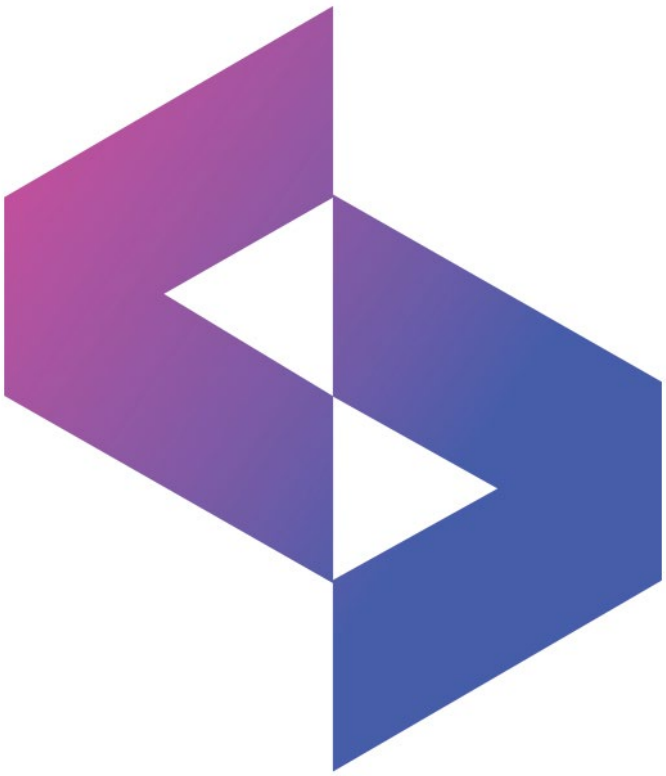

SESAME

JBOG 0.1 Mechanical requirements

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Contents

1. Table of figures

2. Revision History

Date	Name	Description
04/22/2019	JJ Chanut	Creation

3. Scope

This document provides the technical requirements for the design of the discovery chassis so that it is ORV2 an Sesame fast start compatible, and meets the thermal specifications.

4. Overview

JBOG is a 2OU chassis open rack V2 sled design compatible integrating 4 full length double slot GPUs (NVIDIA Quadro and Tesla products).
JBOD is masters by a compute node thanks to 4 mini SAS HD cables.

The PCIe boards are plugged on a vertical riser and are arranged two by two and aligned horizontally on the right side of the server.
The JBOG includes 4 mini SAS HD ports, a USB port and an RJ45 port.

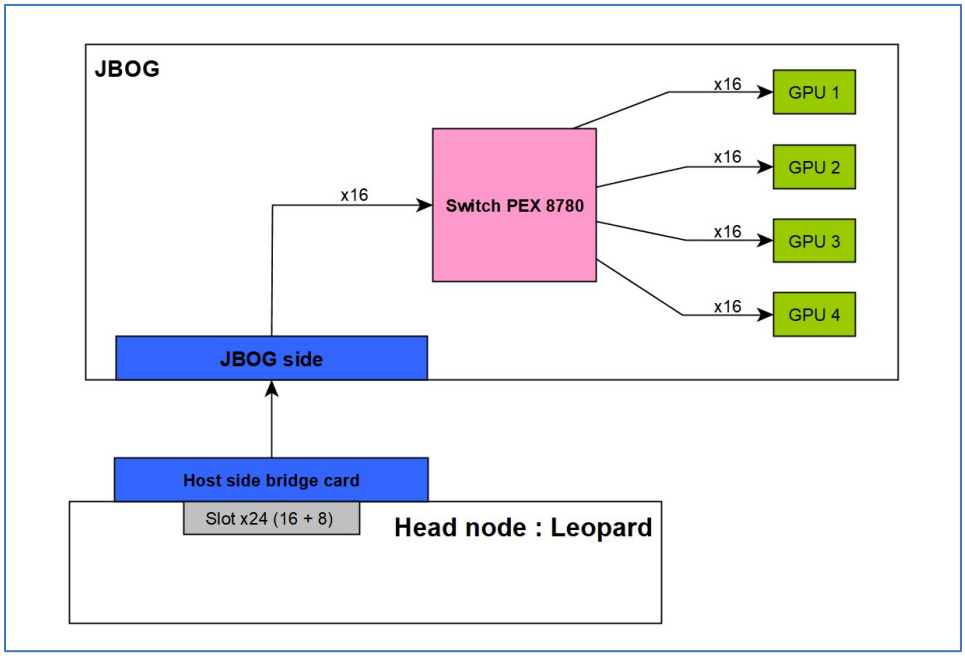

Figure 1: PCIE interface diagram

5. NVIDI Quadro and Tesla requirements

1) Thermal

NVIDIA Quadro and TESLA Thermal specification:

Parameter	Value	Units
Max Total graphics power (TGP)	260	W
GPU shutdown temperature	94	˚C
GPU slowdown temperature (50% clock slowdown)	91	˚C
GPU target temperature	84	˚C
GPU maximum operating temperature	89	˚C
Maximum fan inlet temperature	45	˚C

2) Mechanical dimension

The Tesla and Quadro PCIe board conform to NVIDIA Form Factor 3.0 and form factor 4.0 specification. Thickness is 40mm.

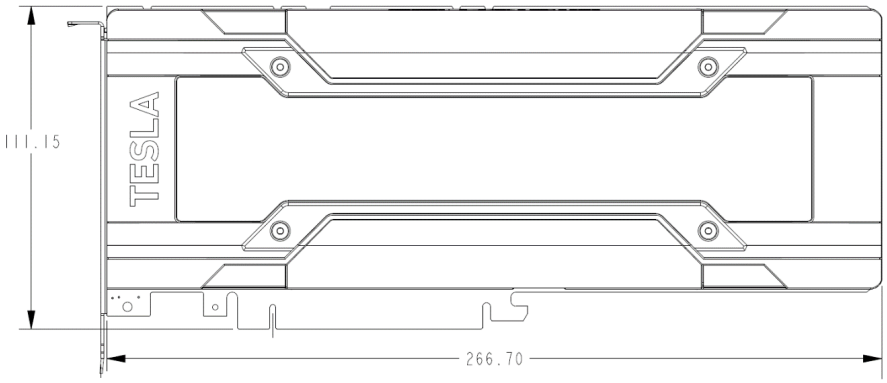

Figure 2: NVIDIA card mechanical dimension

3) Power connection

The board provides power connection on the east edge of the board, it can be with one or two connectors:

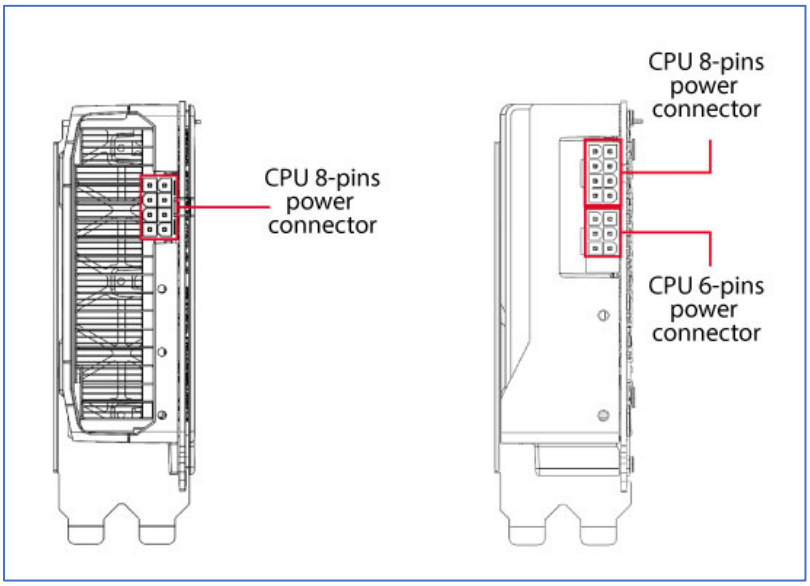

Figure 3 power connectors

4) NVLink placement

Nvidia cards allow NVLink via SLI connection:

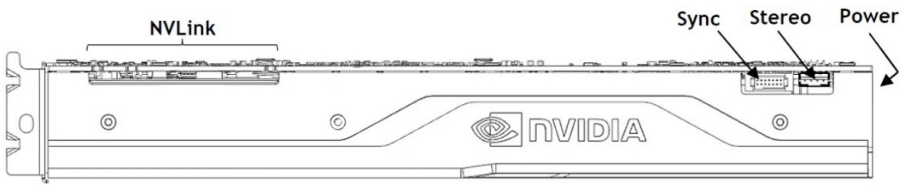

Figure 4 NVLink connector

From ATX standard specification 2.2, the spacing between 2 PCIe slots is 0.8 in, in order to allow an SLI connection between two x2 slots GPUs a gap of 1.6 inches is required.

6. Open Rack V2 mechanical requirement

This section serves as a guideline for the JBOG sled design

1) Mechanical overview

This JBOG is open rack v2 ready and have a standard sled design form factor.
It is compatible with ORV2 cubby shelf form factor that will distribute power up to three JBOG sled and Fast start chassis.

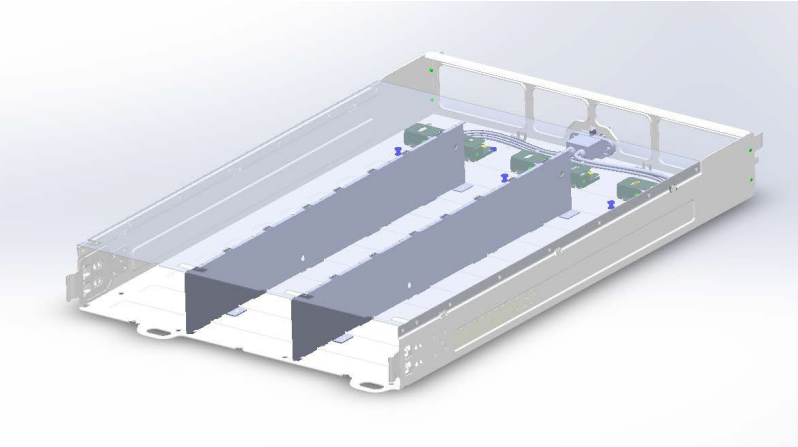

Figure 5 Cubby Shelf overview

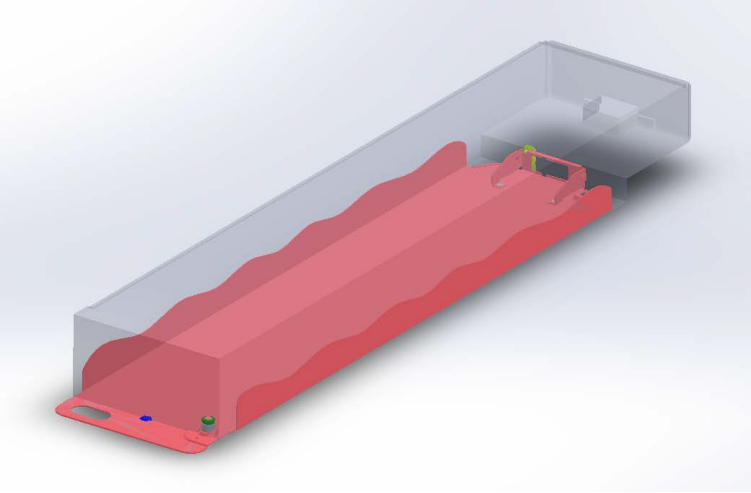

Figure 6 Sled design envelope

2) Required Sled Features and Dimensions

Sleds must not exceed the keepout volume defined provisioned for sled bays .

Sleds must feature power connectors as specified in the JBOG electrical specifications document specification document.

3) Sled Retention

In order to retain in Cubby, sleds must include T-standoffs and slots as specified in the general reference sled specification. Secondary catch holes on the roof are required for sleds weighing more than 15kg.

4) Weight Rating

Cubby will support sleds weighing up to 20kg per sled bay for a total maximum shelf weight of 60kg.

5) Cubby and Fast Start chassis power connectors

In order to provide enough electrical power to the JBOD, the Cubby and Mini-Cubby must be equipped with new Medusa cables carrying more current, as specified in the JBOG electrical specifications document.

6) Cubby reference drawing

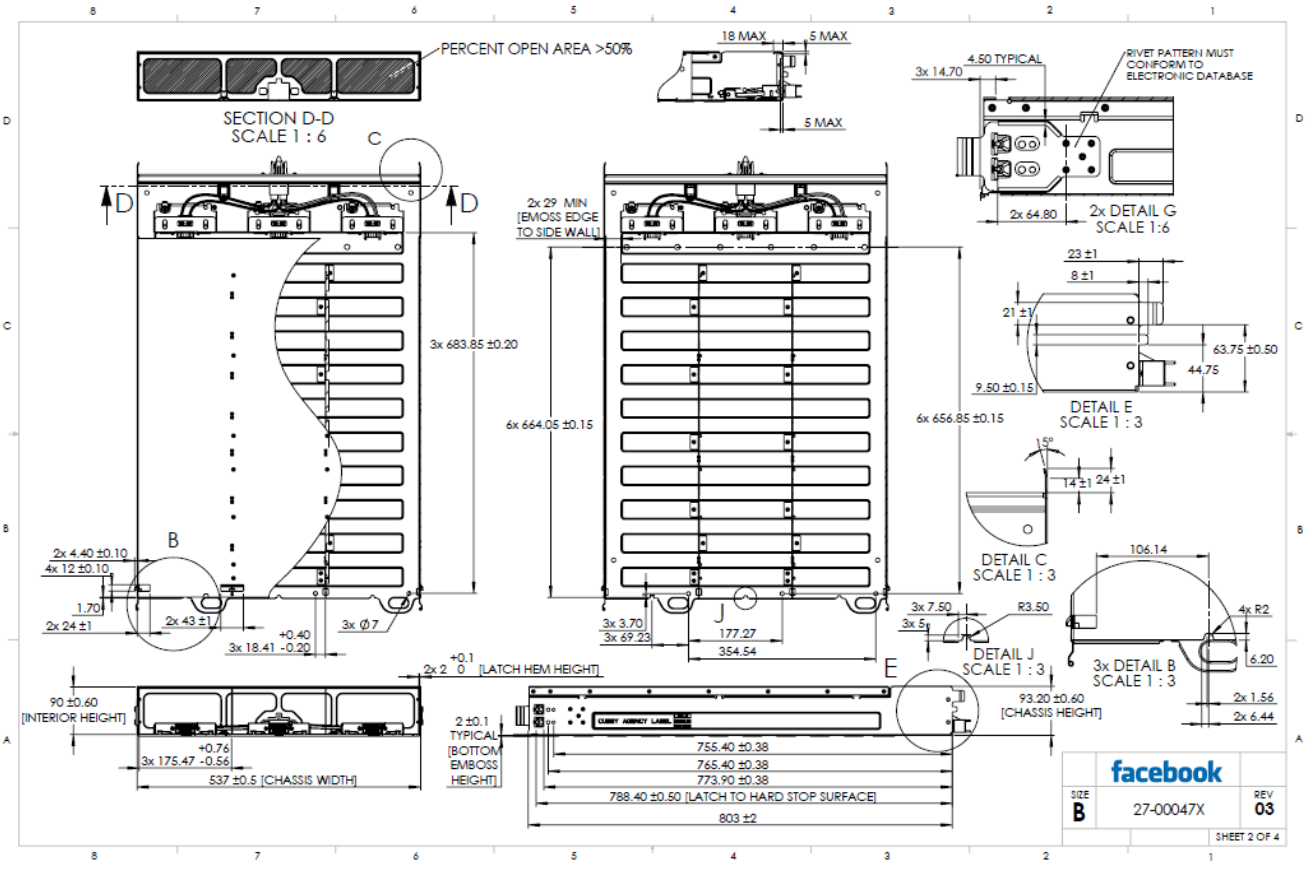

Figure 7 Cubby shelf reference drawing

7) Standard sled design reference drawing

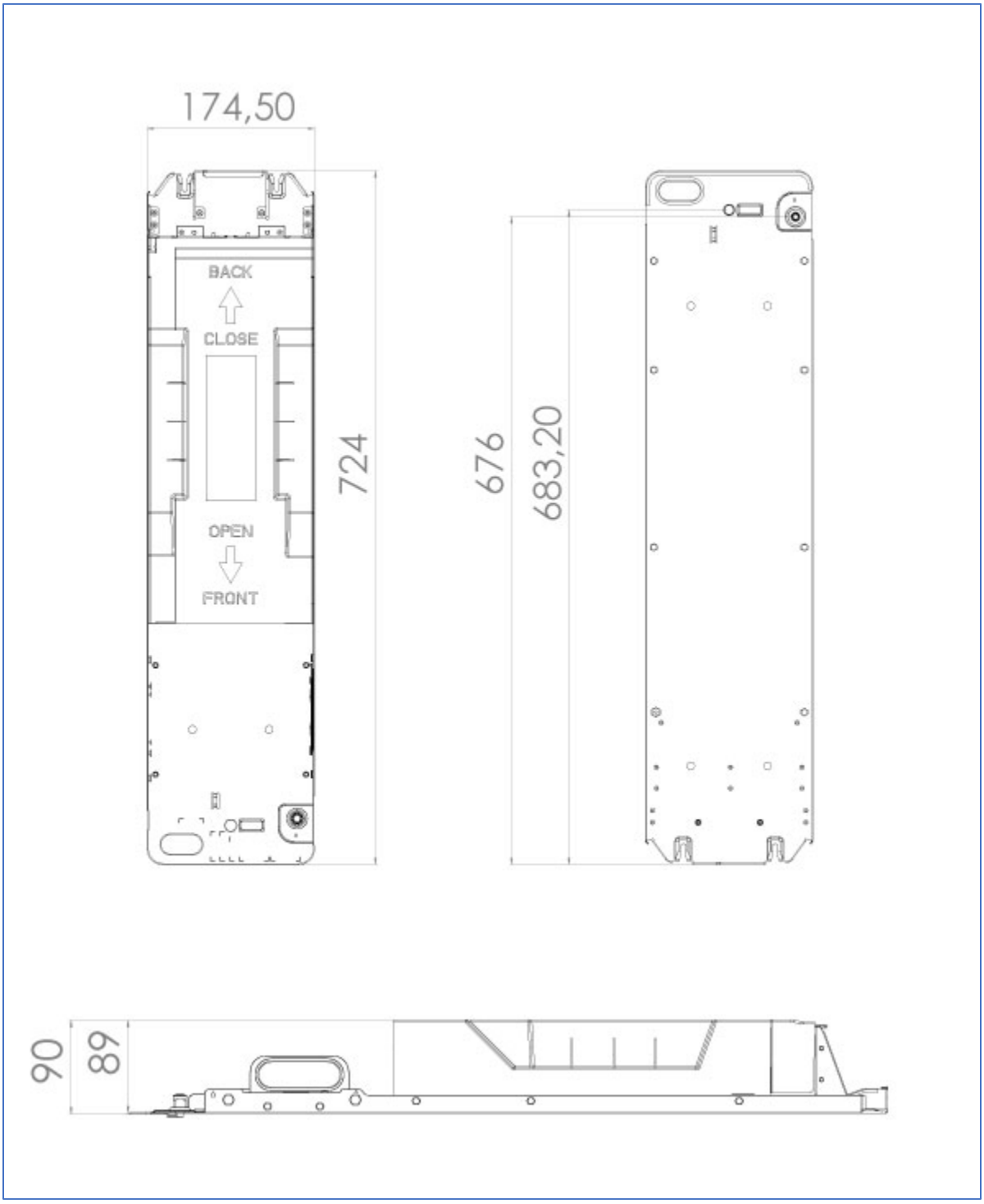

Figure 8 : Standard ORV2 Sled dimensions

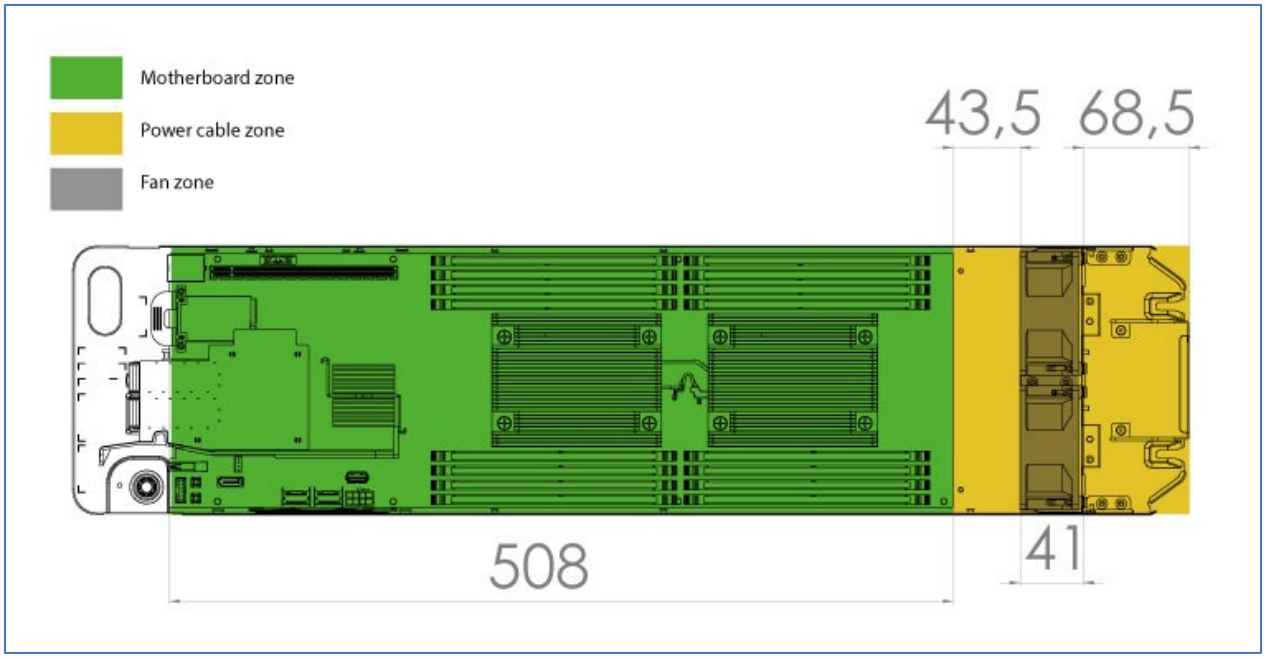

Figure 9 : Standard Sled ORV2 components zone

7. JBOG mechanical architecture

1) Architecture overview

JBOG integrates **4 GPU in 2 lines**, with an air guide flushing the sides of the GPUs.
2 fans 80x80x38 mm are located at the back of the casing.

The air guide allows to force the passage of air through the GPU radiators, an opening is made on the side to allow a fresh air passage in the middle of the chassis between the two GPUs.

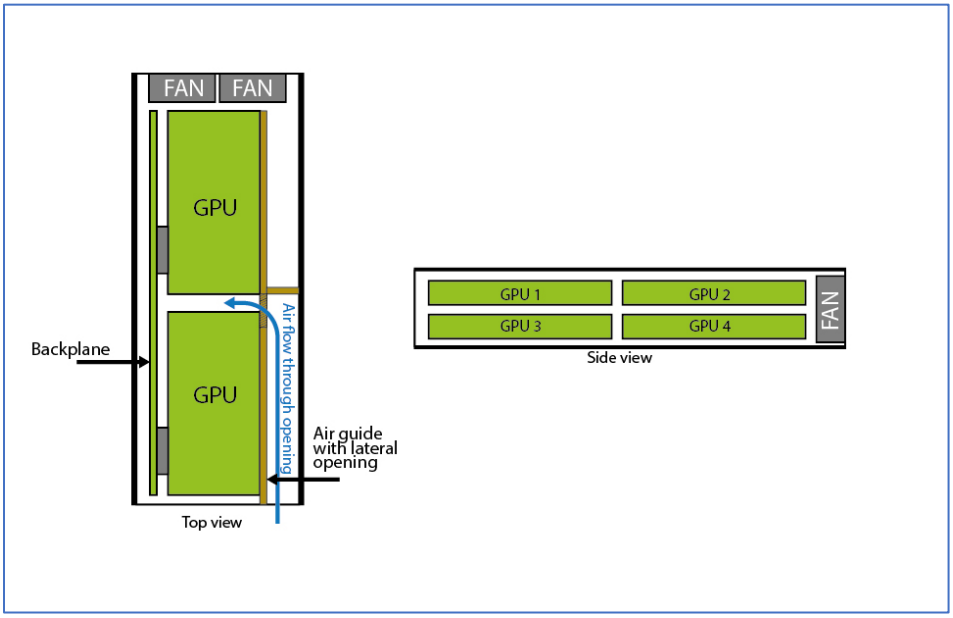

Figure 10 : Mechanical architecture

2) Mechanical dimensions

In accordance with the standard ORV2 dimensions, the sleds will measure L 724 x l 174.5 xH 90 mm

The backplane where the GPUs are connected must not exceed L 508 x l 80 mm

8. Thermal requirements

The mechanical design of the JBOG must comply with the requirements specified in the thermal specification document to allow efficient cooling.

9. Electrical requirement

1) Power distribution

Electrical power is supplied from the rack via the Cubby, which must be modified to provide sufficient power to the JBOG.

The medusa cables of the Cubby (ORV2) and Mini-Cubby (Sesame Fast Start) must be replaced by new ones capable of carrying enough power.

Connector part number table:

Part	Manufacturer	Reference
Sled Connector	TBD	TBD
Cubby Connector	TBD	TBD

2) Electrical grounding

Rack provides an electrically conductive path from the IT equipment in the rack to PSU ground.
This path shall not pass through any surfaces that are not protected from rust and corrosion such as un-plated surfaces.
All rack ground paths shall pass rust grade 6 per ASTM D610-01 after 48 hours of salt spray per ASTMB117-07.
Power board and other electrical component must be connected to the chassis ground.

10. Standards

1) Safety

TBD

2) EMC

TBD

3) Material requirement

TBD