5/8 OAI Subgroup OCP Call

Agenda

- OAI group scope
- OAI group focus in next 3 months – OAI-UBB baseboard for OAM
- Sign the JDA to join the UBB specification discussion
- Kick off OAI-UBB discussion
- Feedback

Group Scope

- OCP Accelerator Module (OAI-OAM)
- OAI Universal Baseboard (OAI-UBB)
- OAI Host Interface (OAI-HIB)
- OAI Power Distribution (OAI-PDB)
- OAI Expansion Beyond UBB (OAI-Expansion)
- OAI Security, Control, and Management (OAI-SCM)
- OAI-Tray
- OAI Chassis

How to Join the UBB Discussion

Sign JDA

Closed meetings will be held under JDA

OAI-UBB Discussion

Topics

- OAM Candidates
- OAM Interconnect Topology
- Baseboard Dimension
- 8x PCIe connector selection
- PCIe connector pin mapping
- OAM TDP/Power support/Thermal
- System Expansion
- System Debugging
- System Management

OAM Candidates(6 or more Links per OAM)

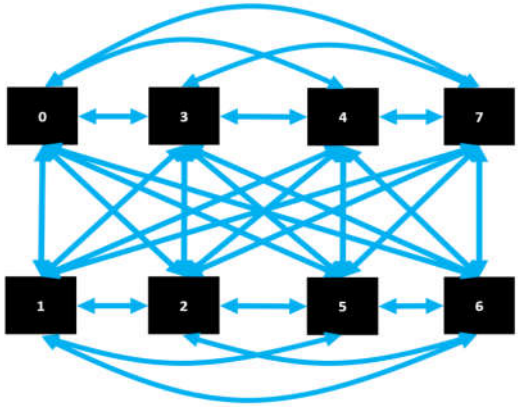
- Lanes per Link
  - X4 per link
  - X8 per link
  - X16 per link
  - Speed reference for SI consideration
    - Need specify max SerDes speed for baseboard design
- Voltage 12V/48V
- TDP

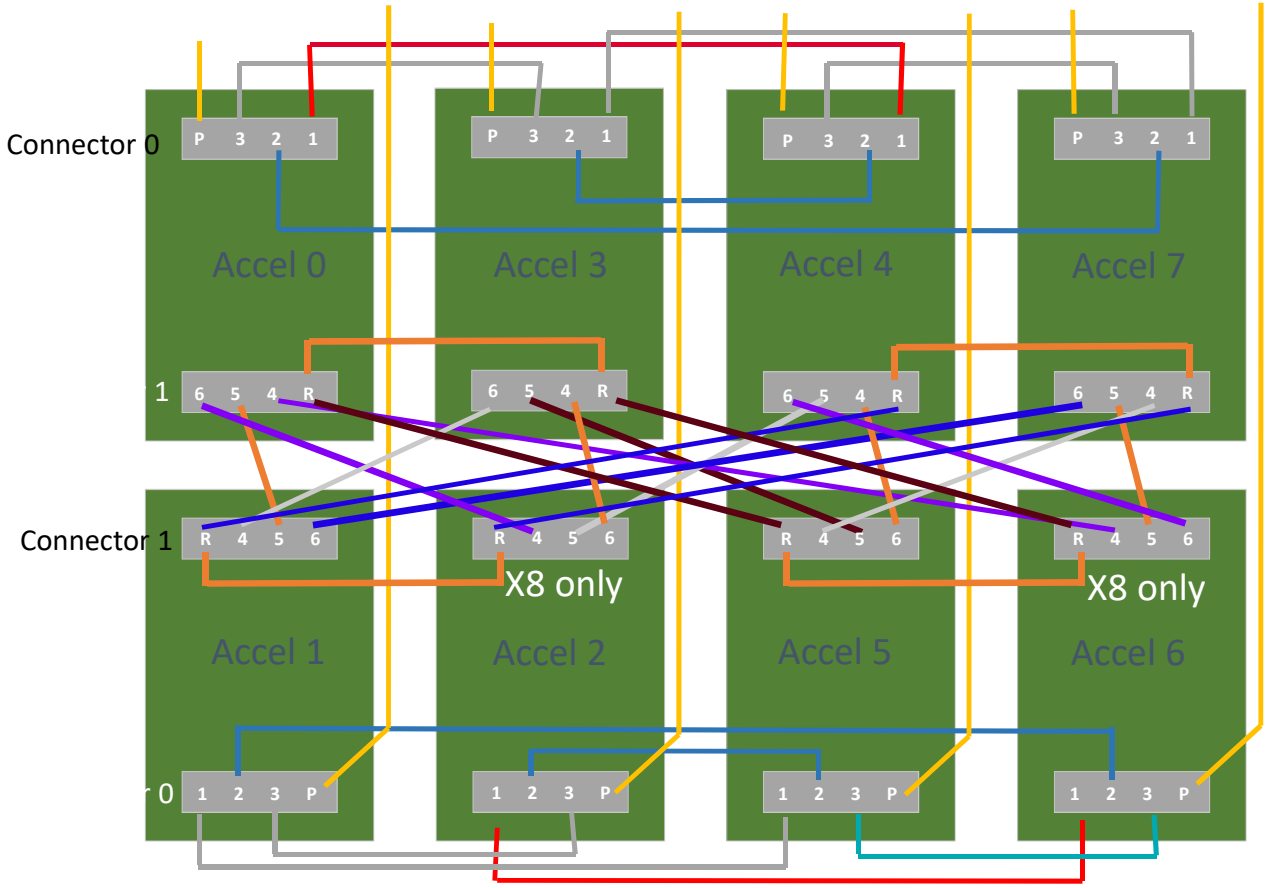
Proposed Topology:

Fully Connected(up to X8)

+

Almost Fully Connected(up to X16)



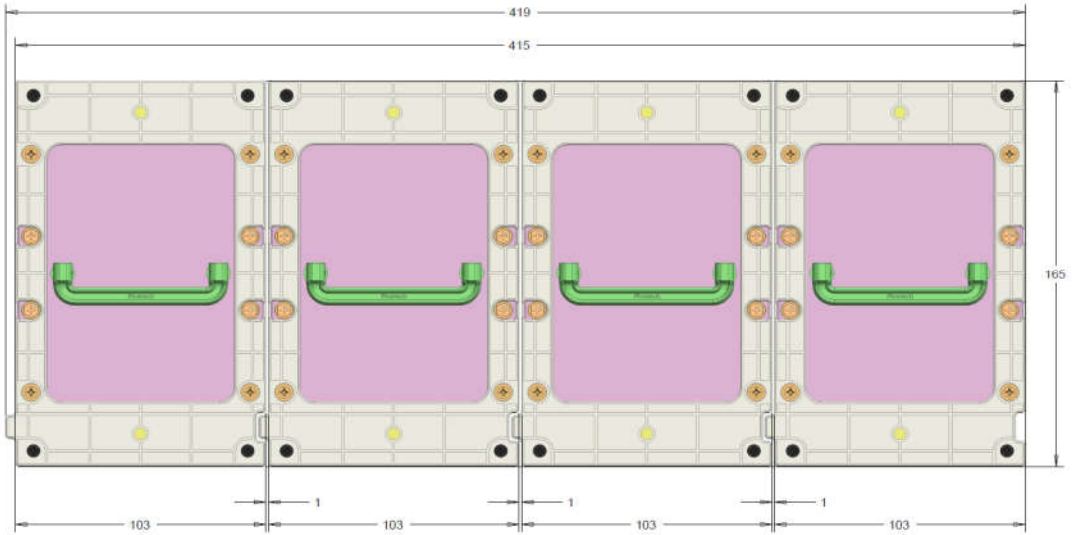


Question:

- Route each link X8 only?
  - To save layers.
  - Extra X8 links could be used for expansion.

Baseboard Dimension

- Consider both 19’’ and 21’’ rack
- 16.4-16.9''(431mm or 416mm)?
- Depth 17-18''?



Host Interface Connector Selection

- 8 X16 PCIe to UBB, total 256+ Differential Pairs
- PCIe Gen4/5 compatible
- Candidates:
  - TE:
  - Amphenol:
  - Molex:

OAM TDP/Power support

- Support both 12V/48V?
- 12V up to 300w?
- 48V up to 700w*8?

Thermal Consideration

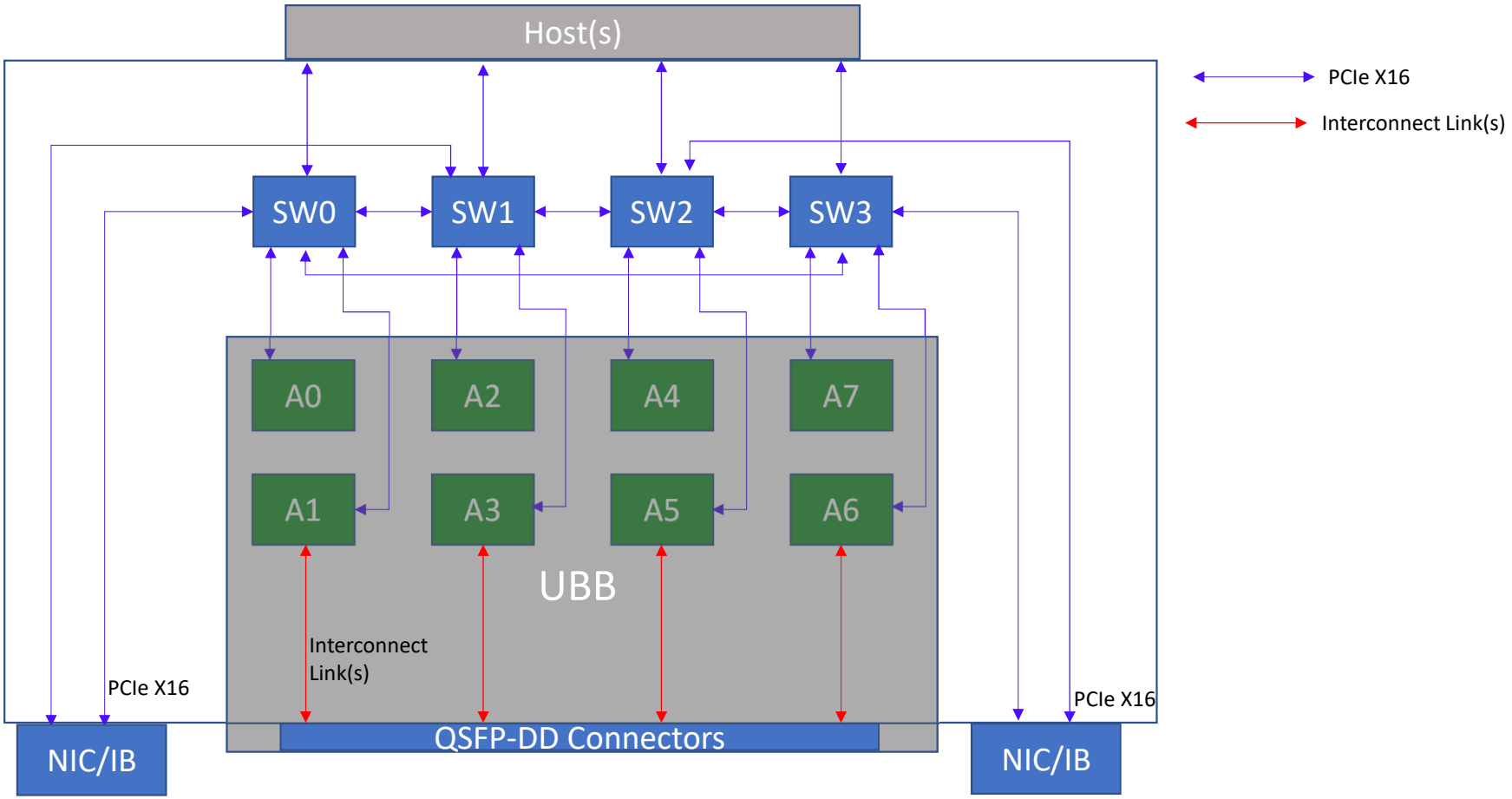
- Air cool in 3U support up to 450w TDP
- Liquid cool required for >450w

System Expansion Options

- Through host NIC
- Through GPU direct(PCIe switch, IB/ethernet)
  - Example: Nvidia
- Through Interconnect Link
  - Example: Google TPU, Intel Nervana
- Through PCIe Fabric
  - Not recommended due to complexity
- Through proprietary switch(Nvswitch…)?

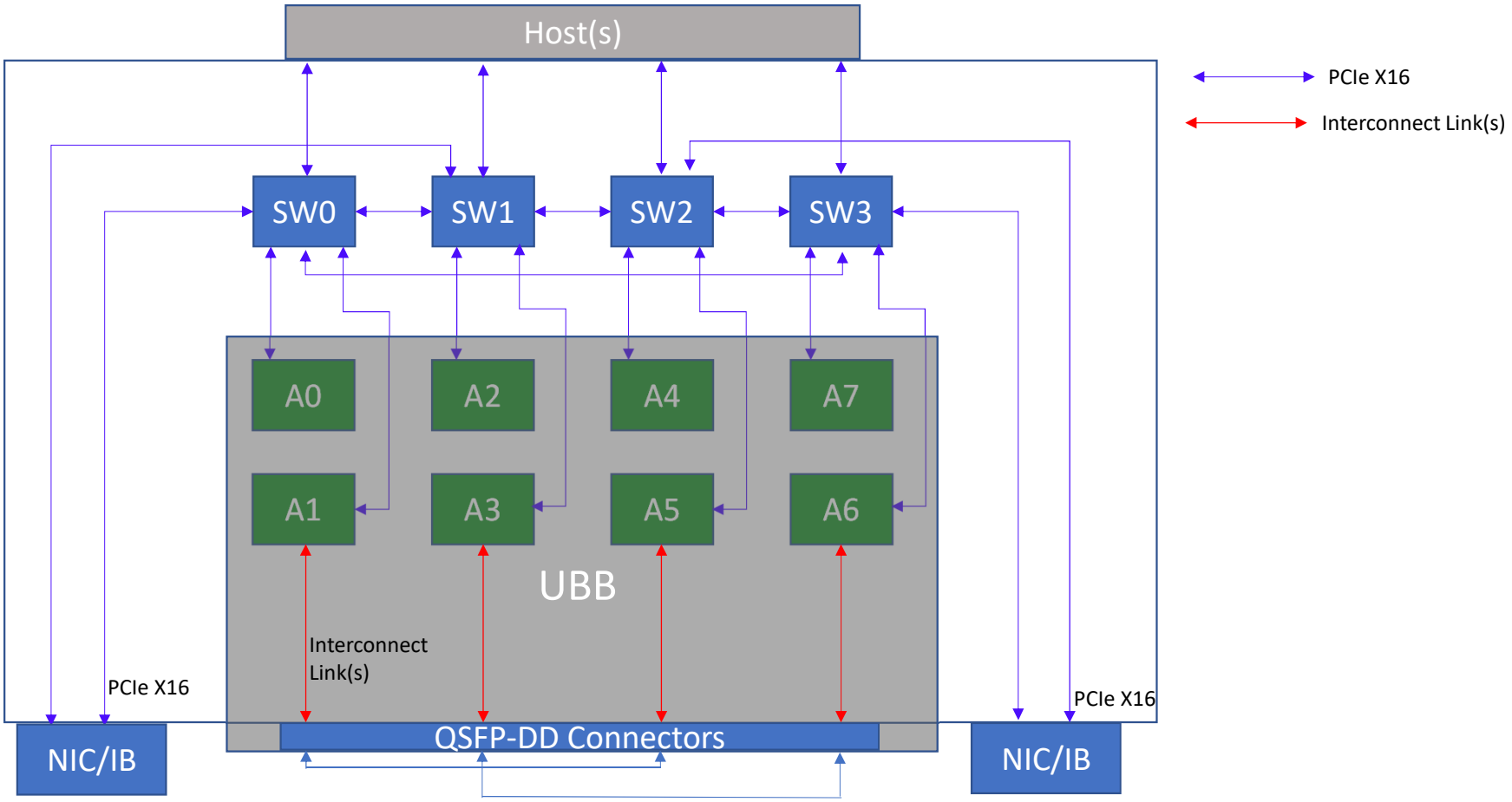
Through GPU Direct

- If 4*PCIe X16 from host



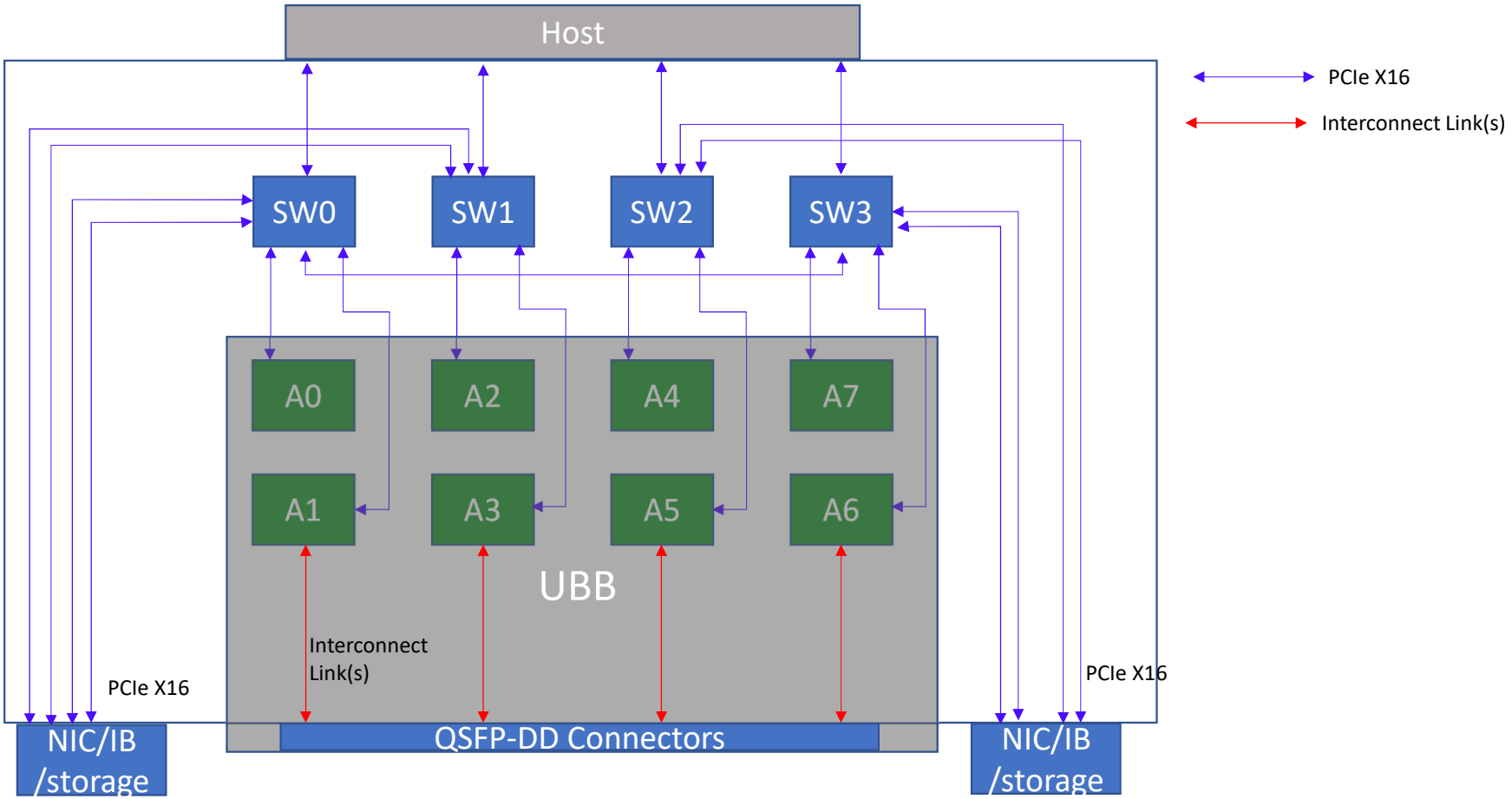
Through GPU Direct

- If 4*PCIe X16 from host



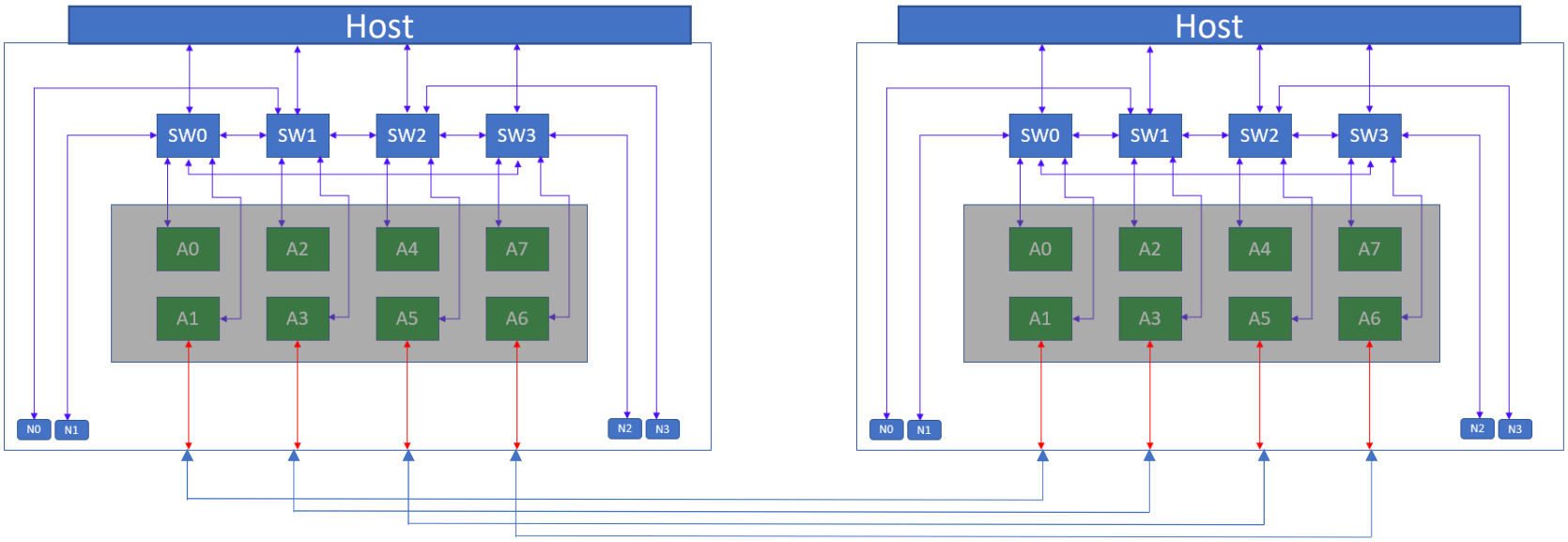
Through GPU Direct

- If 4*PCIe X16 from host



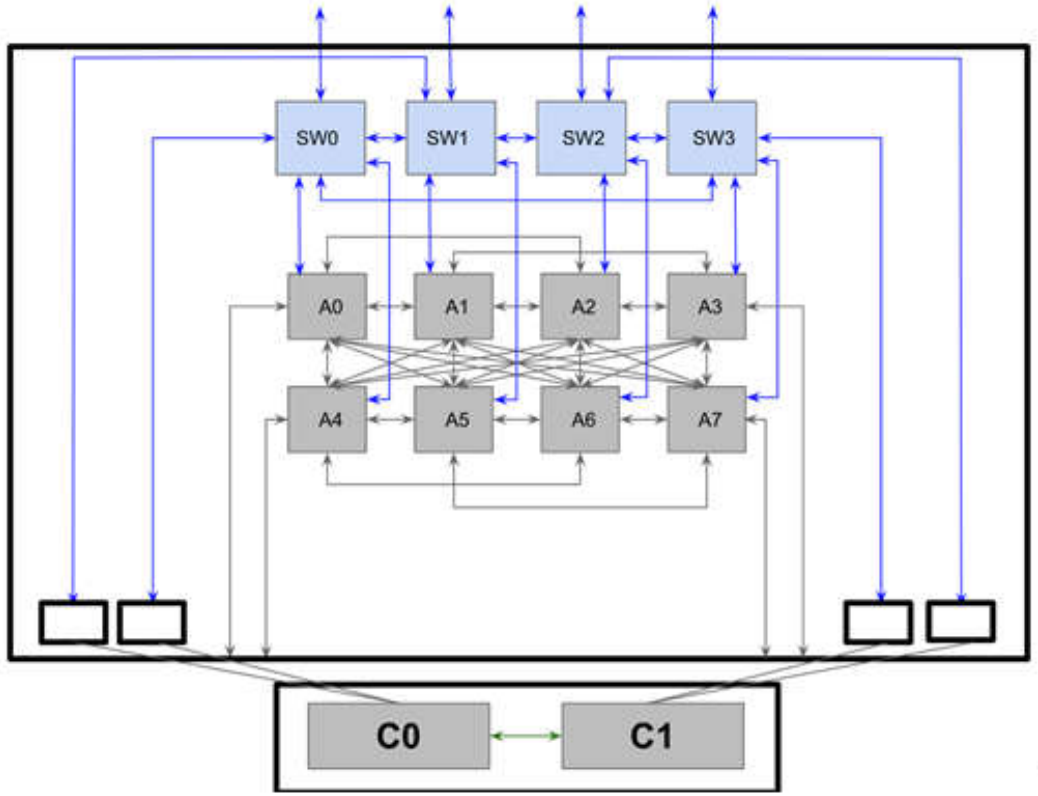
Through GPU Direct

- If 4*PCIe X16 from host, with Expansion



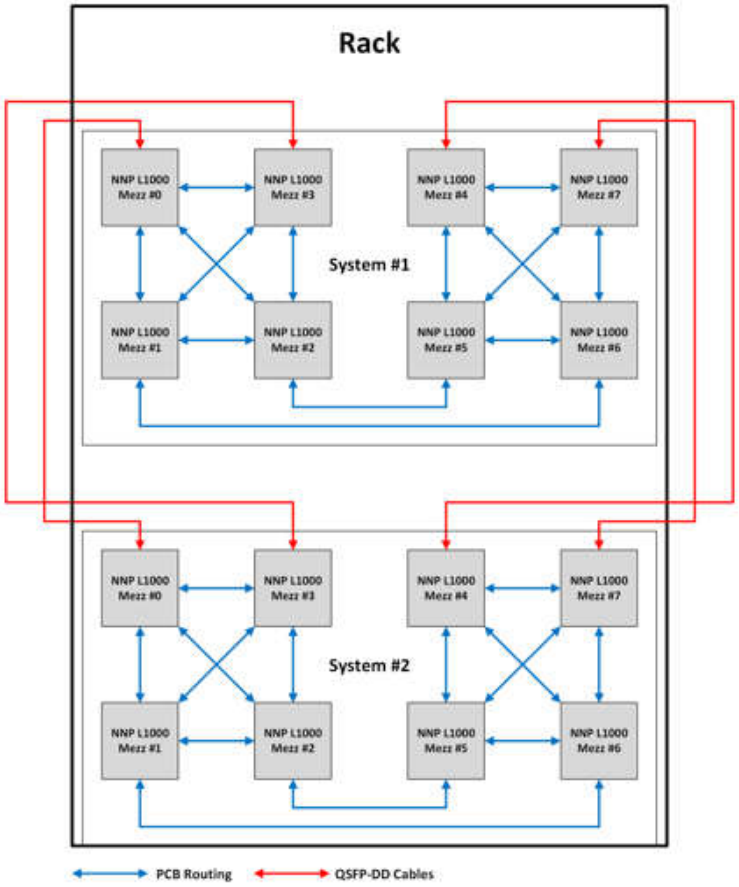
Through GPU Direct

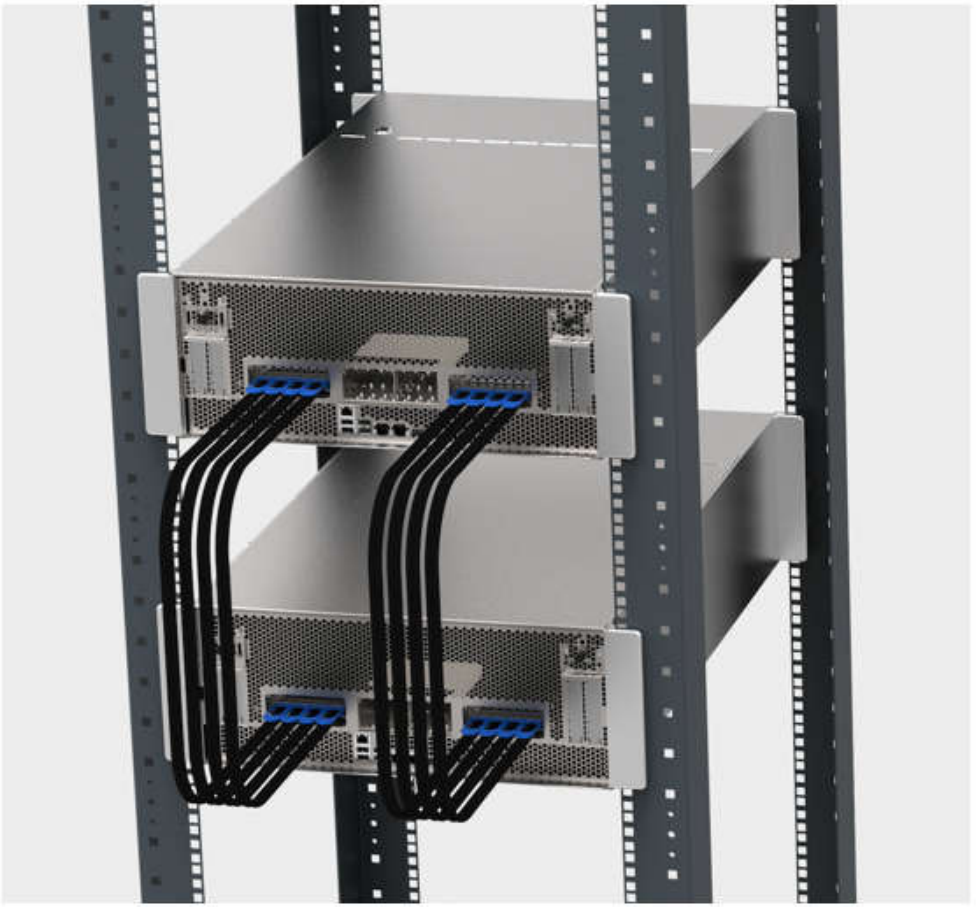
- If 4*PCIe X16 from host



Scale out through Interconnect Link Example

Intel Nervana





System Debug

System Management

- Interface from UBB to control module