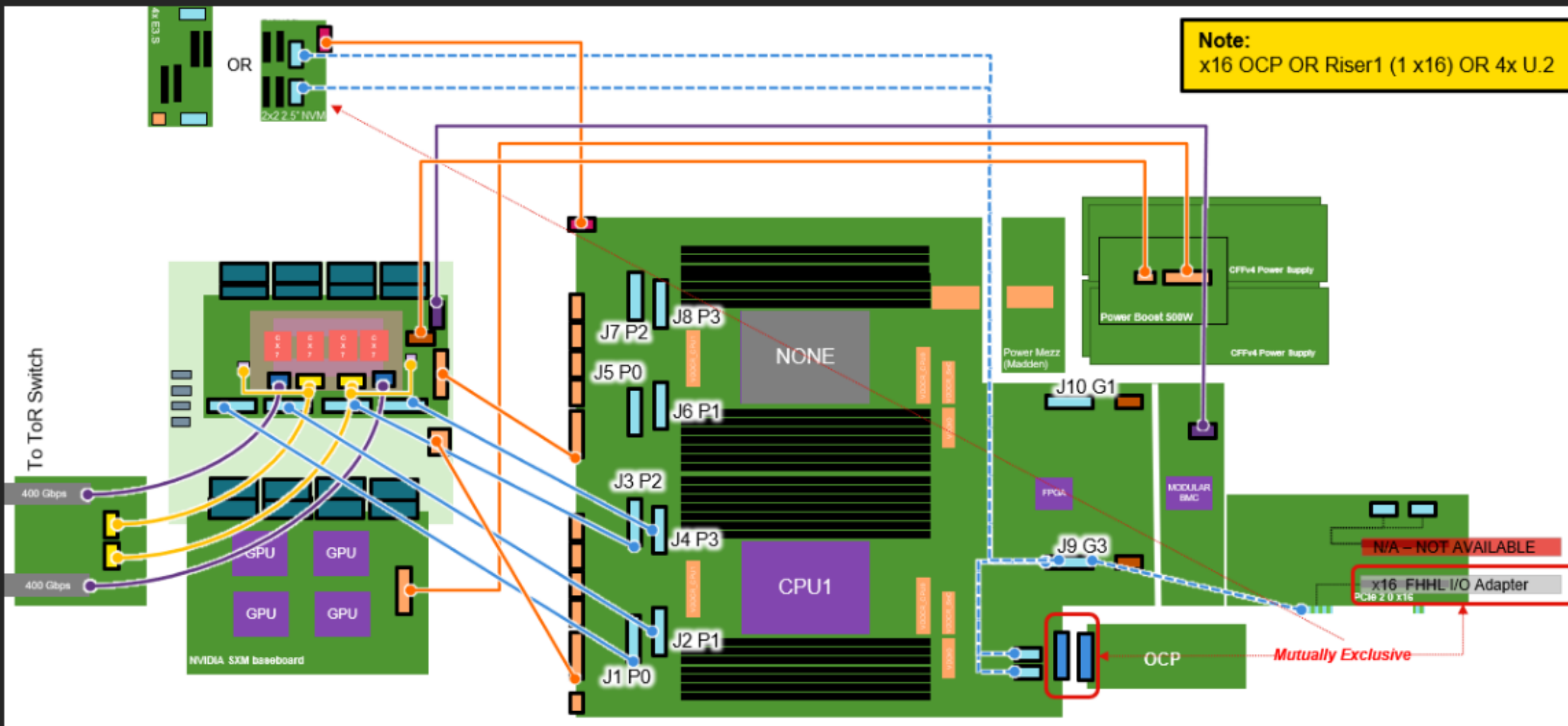
2

3

# SR675 V3 SXM GPU models

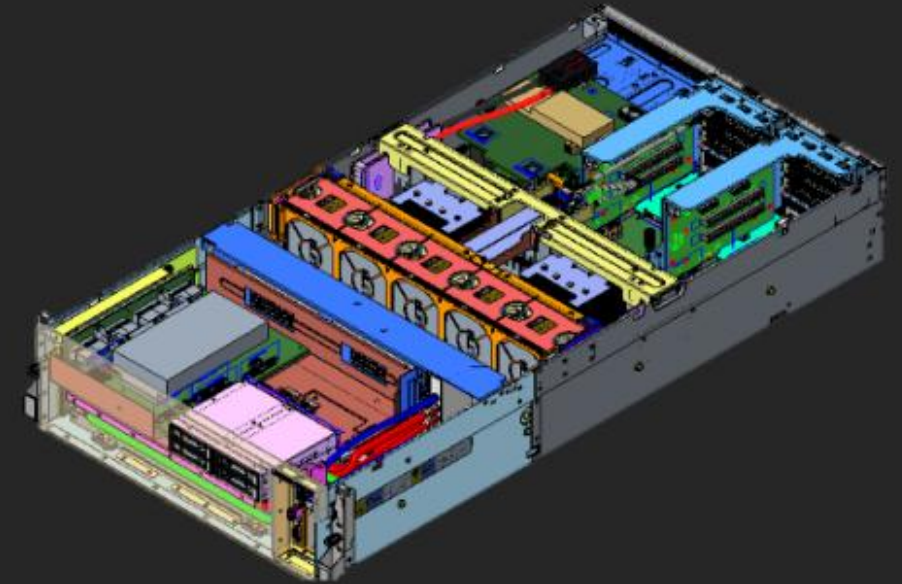


# SR675 V3 SXM GPU models



## SXM5 GPUs with CX-7 module board, two CPUs, two OSFP 400 Gbps front I/O

| Configuration type     | 1                                                                       | 2                              |
|------------------------|-------------------------------------------------------------------------|--------------------------------|
| CPU                    | Two CPUs                                                                |                                |
| GPU                    | 4-Way NVIDIA H100 SXM5 GPU baseboard (PCIe 5.0) with CX-7 modular board |                                |
| Storage (U.2/U.3/E3.S) | Four U.2/U.3 drives (PCIe 4.0)                                          | Four E3.S 1T drives (PCIe 5.0) |
| I/O Front              | Two OSFP 400 Gbps                                                       |                                |
| I/O Rear               | OCP (PCIe 4.0 x16)                                                      |                                |
|                        | Riser 1:<br>One PCIe 5.0 x16                                            |                                |
|                        | Riser 2:<br>One PCIe 5.0 x16<br>One PCIe 4.0 x16 (SLT 21)               |                                |



Click the numbers to see more information

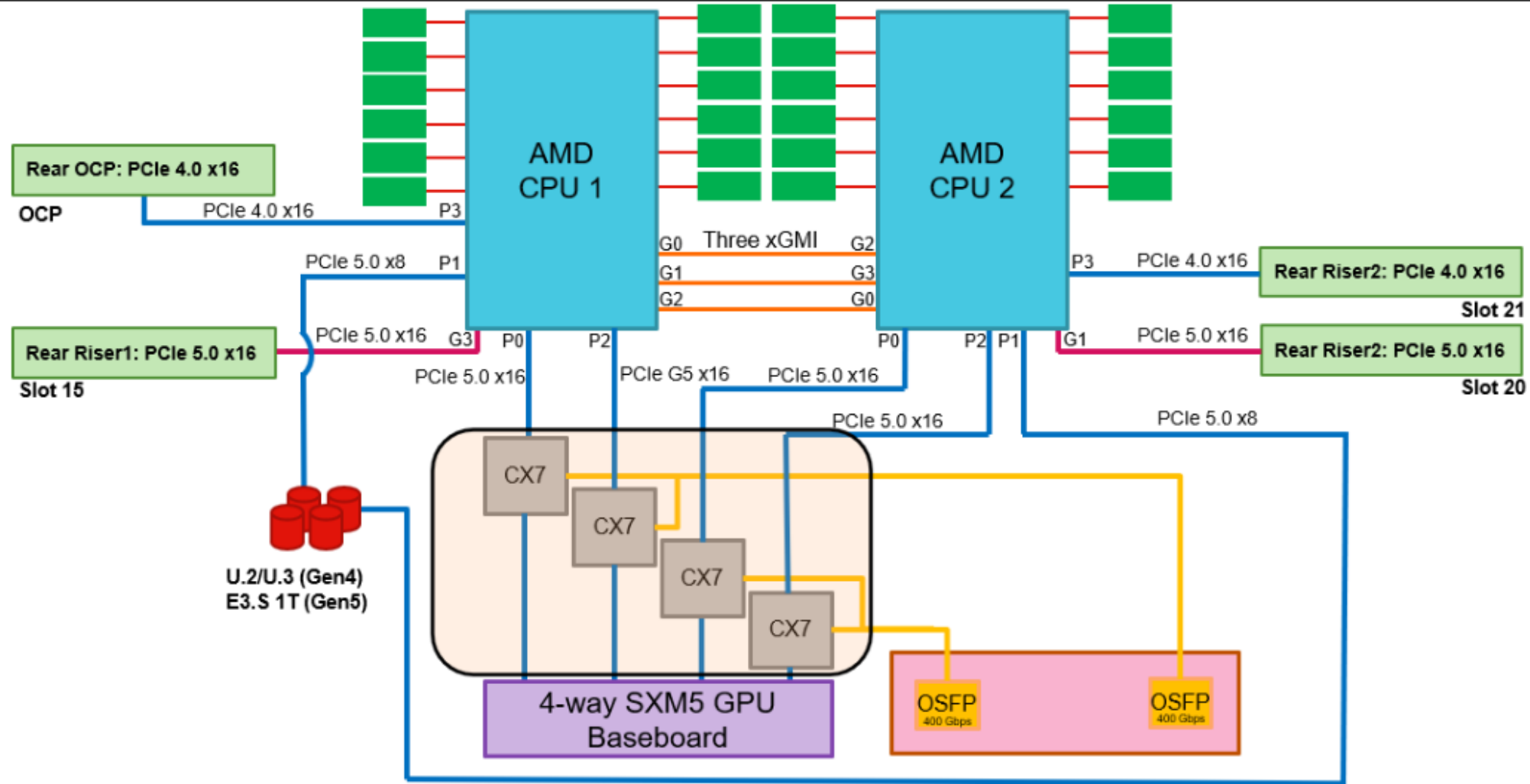


1

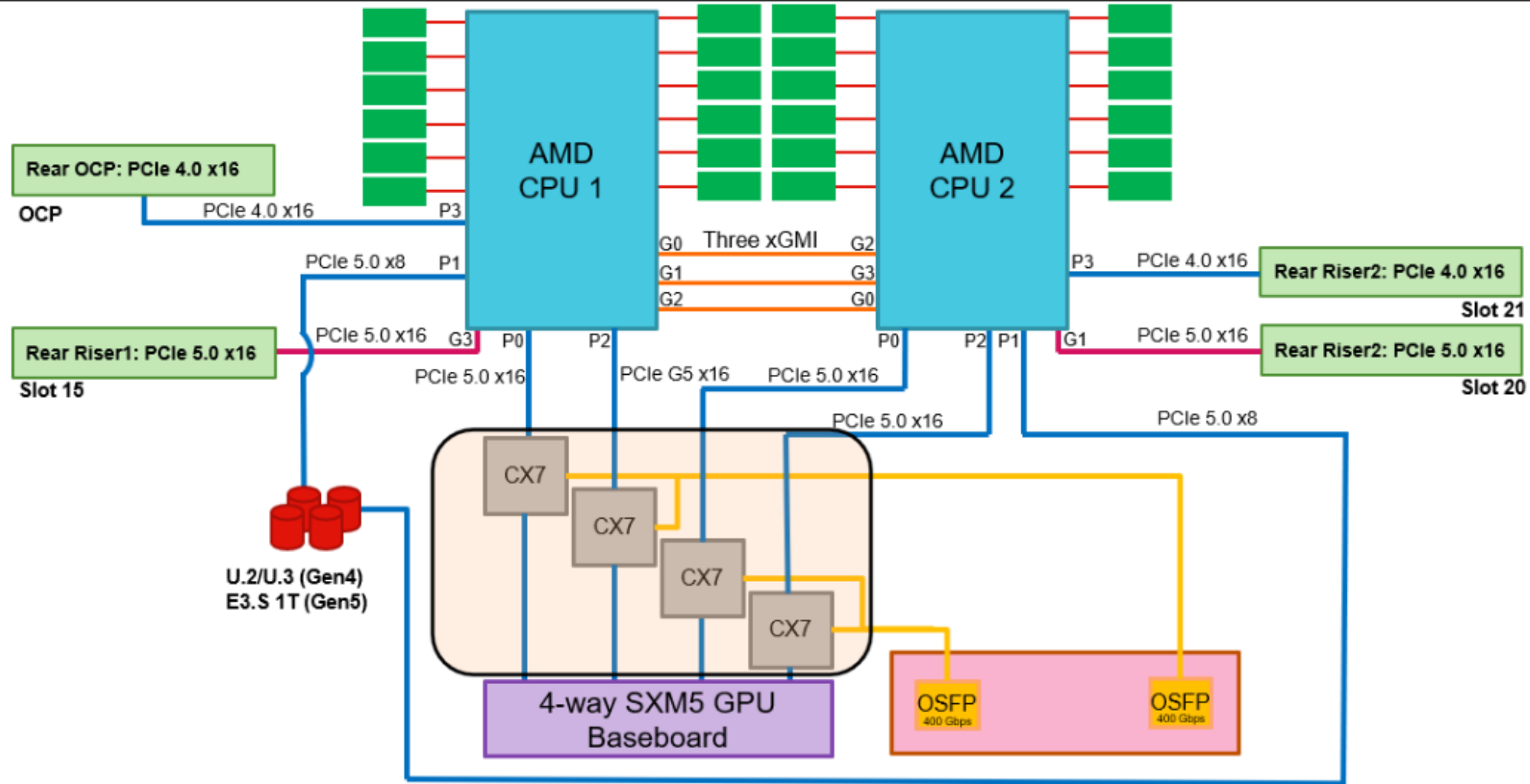
2

3

# System diagram



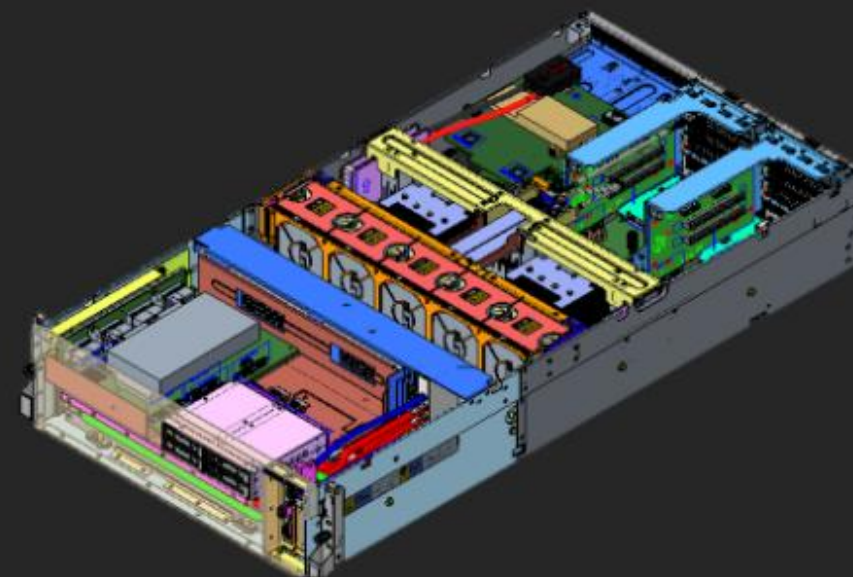
# System diagram





## SXM5 GPUs with CX-7 module board, one CPU, two OSFP 400 Gbps front I/O, no rear PCIe adapters

| Configuration type        | 1                                                                          | 2                                |
|---------------------------|----------------------------------------------------------------------------|----------------------------------|
| CPU                       | One CPU                                                                    |                                  |
| GPU                       | 4-Way NVIDIA H100 SXM5 GPU baseboard (PCIe 5.0)<br>with CX-7 modular board |                                  |
| Storage<br>(U.2/U.3/E3.S) | Two U.2/U.3 drives<br>(PCIe 3.0)                                           | Two E3.S 1T drives<br>(PCIe 4.0) |
| I/O Front                 | Two OSFP 400 Gbps                                                          |                                  |
| I/O Rear                  | OCP (PCIe 4.0 x8)<br><b>PCIe adapters on rear risers are not supported</b> |                                  |



Click the numbers to see more information

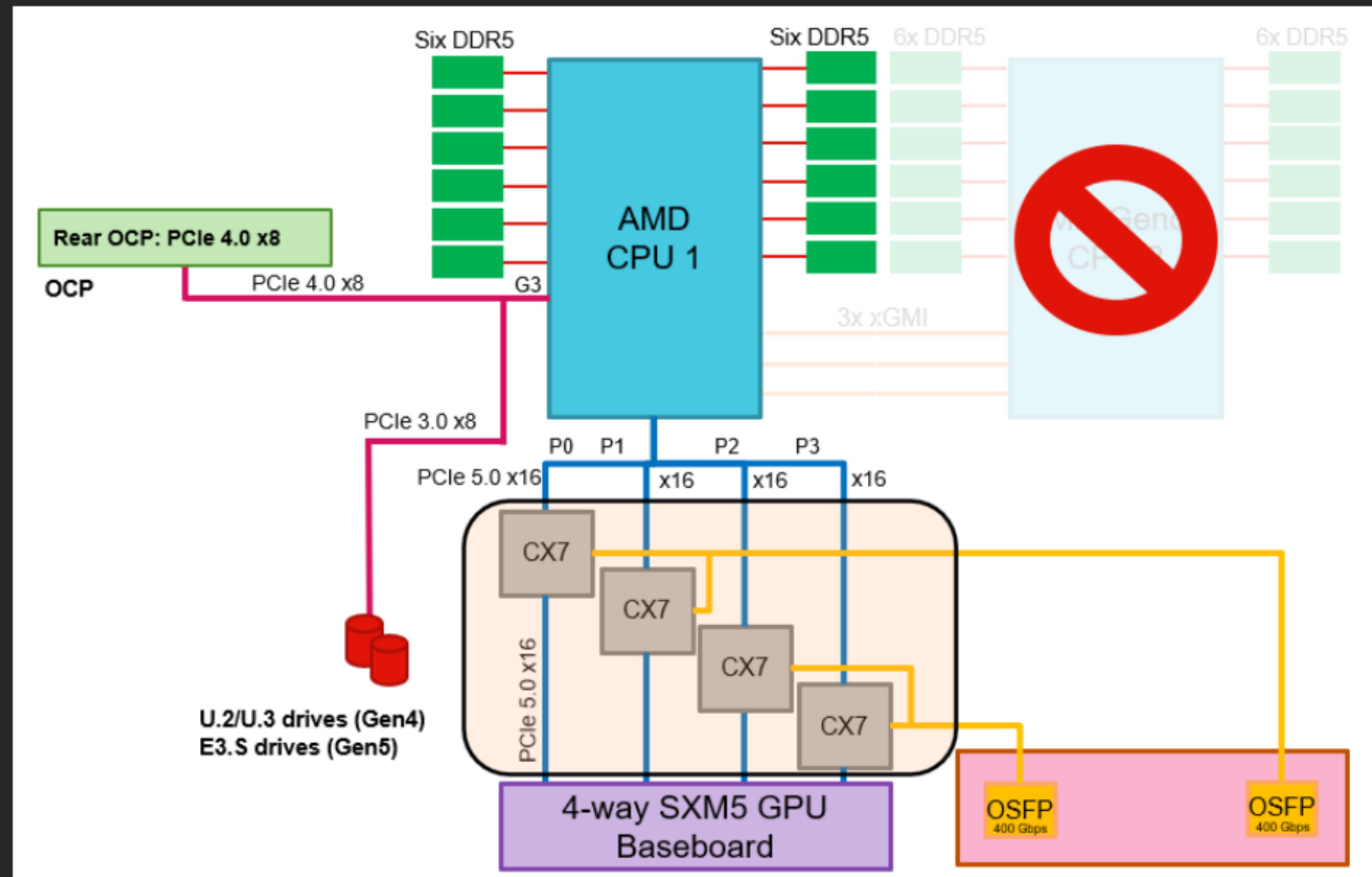


1

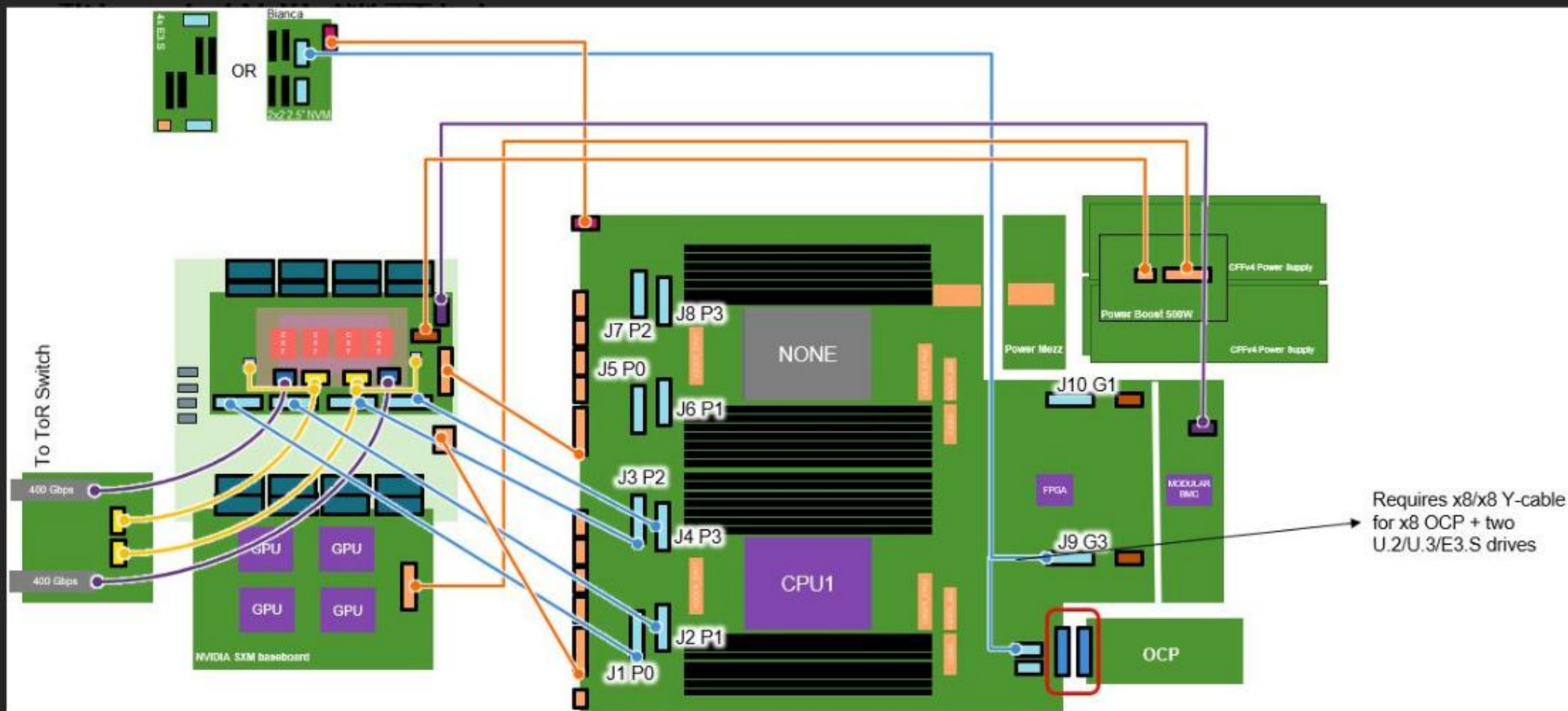
2

3

# System diagram



# Cable diagram



## NVIDIA Omniverse overview

Selected SR675 V3 models are NVIDIA certified for NVIDIA OVX. NVIDIA's Omniverse platform enables individual users and teams to build custom 3D pipelines and simulate large-scale virtual 3D models. When deployed on NVIDIA OVX certified server nodes, NVIDIA Omniverse delivers a scalable, integrated hardware and software platform that can be used to build and operate virtual worlds and accelerate workflows at any scale. The Lenovo EveryScale OVX solution is a purpose-built NVIDIA Omniverse computing offering based on Lenovo Scalable Infrastructure and integrating Lenovo ThinkSystem servers to meet the demands of large-scale digital twins.

SR675 V3 OVX 3.0 certified node configurations include the following hardware components:

- Two CPUs
- Two NVIDIA BlueField-3 (BF-3) DPU adapters
- NVIDIA CX-7 modular board or PCIe CX-7 adapters (depending on the model)
- NVIDIA L40 or L40 CNX GPUs (depending on the model)

For more information, refer to the following articles on the NVIDIA website:

- [NVIDIA Omniverse](#)
- [NVIDIA OVX datasheet](#)
- [What is a DPU?](#)
- [NVIDIA BlueField-3 DPU datasheet](#)

## OVX 3.0 and general Omniverse nodes diagram

### Entry-level OVX 3.0 node

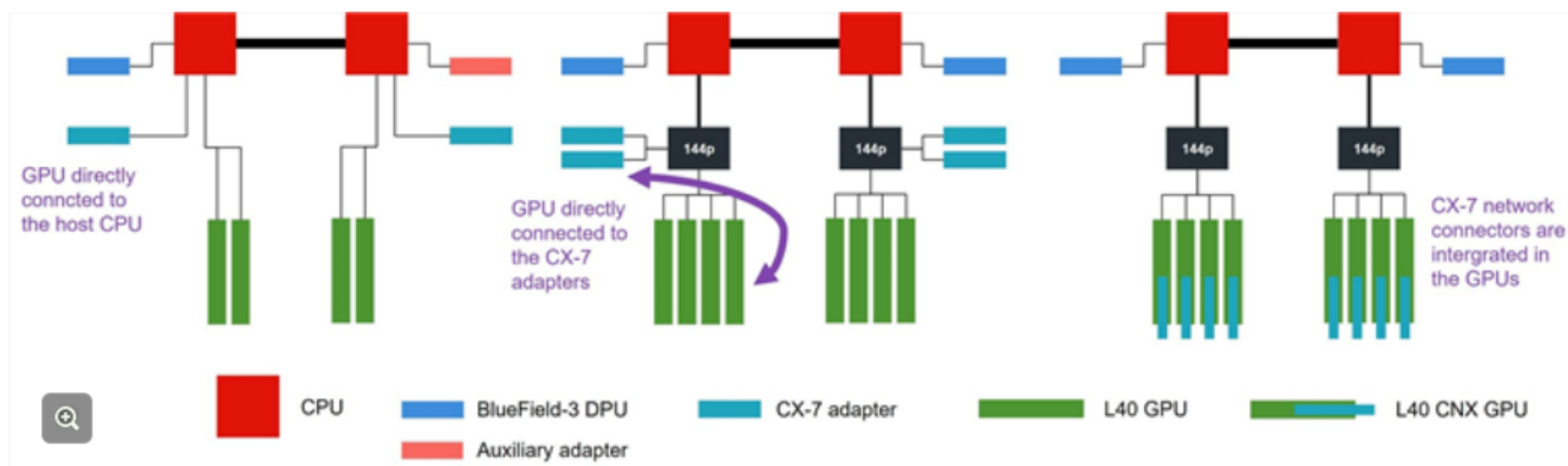
- Two CPUs
- One BlueField-3 DPU and one auxiliary adapter – one device for each CPU
- Four GPUs – two per socket
- Two CX-7 adapters for the GPUs – one per socket

### General Omniverse node

- Two CPUs
- Two BlueField-3 DPUs – one per CPU
- Eight NVIDIA L40 GPUs – four per PCIe switch adapter
- Four CX-7 adapters for GPUs – two per PCIe switch adapter

### Optimal OVX 3.0 node

- Two CPUs
- Two BlueField-3 DPUs – one per CPU
- Eight NVIDIA L40 CNX GPUs – four per PCIe switch adapter
- CX-7 adapters are integrated on each GPU (NVIDIA CNX feature)



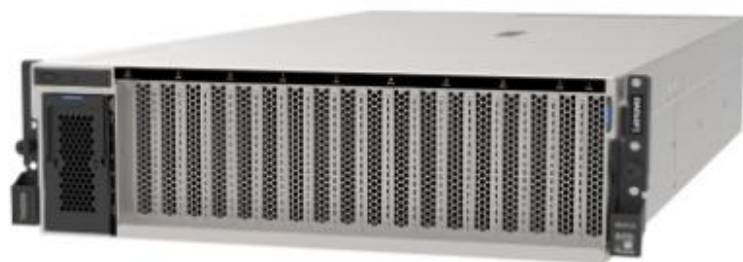
## SR675 V3 for NVIDIA Omniverse models

Click the buttons to see more information about SR675 V3 for NVIDIA Omniverse models

**Entry-level OVX 3.0 node**

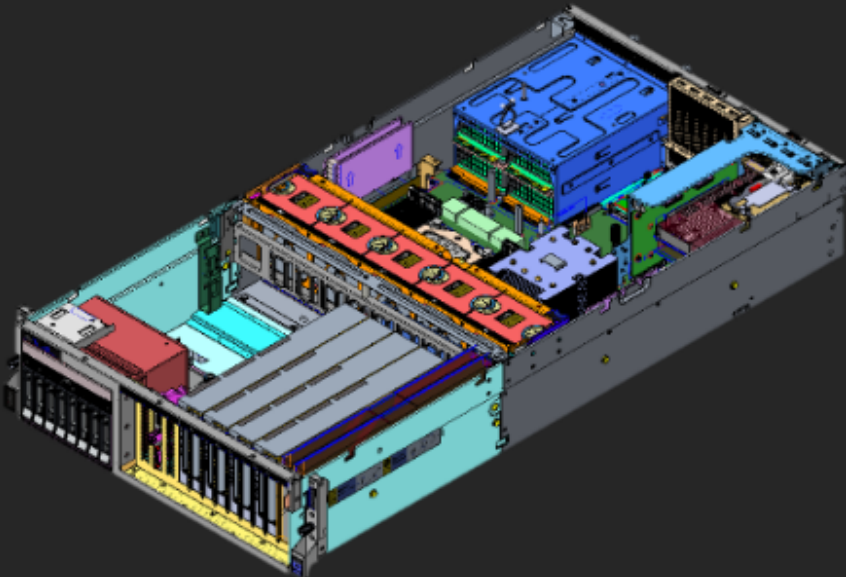
**General Omniverse node**

**Optimal OVX 3.0 node**





| OVX 3.0 entry-level node |                                                                |
|--------------------------|----------------------------------------------------------------|
| CPU                      | Two CPUs                                                       |
| GPU                      | Four NVIDIA L40 GPUs (PCIe 5.0)                                |
| Storage                  | Eight NVMe 2.5-inch drives (PCIe 5.0)                          |
| Front I/O adapters       | One NVIDIA BlueField-3<br>One auxiliary adapter (with retimer) |
| Rear I/O adapters        | Two NVIDIA CX-7 adapters                                       |

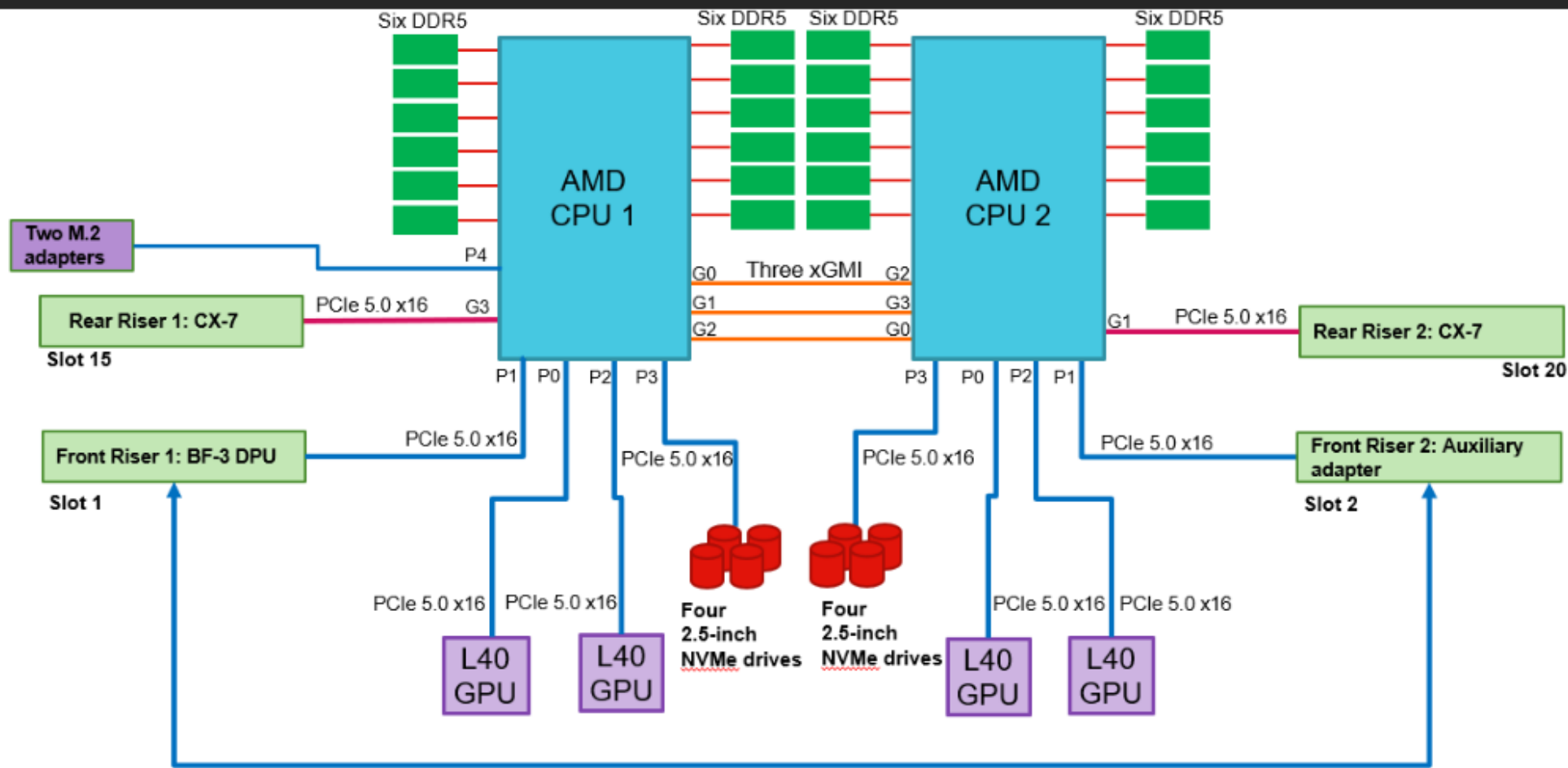


Click the numbers to see more information

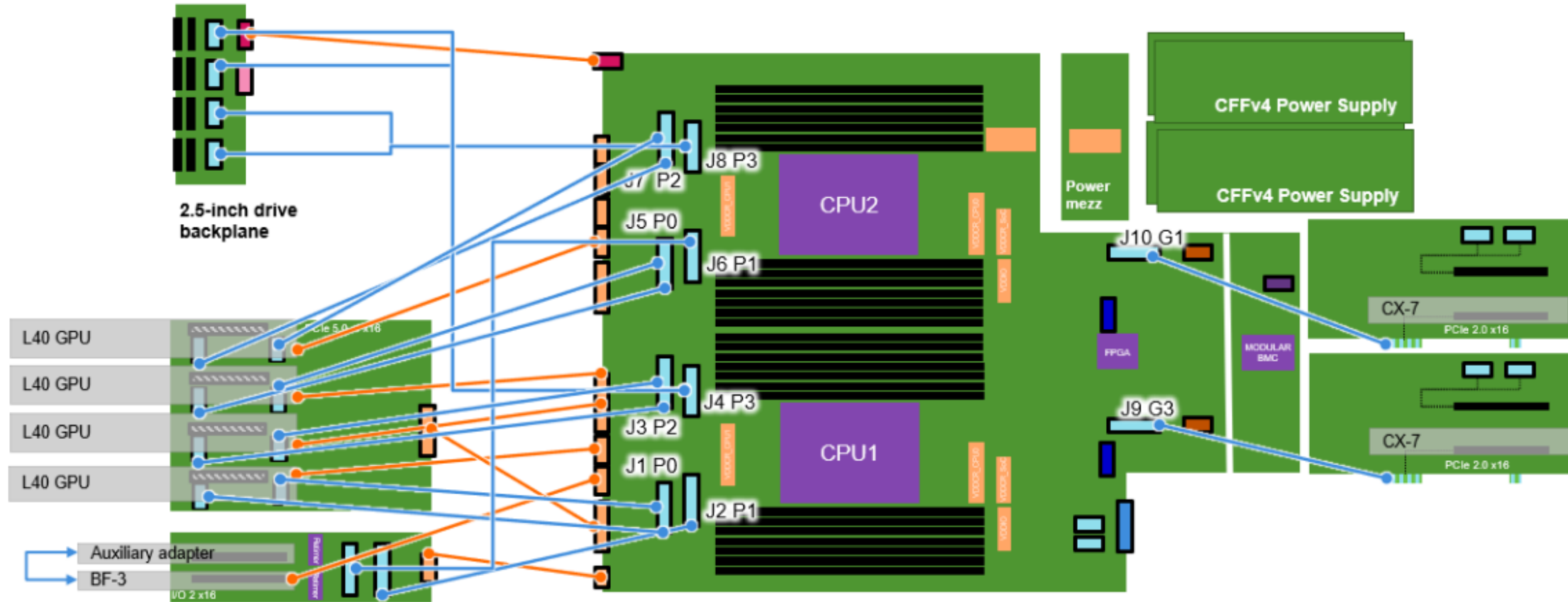


- 1
- 2
- 3

# System diagram

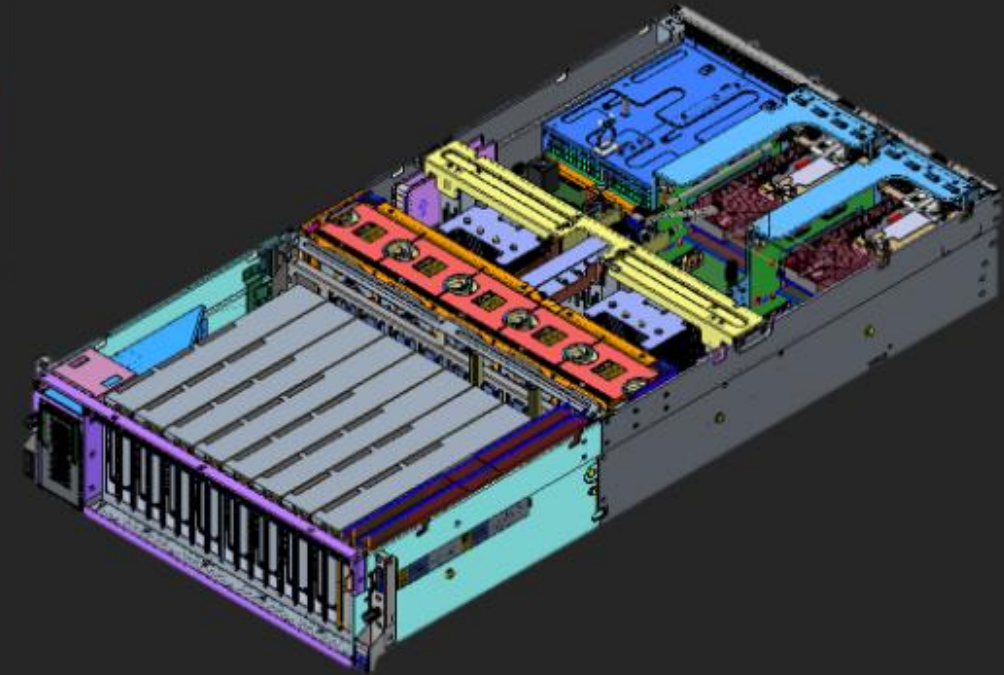


## Cable diagram





| General Omniverse node |                                                   |                                |
|------------------------|---------------------------------------------------|--------------------------------|
| Type                   | 1                                                 | 2                              |
| CPU                    | Two CPUs                                          |                                |
| GPU                    | Four NVIDIA L40 GPUs (PCIe 5.0)                   |                                |
| Storage (EDSFF)        | Six E1.S 5.9 mm drives (PCIe 4.0)                 | Four E3.S 1T drives (PCIe 5.0) |
| I/O Front              | Two CX-7 adapters                                 |                                |
| I/O Rear               | Two CX-7 adapters<br>Two BlueField-3 DPU adapters |                                |



Click the numbers to see more information

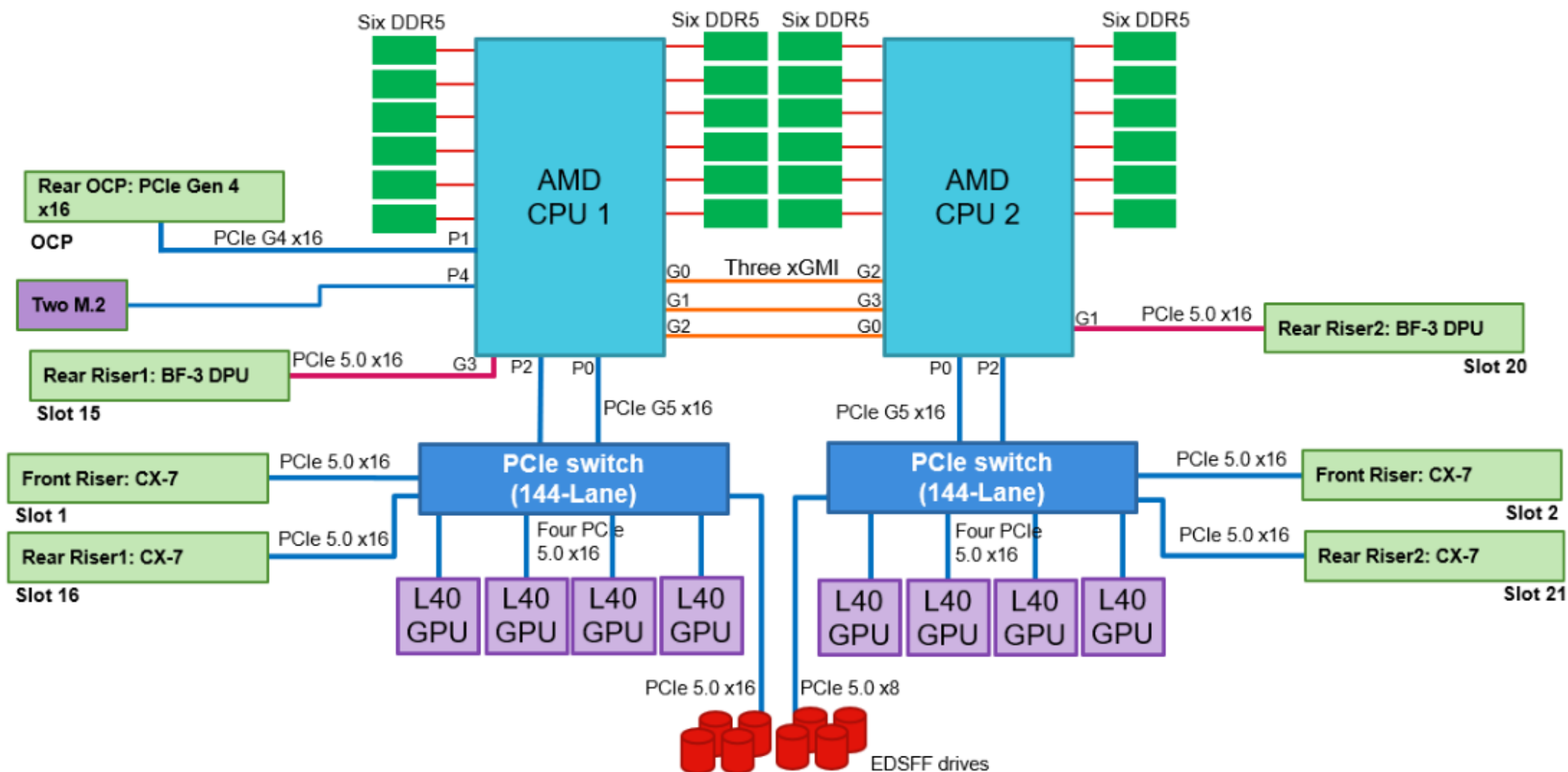


1

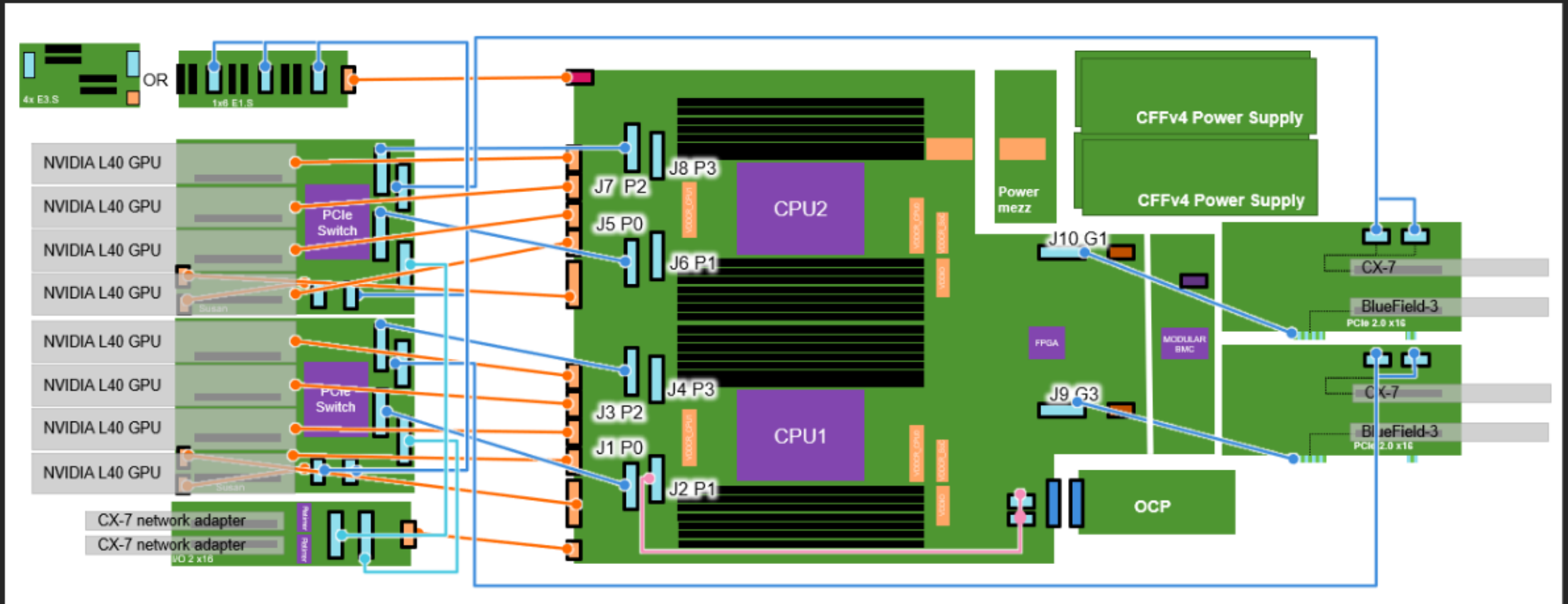
2

3

# System diagram

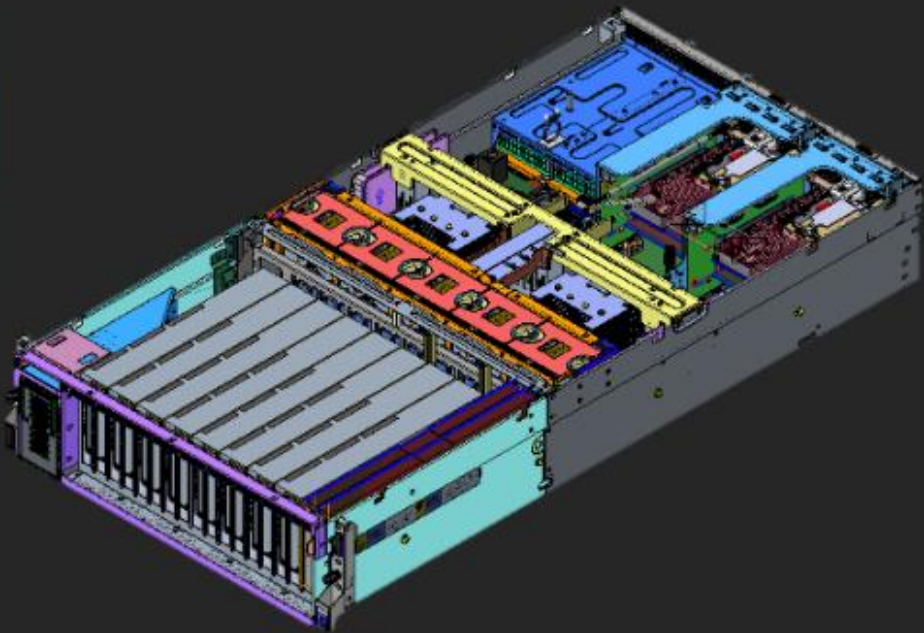


# Cable diagram





| Optimal OVX 3.0 node |                                      |                                |
|----------------------|--------------------------------------|--------------------------------|
| Type 1               | 1                                    | 2                              |
| CPU                  | Two CPUs                             |                                |
| GPU                  | Eight NVIDIA L40 CNX GPUs (PCIe 5.0) |                                |
| Storage (EDSFF)      | Six E1.S 5.9 mm drives (PCIe 4.0)    | Four E3.S 1T drives (PCIe 5.0) |
| I/O Front            | N/A                                  |                                |
| I/O Rear             | Two NVIDIA BlueField-3 DPUs          |                                |



Click the numbers to see more information

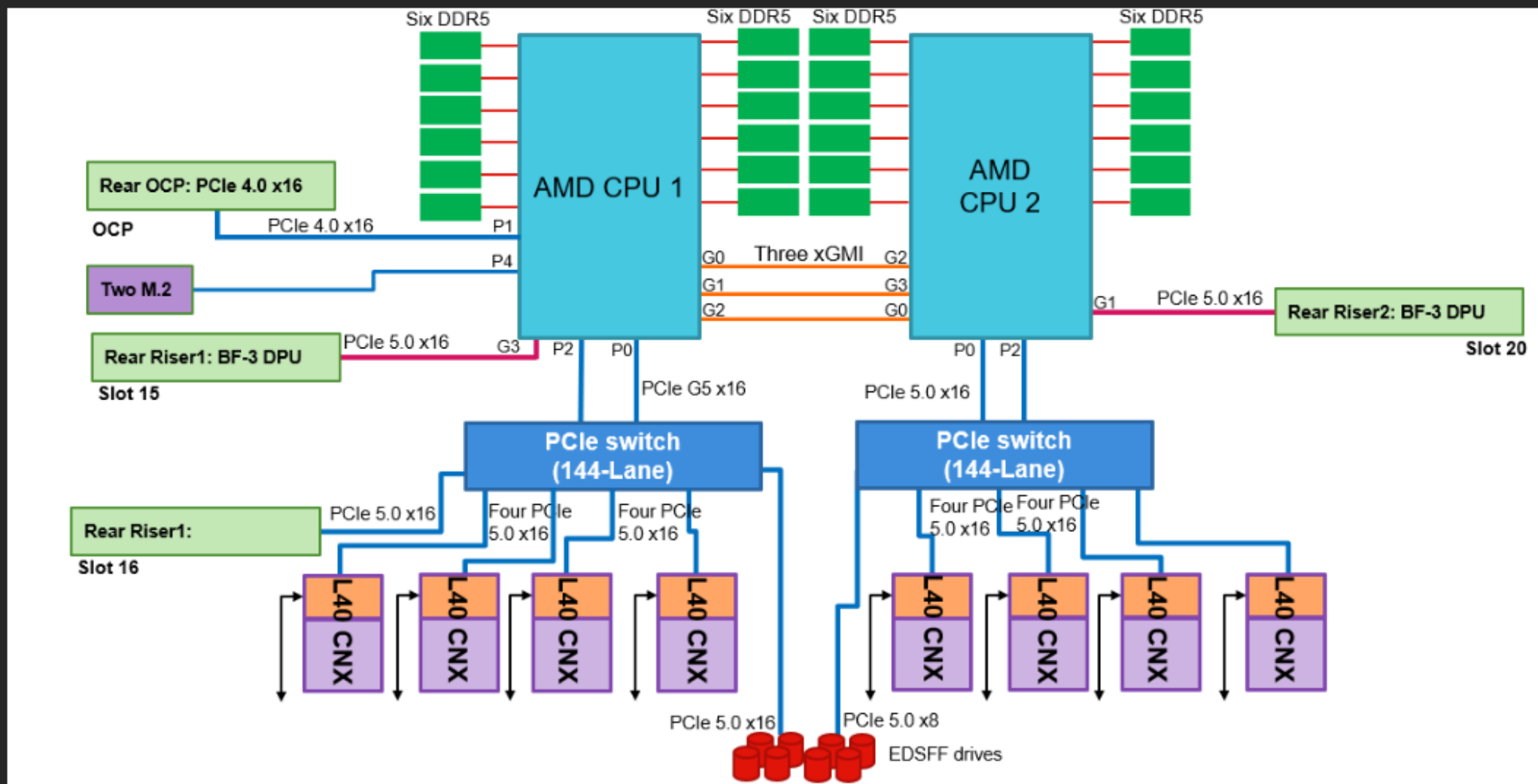


1

2

3

# System diagram



# Cable diagram

