



Open. Together.



OCP
SUMMIT

OCP Accelerator Module (OAM) with Intel® Nervana™ Neural Network Processor (NNP) L-1000 Product Family



Song Kok Hang, System Architect, Intel Corporation



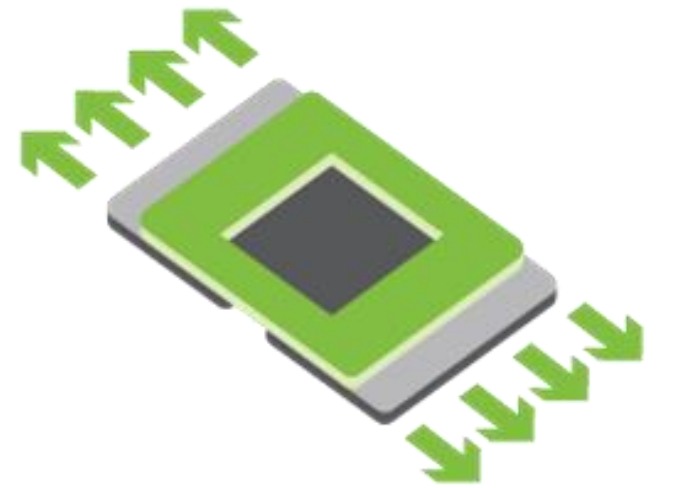
Open. Together.

Intel® Nervana™ NNP L-1000 Mezzanine Module Specification

- OCP Accelerator Module (OAM) Design Specification v0.85
- Module Dimension
 - 102mm x 165mm
- Power Consumption
 - 200W and 425W
- High Speed Inter-Chip Link (ICL) SerDes
 - 16 ICL SerDes ports
 - Each ICL SerDes port is x4 lanes



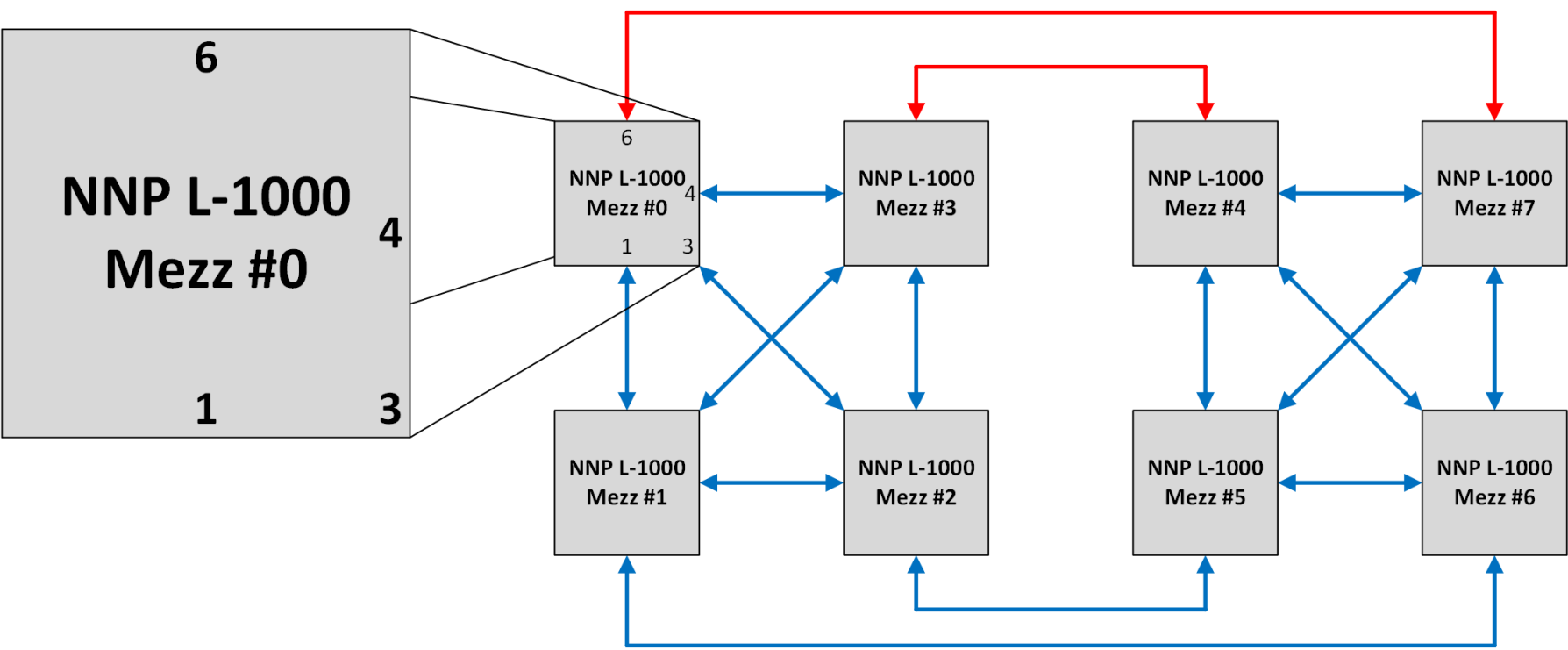
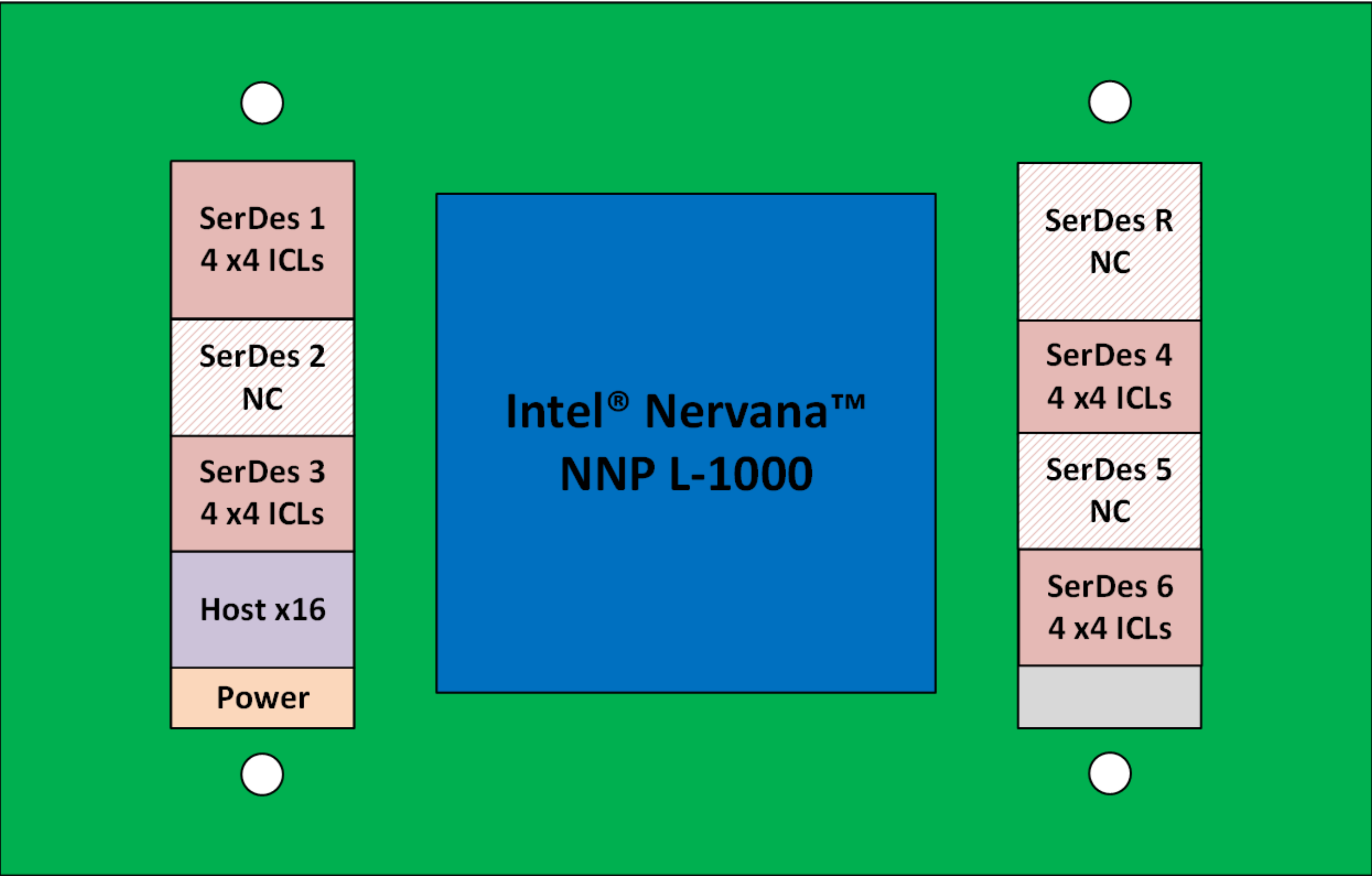
HPC



Intel® Nervana™ NNP L-1000 Mezzanine Module Pinmap



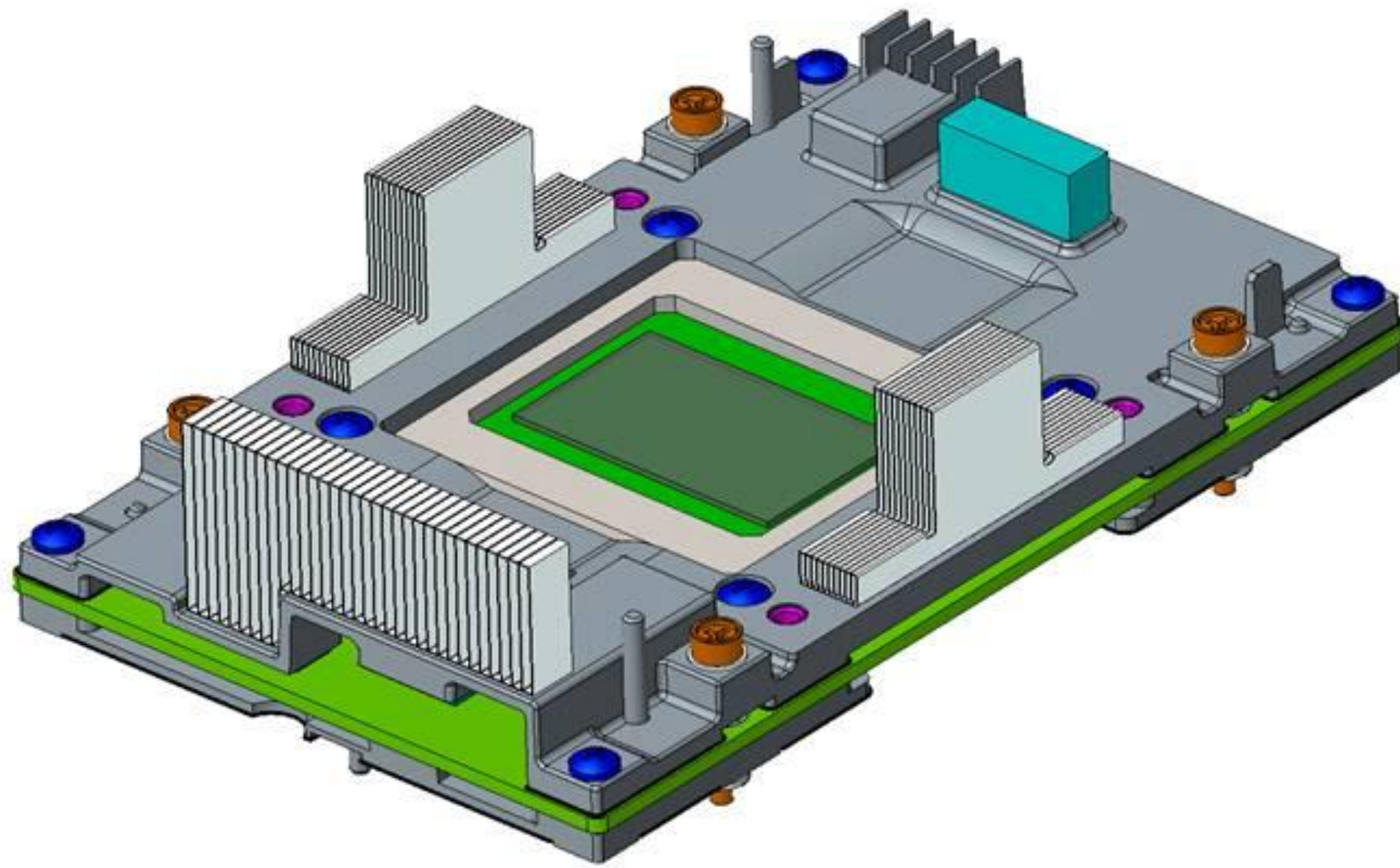
HPC



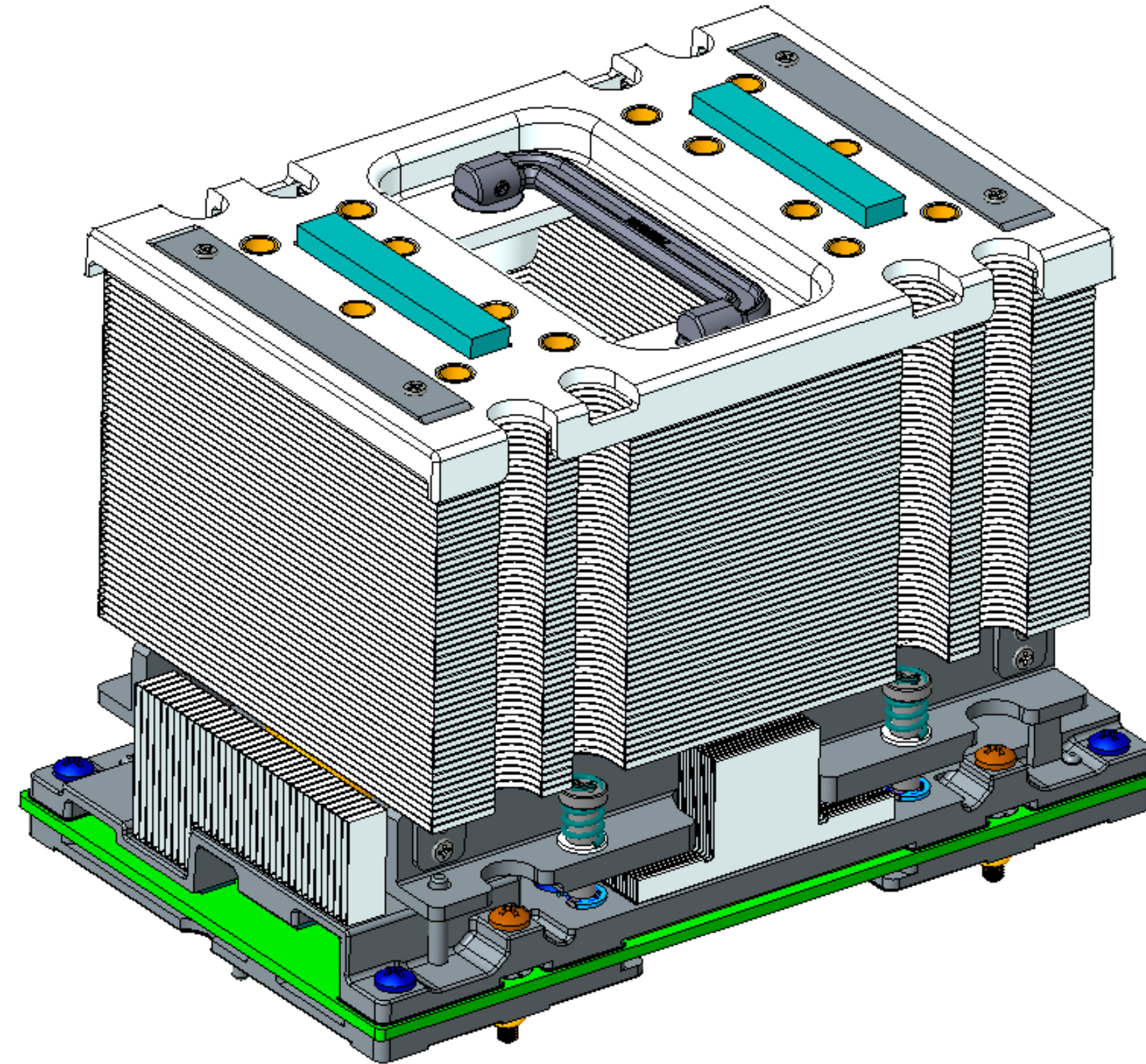
Intel® Nervana™ NNP L-1000 Mezzanine Module



HPC



Intel® Nervana™ NNP L-1000 Mezzanine Module



Heatsink Reference Design

8x Intel® Nervana™ NNP L-1000 Module System Implementation



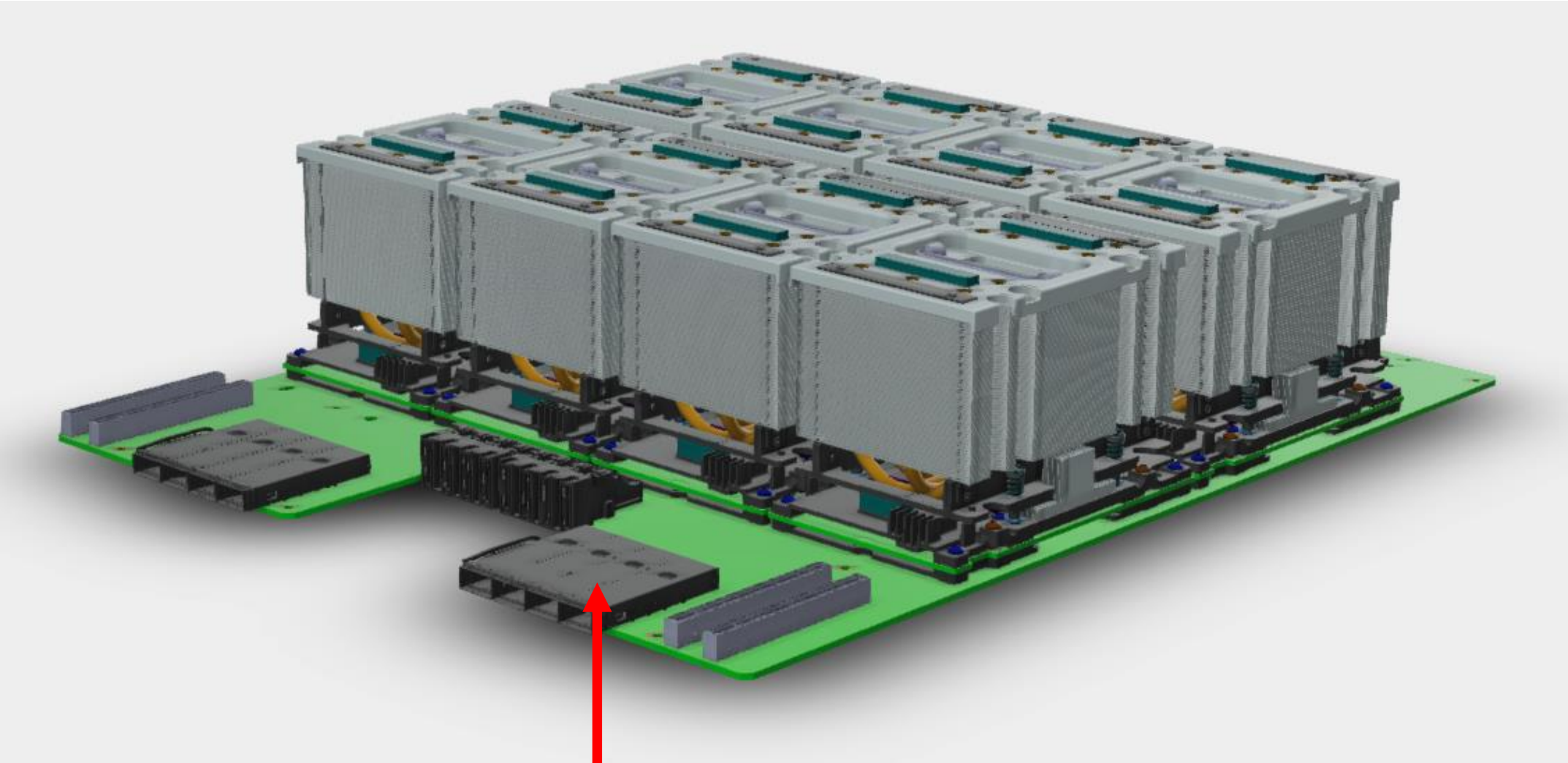
HPC

- Voltage and Power Requirement
 - 40-60V and 3.3V Voltage Input
 - Total of 3400W with 8x 425W Intel® Nervana™ NNP L-1000 Mezzanine Module
- Thermal Solution
 - 3U/30U Passive Air Cooled up to 35C ambient temperature
- Multi-Module Deep Learning Topology and Connectivity
 - Hybrid Cube Mesh (HCM)
 - PCB Routing
 - External QSFP-DD Cables

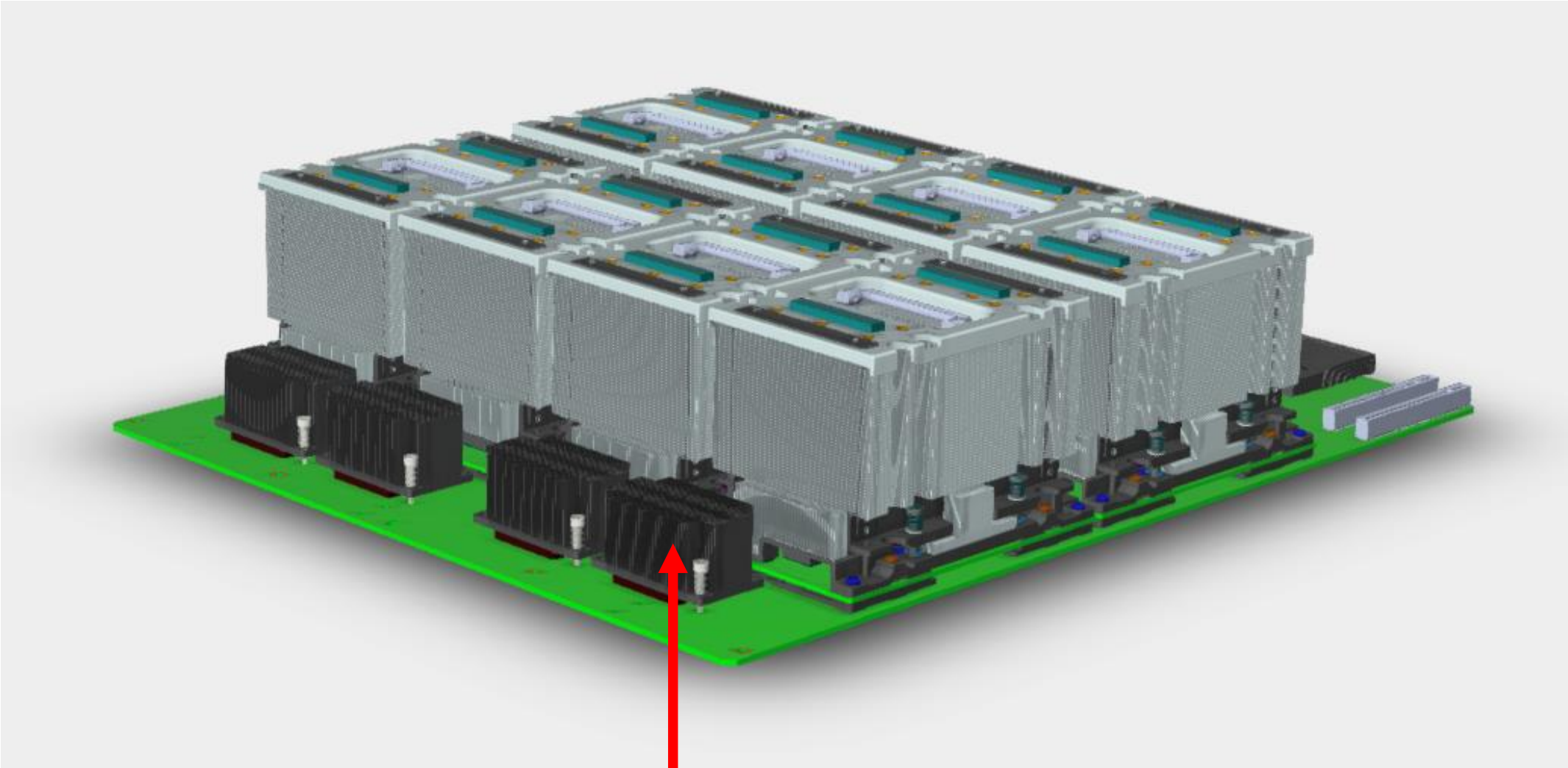
8x Intel® Nervana™ NNP L-1000 Module Baseboard Placement



HPC

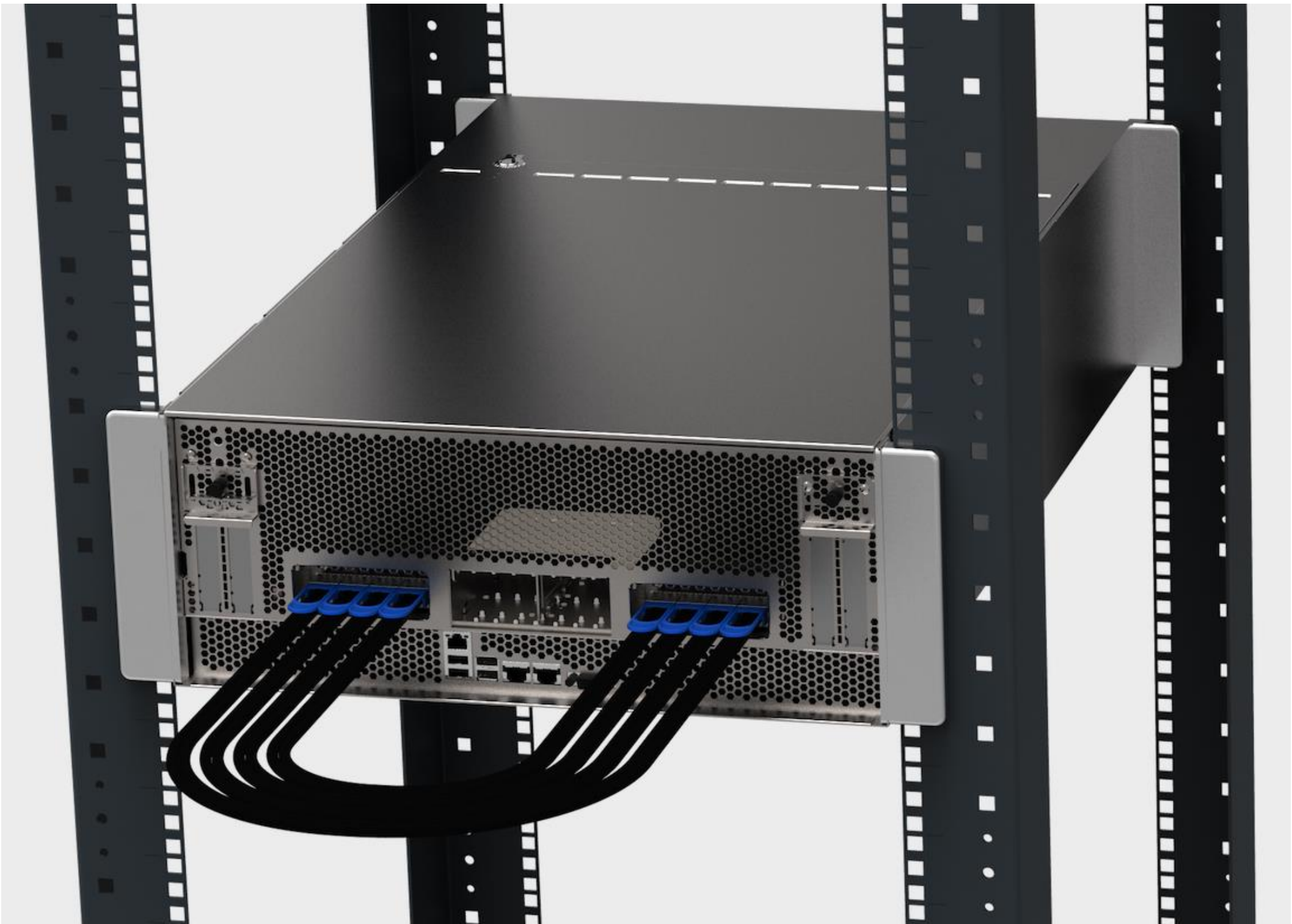
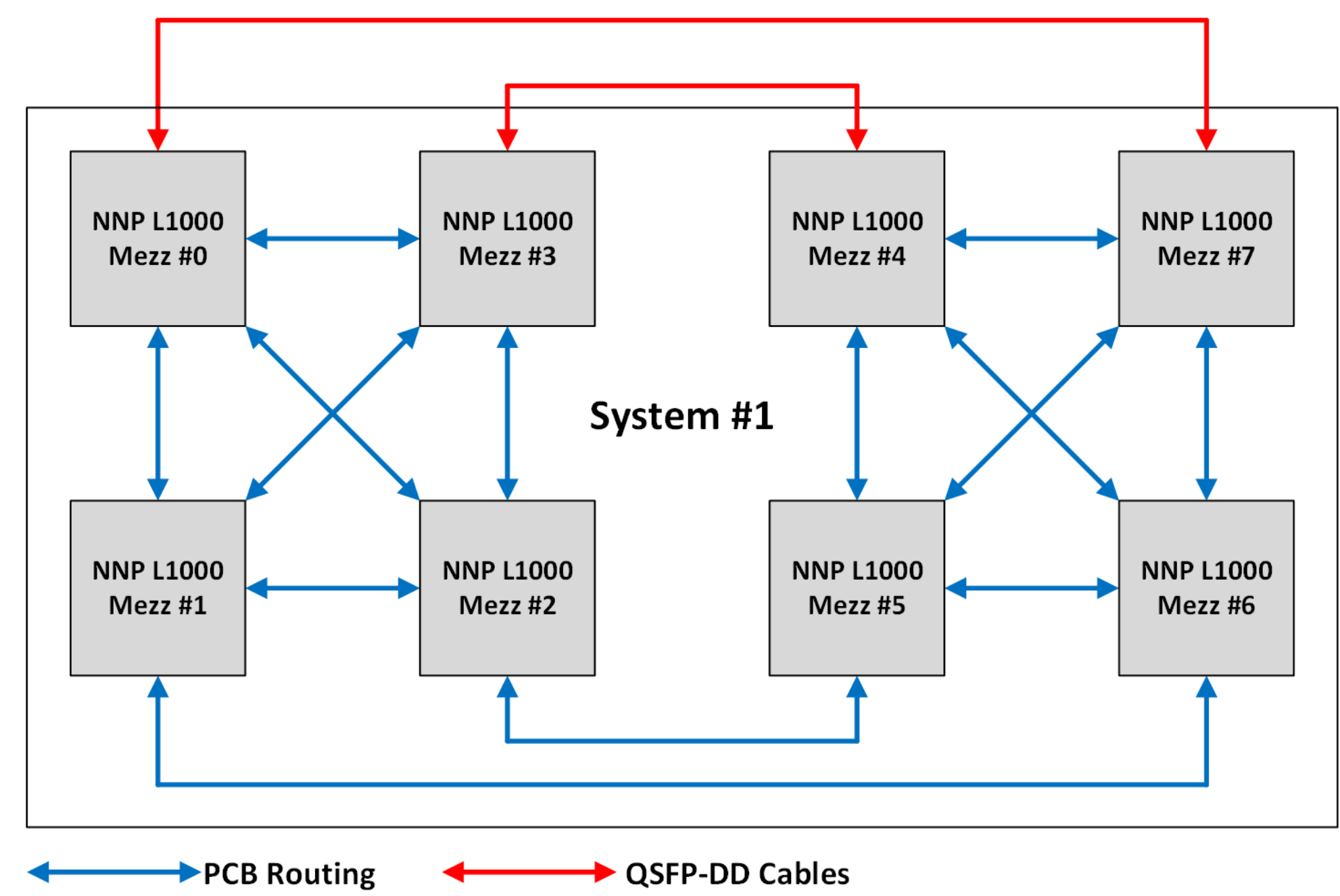


QSFP-DD



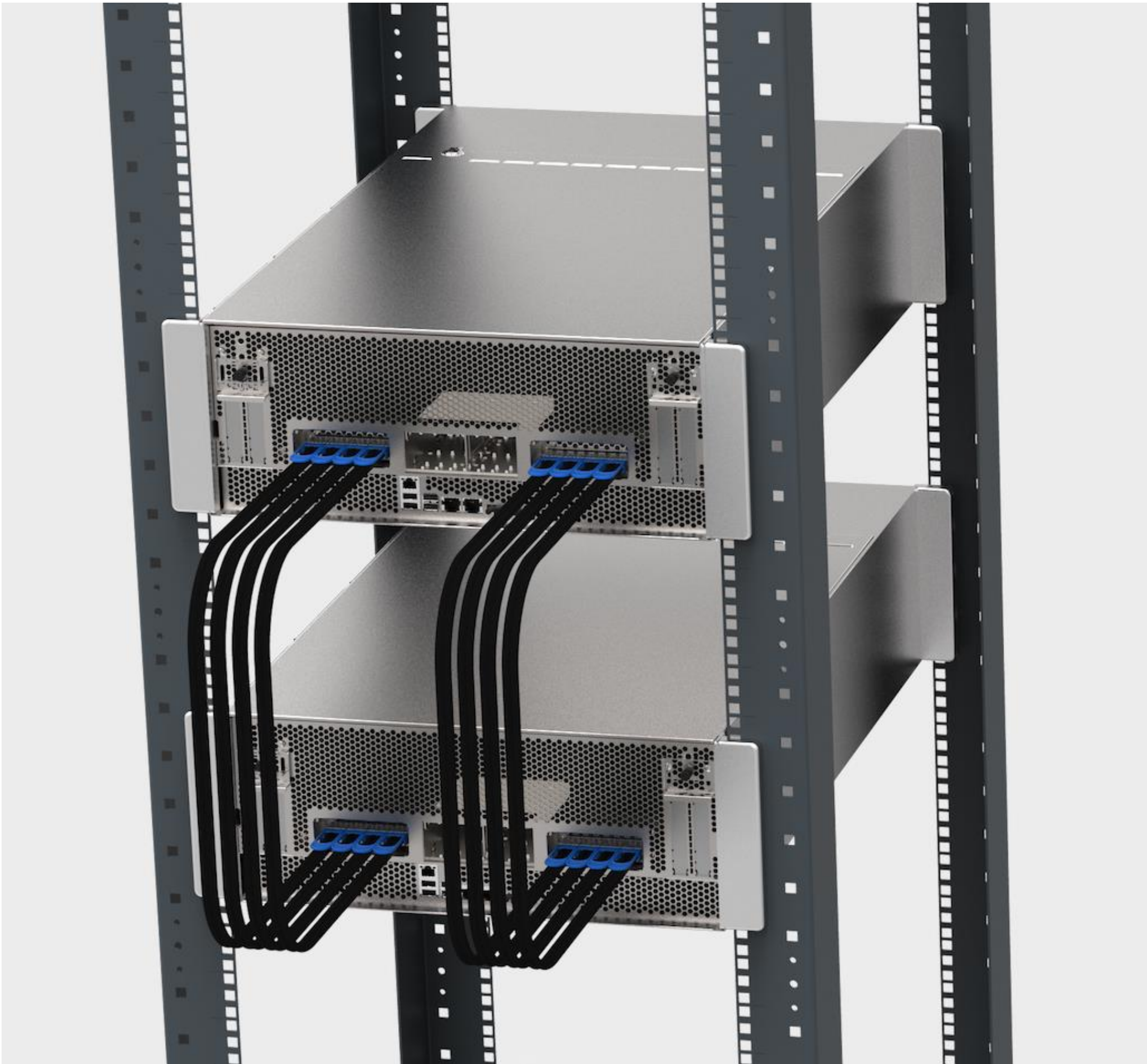
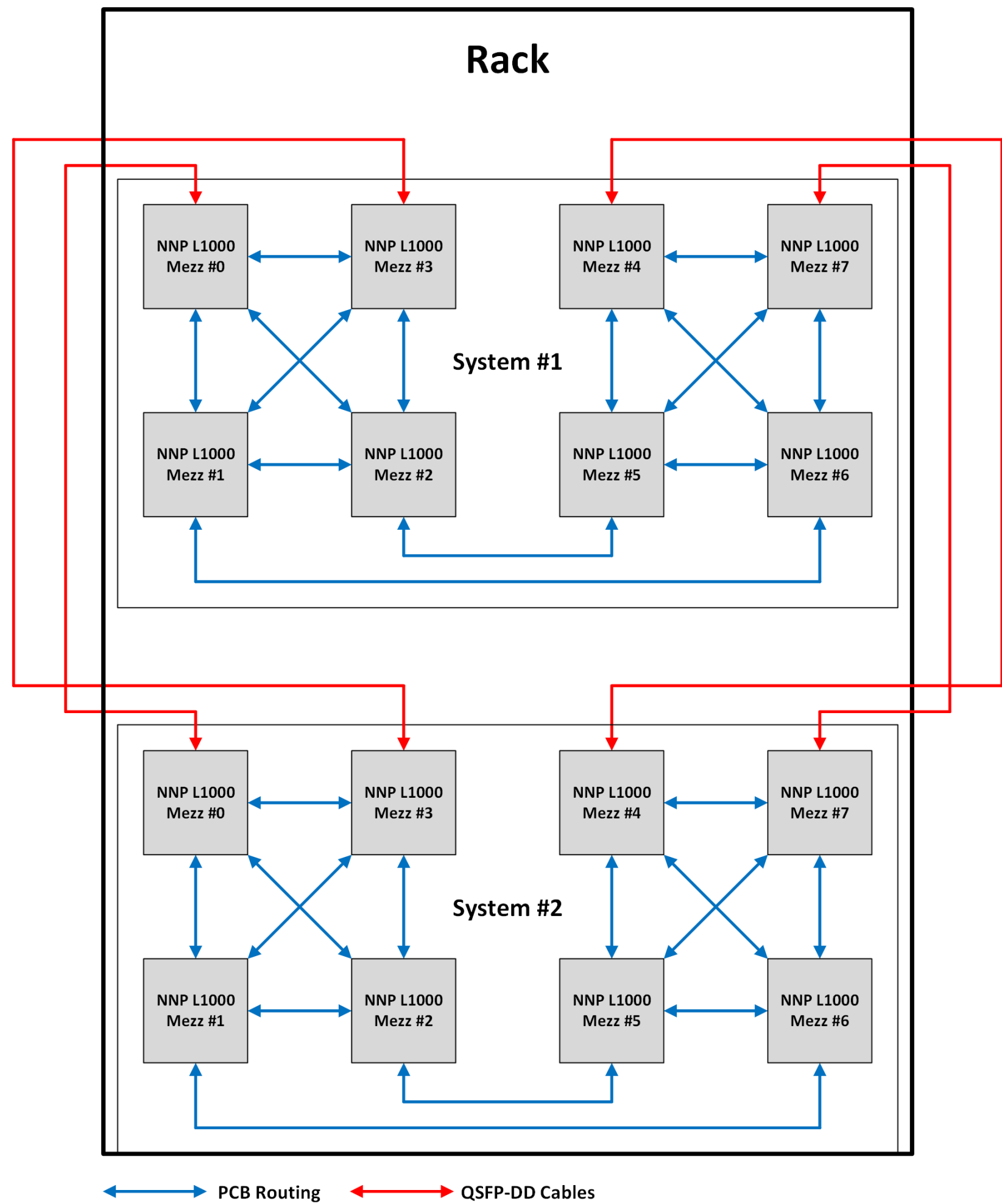
PCIe Switch

Single Chassis HCM Topology and External Connectivity



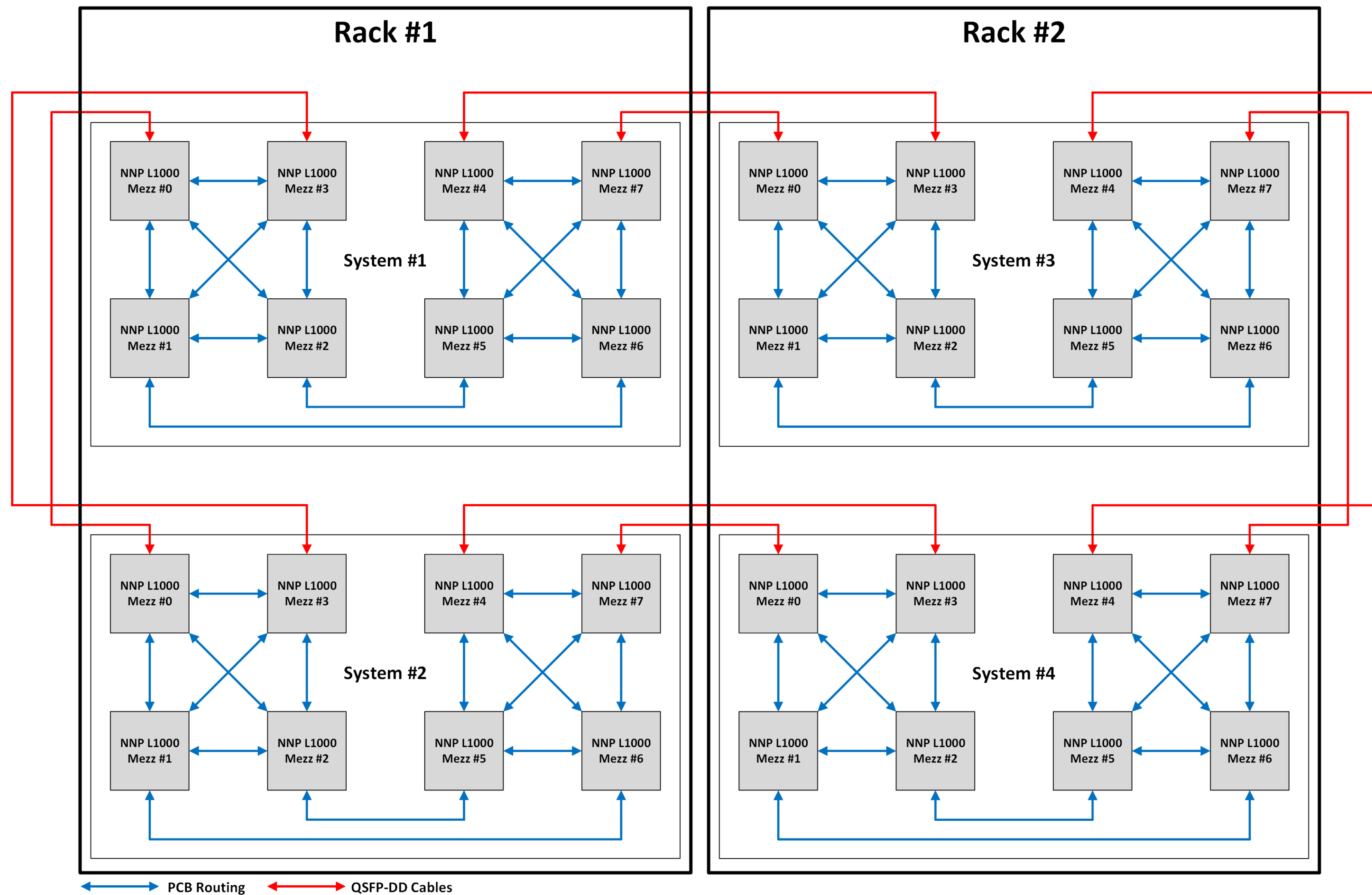
HPC

Multi-Chassis HCM Topology and External Connectivity



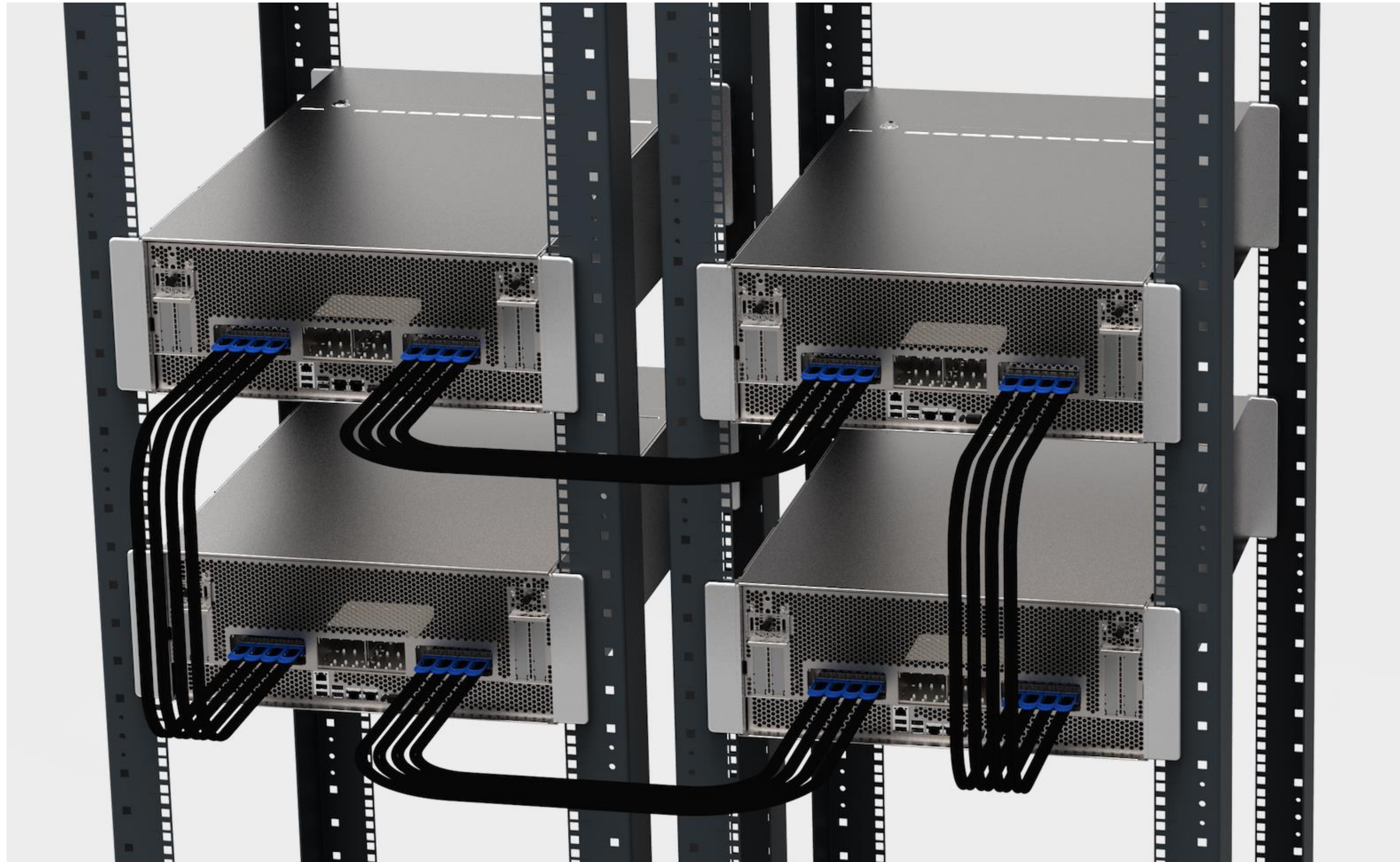
HPC

Multi-Rack Multi-Chassis HCM Topology



HPC

Multi-Rack Multi-Chassis HCM External Connectivity



HPC

Call to Action

Engage with **OCP Server WG** and provide feedback on OAM system level implementation

- Interconnect topology
- Multi-chassis scaling
- Thermal/Power solutions

Wiki under OCP Server Project:

<http://www.opencompute.org/wiki/Server/OAM>

Register for Mailing list:

<https://ocp-all.groups.io/g/OCP-OAM>



Open. Together.

Notice and Disclaimer

This document contains information on products, services and/or processes in development. All information provided here is subject to change without notice. Contact your Intel representative to obtain the latest forecast, schedule, specifications and roadmaps.

Intel technologies' features and benefits depend on system configuration and may require enabled hardware, software or service activation. Learn more at intel.com, or from the OEM or retailer. No computer system can be absolutely secure.

Tests document performance of components on a particular test, in specific systems. Differences in hardware, software, or configuration will affect actual performance. Consult other sources of information to evaluate performance as you consider your purchase. For more complete information about performance and benchmark results, visit <http://www.intel.com/performance>.

Cost reduction scenarios described are intended as examples of how a given Intel-based product, in the specified circumstances and configurations, may affect future costs and provide cost savings. Circumstances will vary. Intel does not guarantee any costs or cost reduction.

Statements in this document that refer to Intel's plans and expectations for the quarter, the year, and the future, are forward-looking statements that involve a number of risks and uncertainties. A detailed discussion of the factors that could affect Intel's results and plans is included in Intel's SEC filings, including the annual report on Form 10-K.

The products described may contain design defects or errors known as errata which may cause the product to deviate from published specifications. Current characterized errata are available on request.

Performance estimates were obtained prior to implementation of recent software patches and firmware updates intended to address exploits referred to as "Spectre" and "Meltdown." Implementation of these updates may make these results inapplicable to your device or system.

No license (express or implied, by estoppel or otherwise) to any intellectual property rights is granted by this document.

Intel does not control or audit third-party benchmark data or the web sites referenced in this document. You should visit the referenced web site and confirm whether referenced data are accurate.

Results have been estimated or simulated using internal Intel analysis or architecture simulation or modeling, and provided to you for informational purposes. Any differences in your system hardware, software or configuration may affect your actual performance.

Intel, the Intel logo, Pentium, Celeron, Atom, Core, Xeon, Movidius, Saffron and others are trademarks of Intel Corporation in the U.S. and/or other countries.

*Other names and brands may be claimed as the property of others.

© 2018 Intel Corporation.



Open. Together.



Open. Together.

OCP Global Summit | March 14–15, 2019

