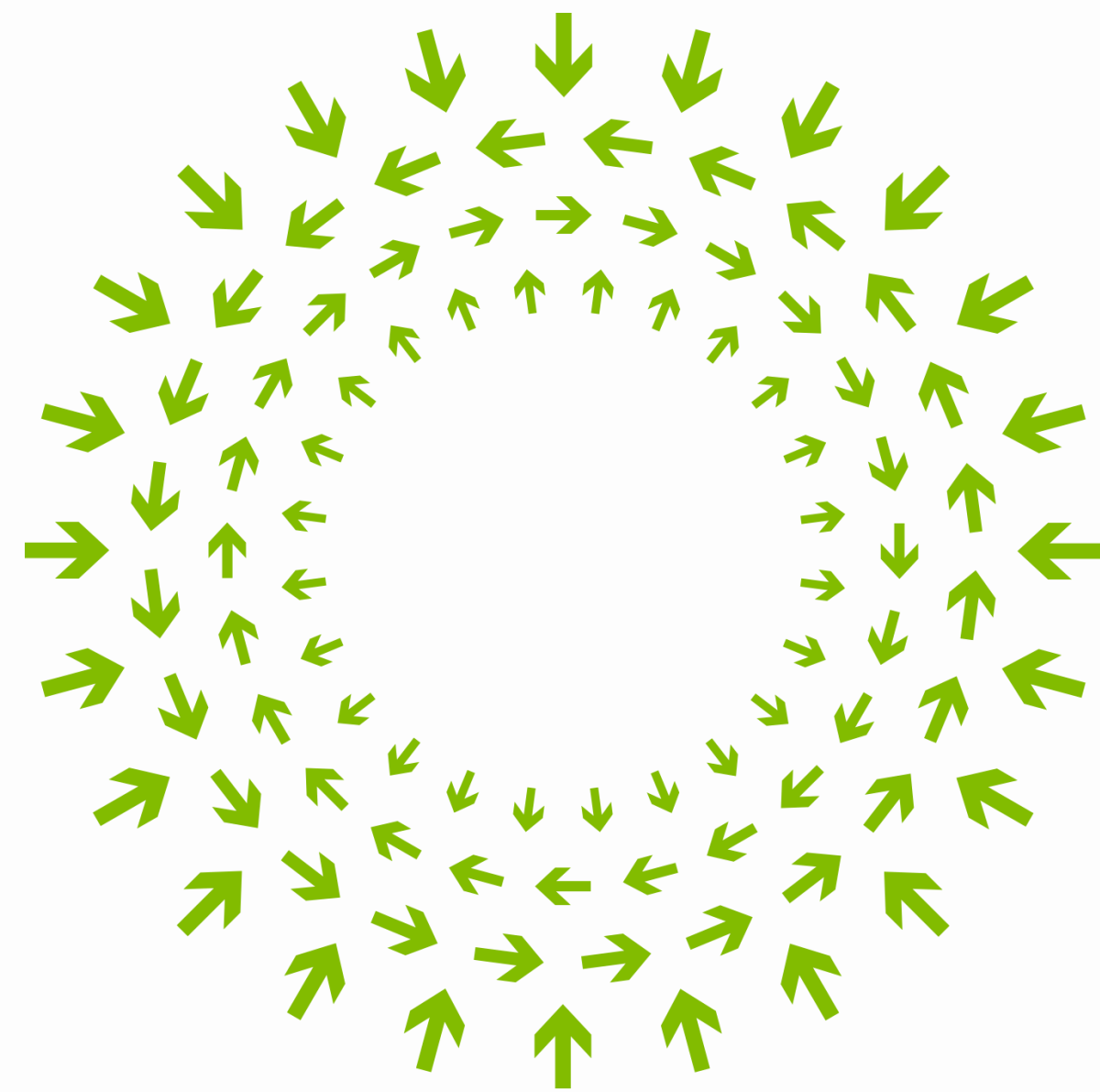


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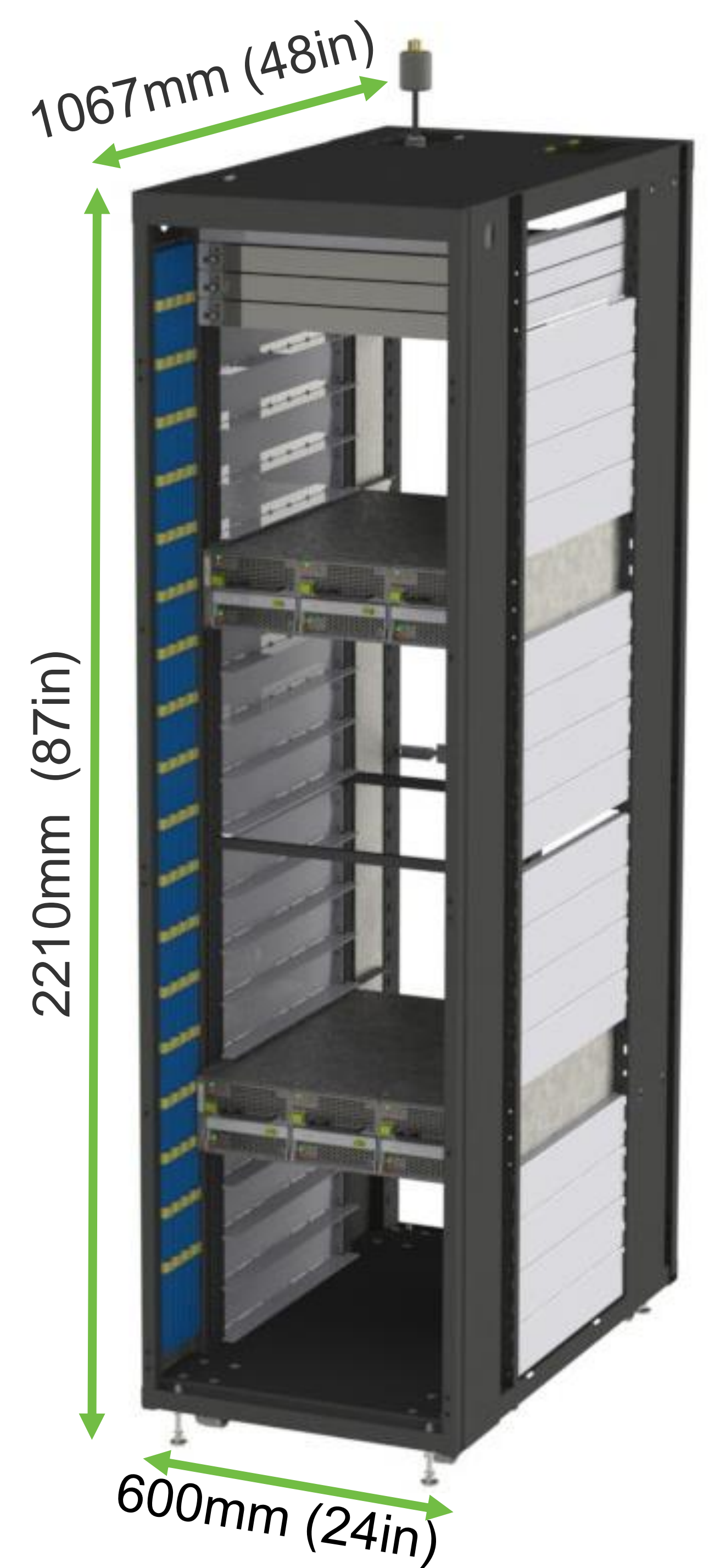
Intro to FB Open Rack V2

Steve Mills
Technical Lead - Facebook



Open Rack V2 Overview

- Complies with Open Rack Standard V1.1
- Backwards compatible with all Open Rack V1 IT Gear
- Supports dynamic loading of 1400kg of IT Gear per ASTM D4169-09
- Footprint similar to 19" EIA rack



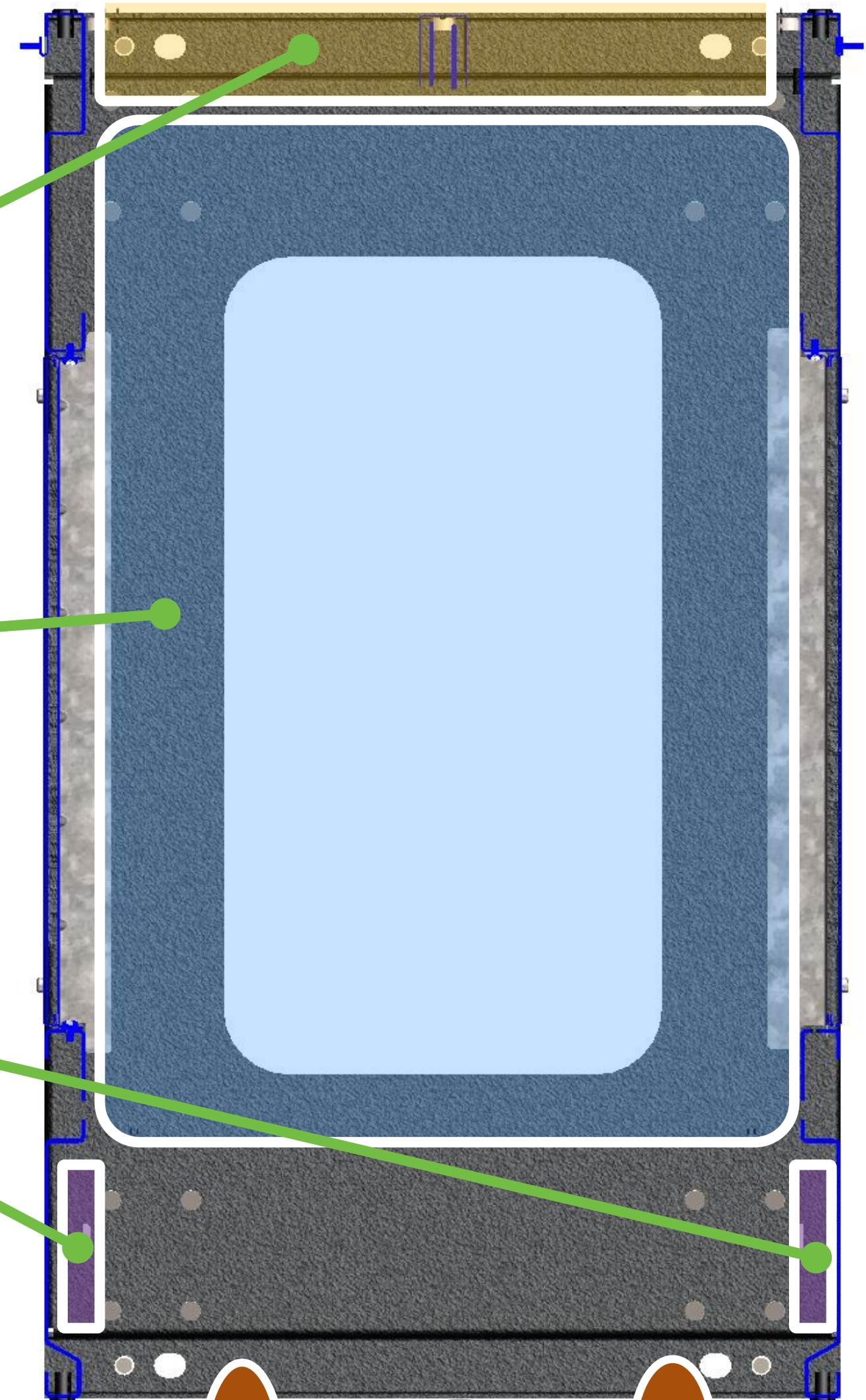
Open Rack Layout

Power Zone

Open Rack IT Zone (538mmx800mm)
Greater IT volume per floor tile vs. EIA

2x DATA Cable Zones (26mmx160mm)
Accessible from cold aisle
Segregated from AC power

Service Technician
can perform high failure
rate repairs from cold aisle



Data Center Air Flow

Top View

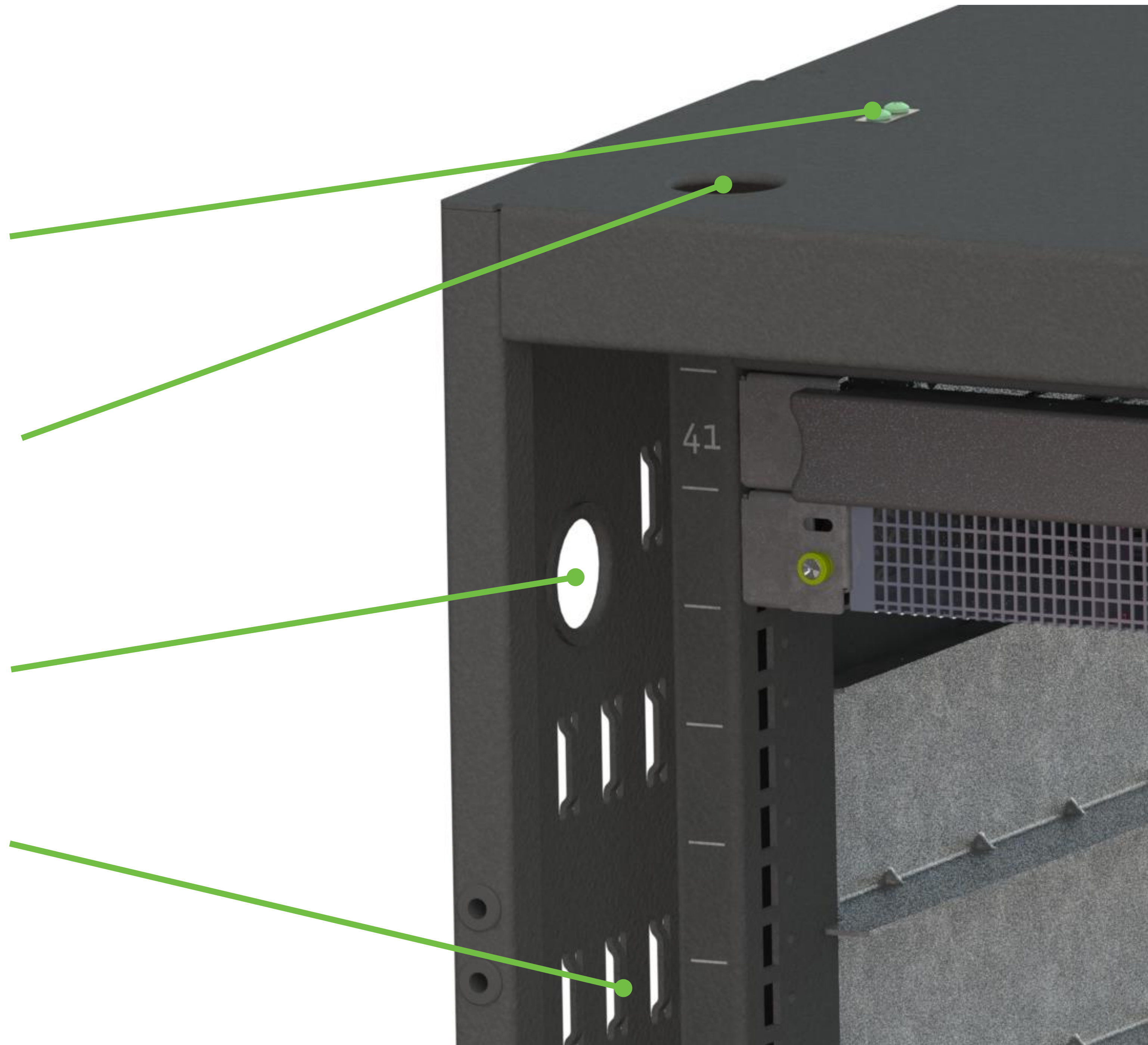
V2 Cabling

Ground points located near front of rack for easy access

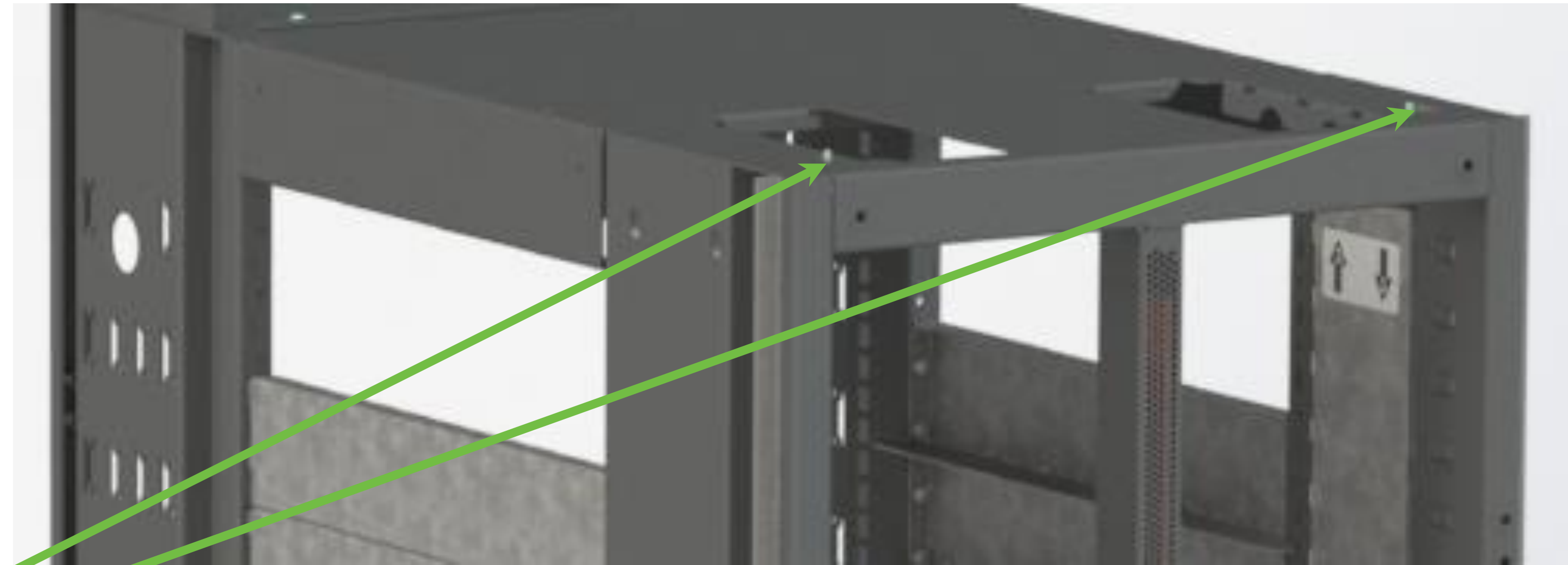
Openings on top provide cable egress to data center

Openings on side provide cable egress to neighboring rack

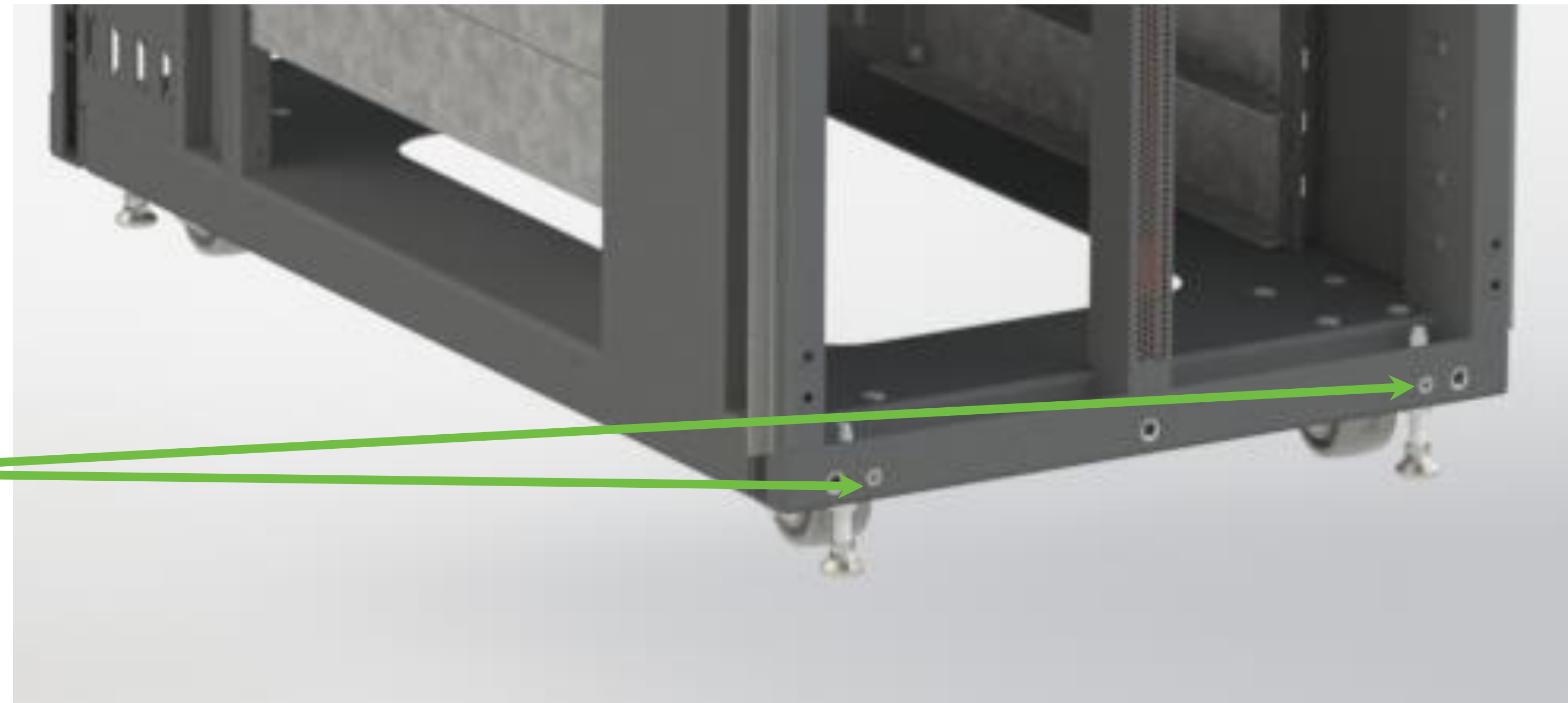
Lances in rack provide cable management points



V2 Cabling



Ground points added for
both PDU locations.



Ground points located at
rear for raised floor
applications

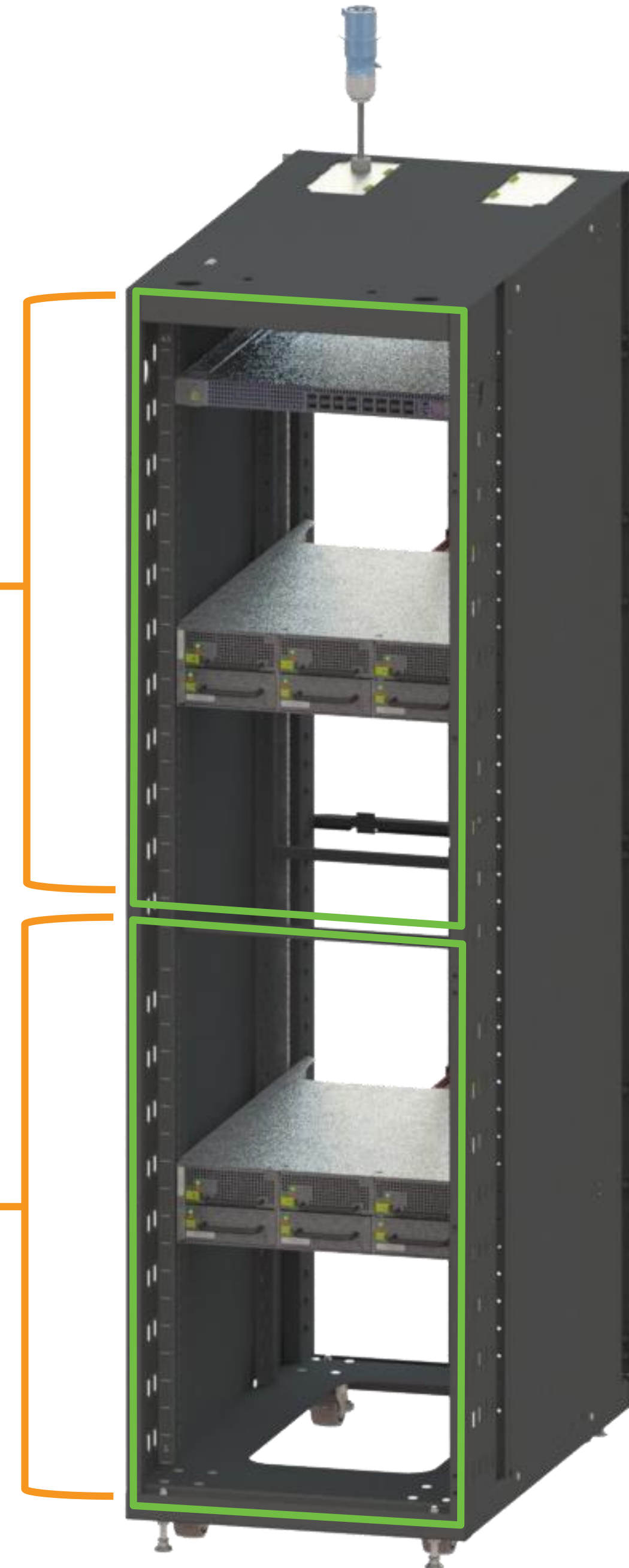
V2 Power



V2 Power Layout

1 Power Zone = 19OU
+30U Power Shelf

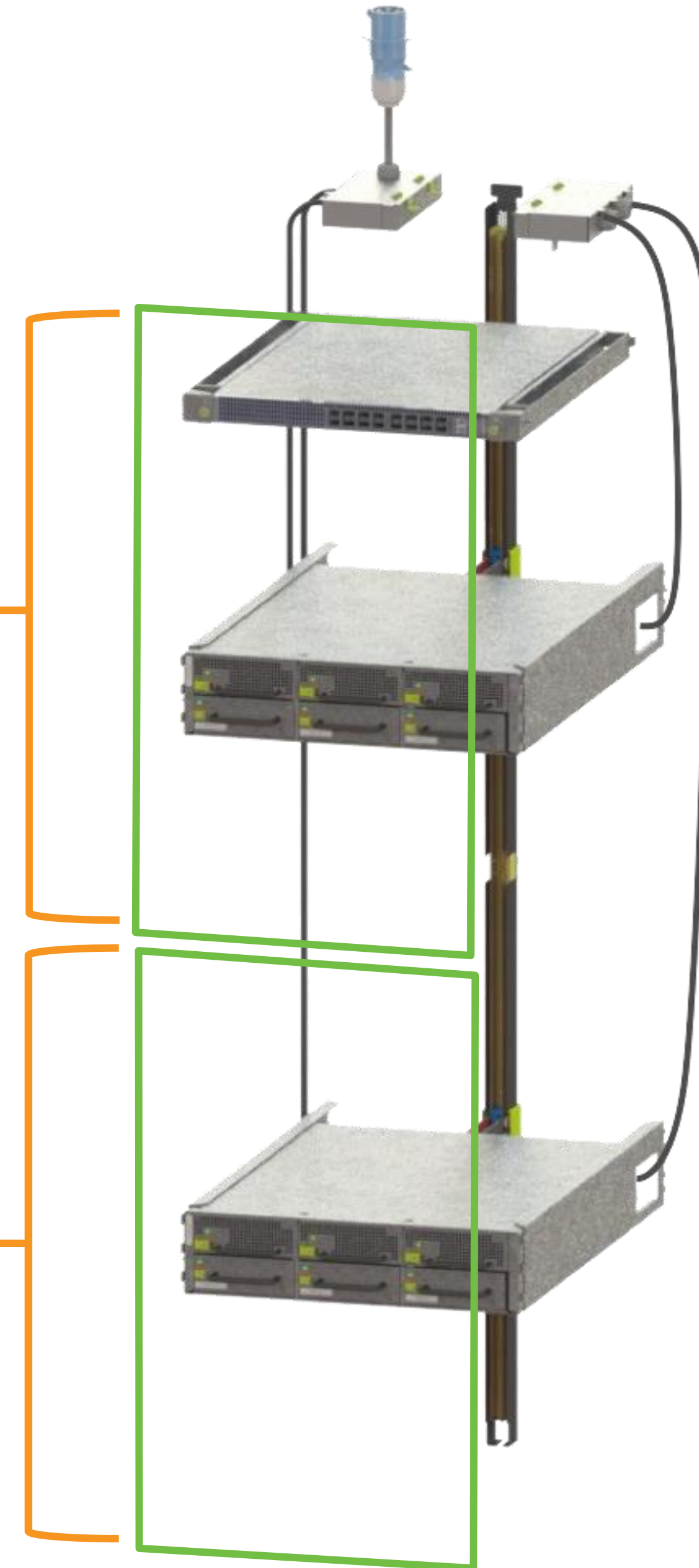
1 Power Zone = 16OU
+30U Power Shelf



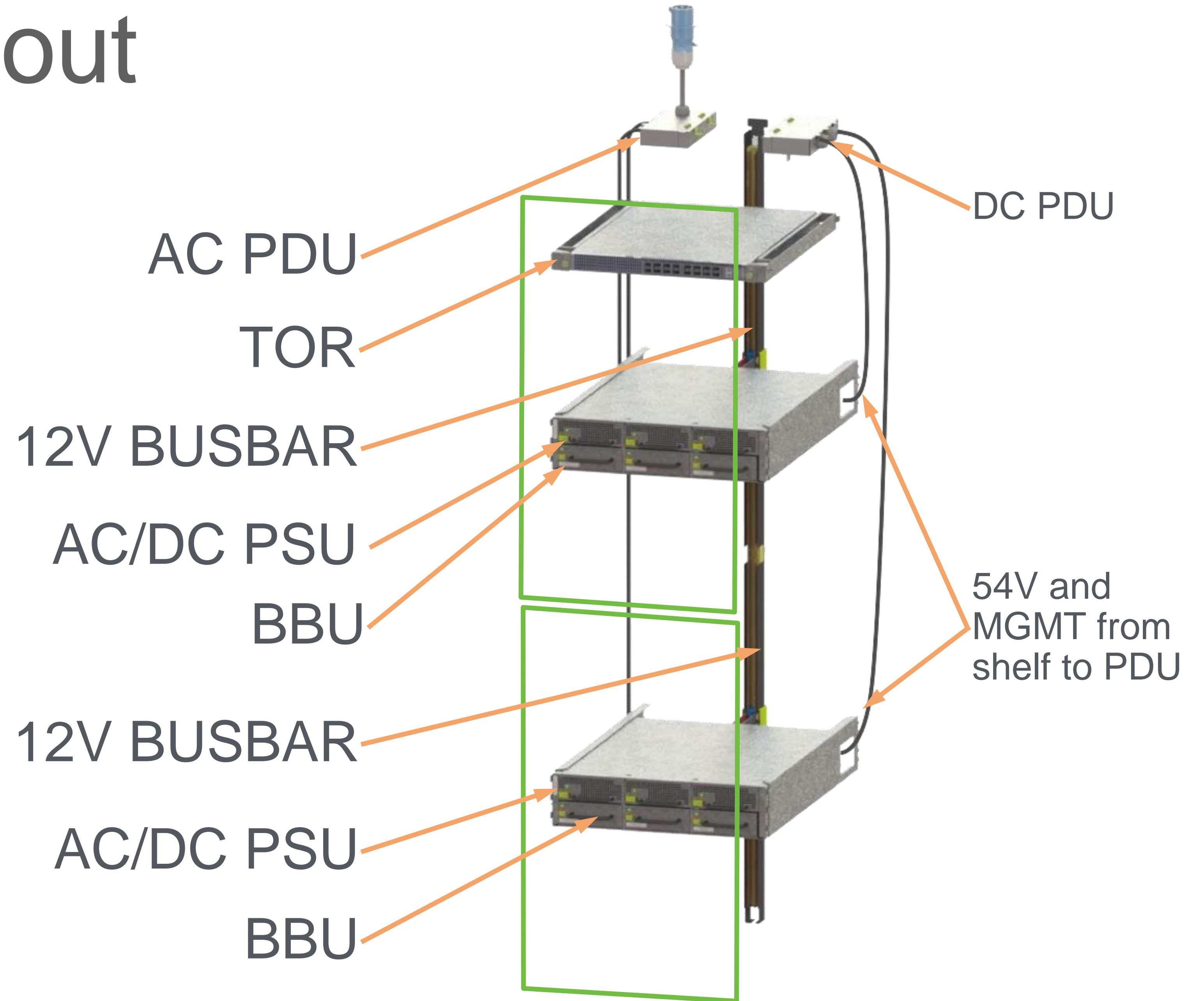
V2 Power Layout

1 Power Zone = 19OU
+30U Power Shelf

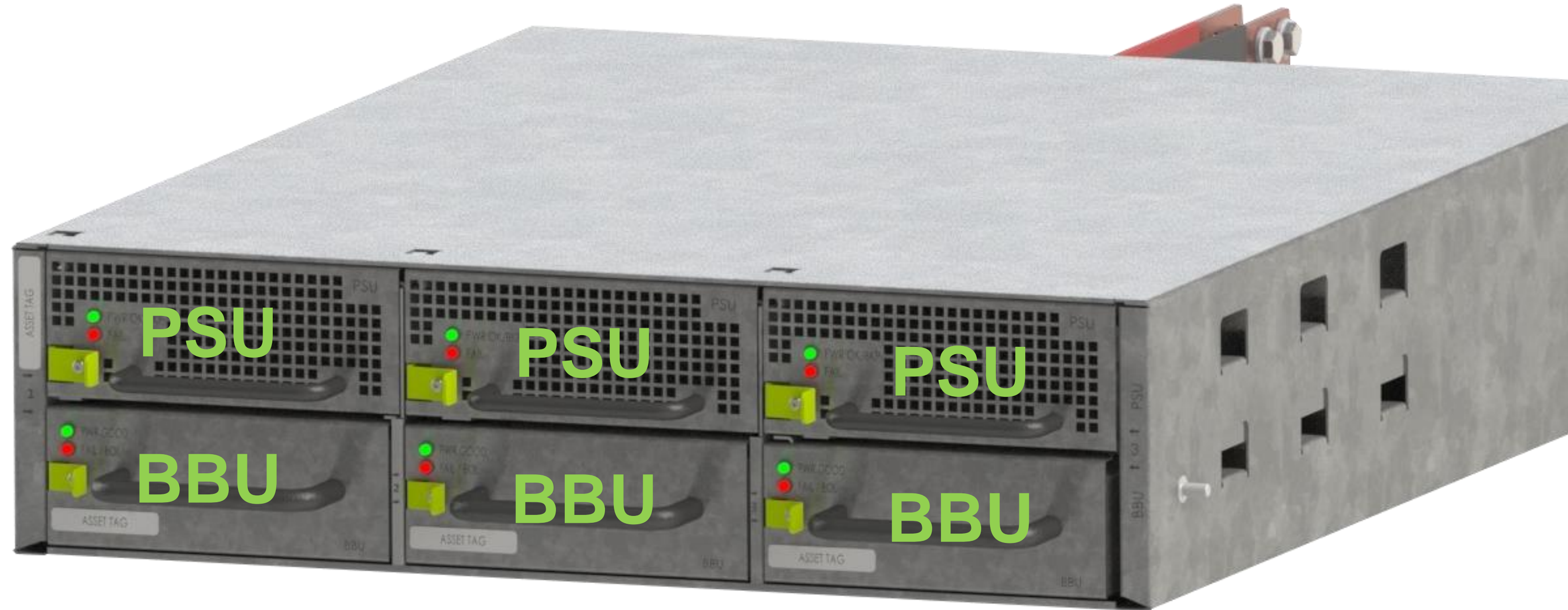
1 Power Zone = 16OU
+30U Power Shelf



V2 Power Layout



V2 277V Power Shelf



Output: **6.6Kw @12.6VDC**

Input: **Single, 3 Phase 180V-305V auto ranging**

2+1 redundant, hot swap PSUs

Integrated, hot swap BBUs provide 90 seconds of uptime

V2 277V Power Shelf



12VDC Output busbars

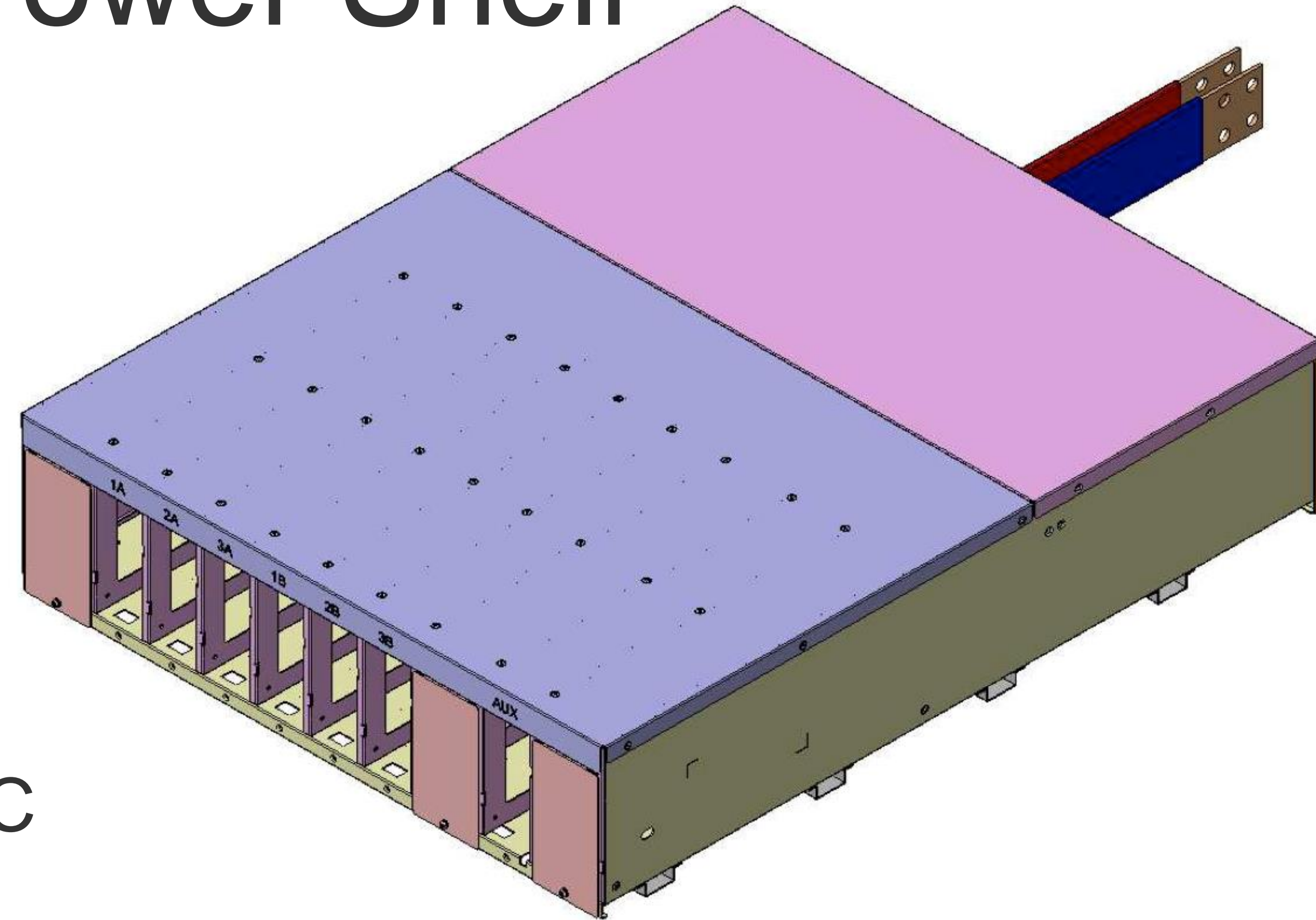
54VDC Output to DC PDU

RS485 MGMT port

12V Power Good LED

3 phase AC Input

V2 Stingray 208V Power Shelf



Input: 208V, 3 phase, Dual A+B AC

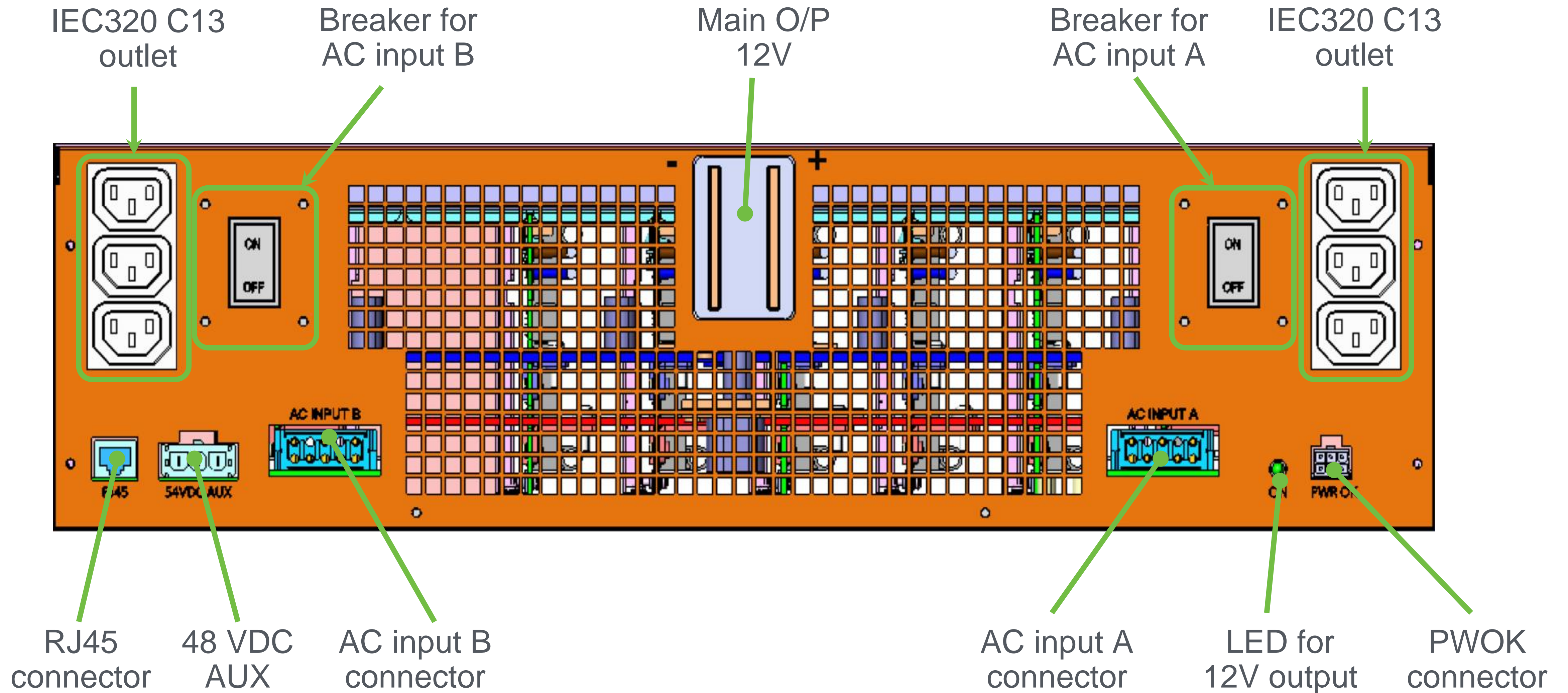
Outputs: 6.3kW @ 12.5VDC

6xC13 single phase AC

48VDC AUX

6x2.1kW, 3+3 redundant, hot-swap PSUs

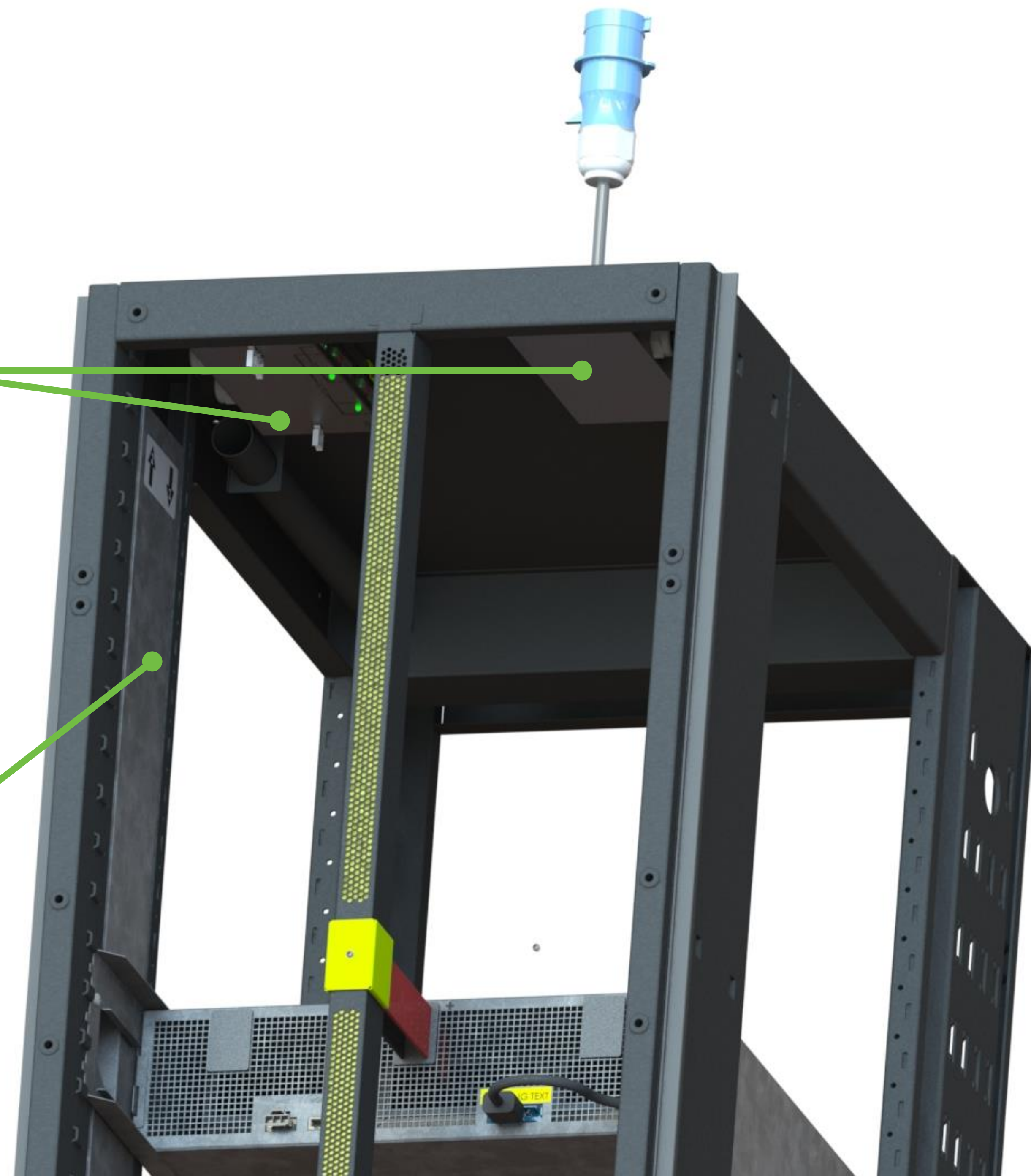
V2 Stingray 208V Power Shelf



V2 PDU Locations

2 PDU locations under canopy
Both locations support

Wires from PDUs to Power
Shelves route inside frame vertical



V2 PDUs Available

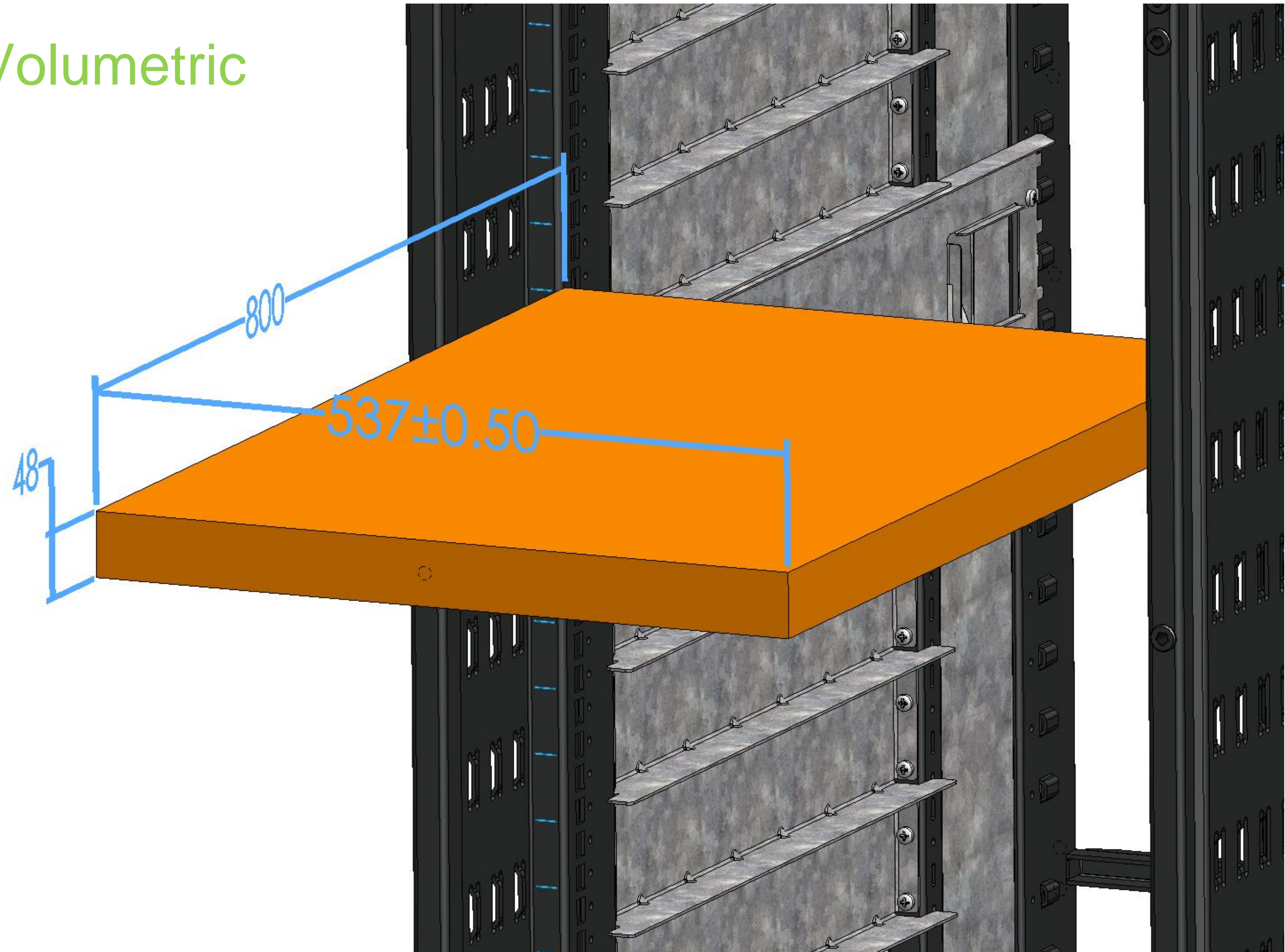
| Type | NA, 277/480 | EU, 240/415 | NA, 120/208 | NA, 277 CS | NA, 277 30A | DC PDU |
|------------------|-------------------|-------------------|----------------|--------------|-------------------|------------|
| Input Volt. | 277V/480V 3P5W | 240V/415V 3P5W | 208V 3P4W | 277V 1P3W | 277V/480V 3P5W | 54VDC |
| Surge Protection | Yes | Yes | No | No | Yes | No |
| Input Plug Type | L22-20P | IEC 309 | L21-30P | L7-20P | L22-30P | N/A |
| In/Out Style | 2 in / 2 out | 1 in/ 2 out | 2 in / 2 out | 1in / 1out | 1 in/2 out | 0 in/2 out |
| Safety Mark | UL | CE | UL | UL | UL | UL&CE |
| Usage | N America | Europe | Stingray, Colo | Cold Storage | J-box NA | All racks |

V2 IT Form Factors



Open Rack V2 IT Form-Factors

1 OpenU Generic Full Volumetric



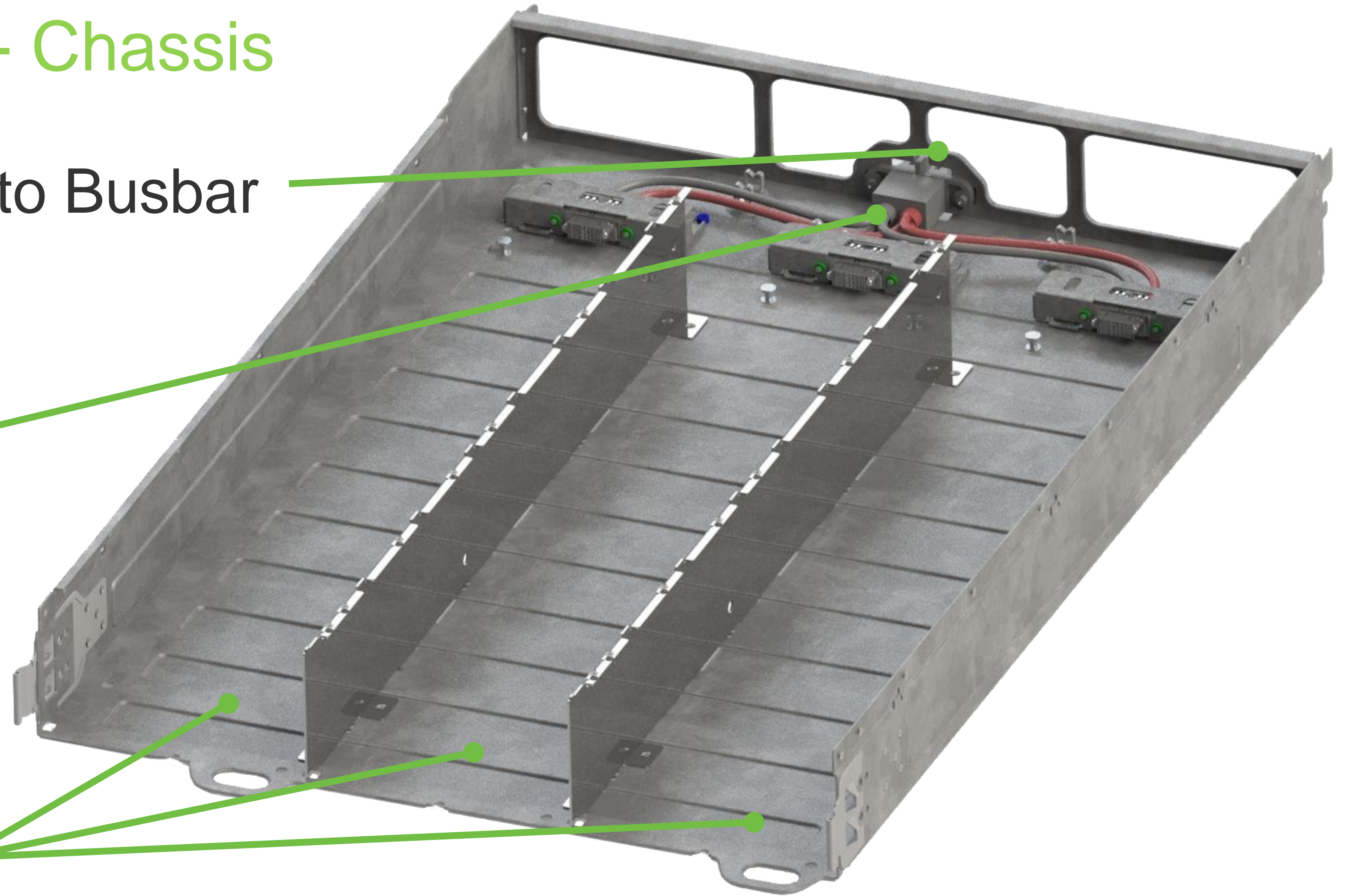
Open Rack V2 IT Form-Factors

Cubby 2 OpenU Sub- Chassis

Connector to 12V DC to Busbar

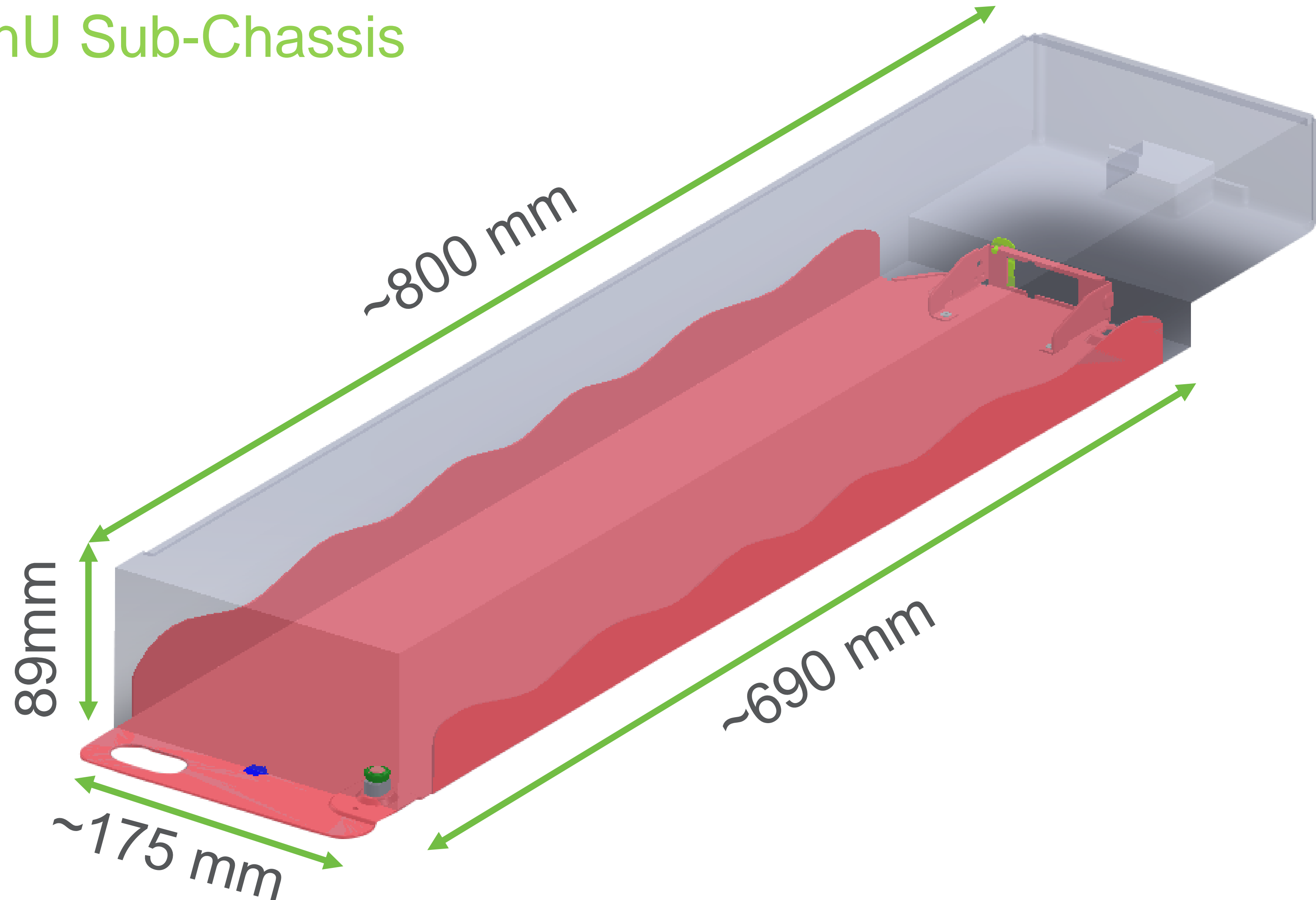
Wire Harness splits
power to 3 IT slots

Each IT Slot provides
89 x 176 x 690mm
20kg max per slot



Open Rack V2 IT Form-Factors

Cubby 2 OpenU Sub-Chassis



Open Rack Project Future



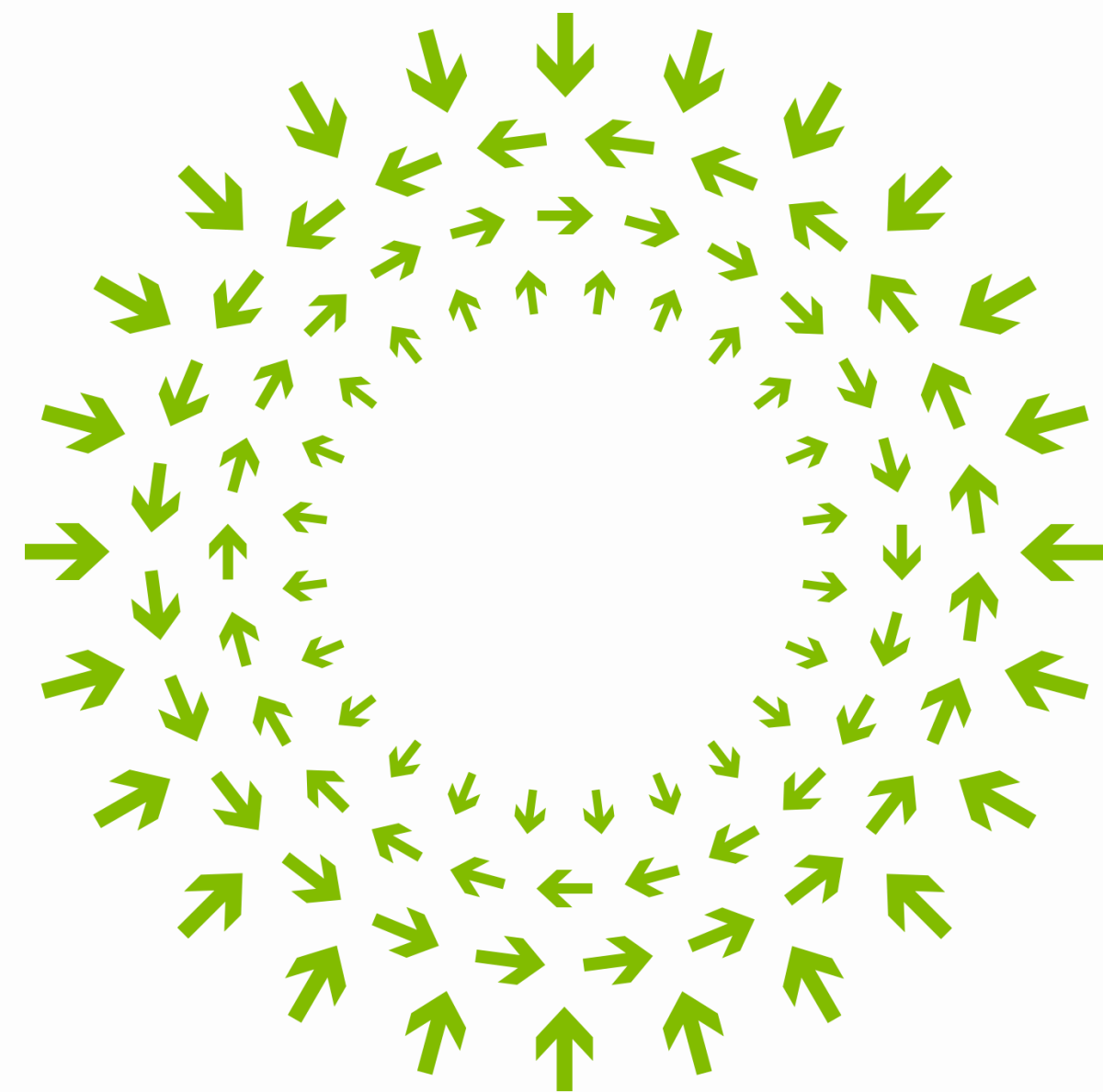
Open Rack Project - What's Next

48V Power System

Open Rack Project - What's Next

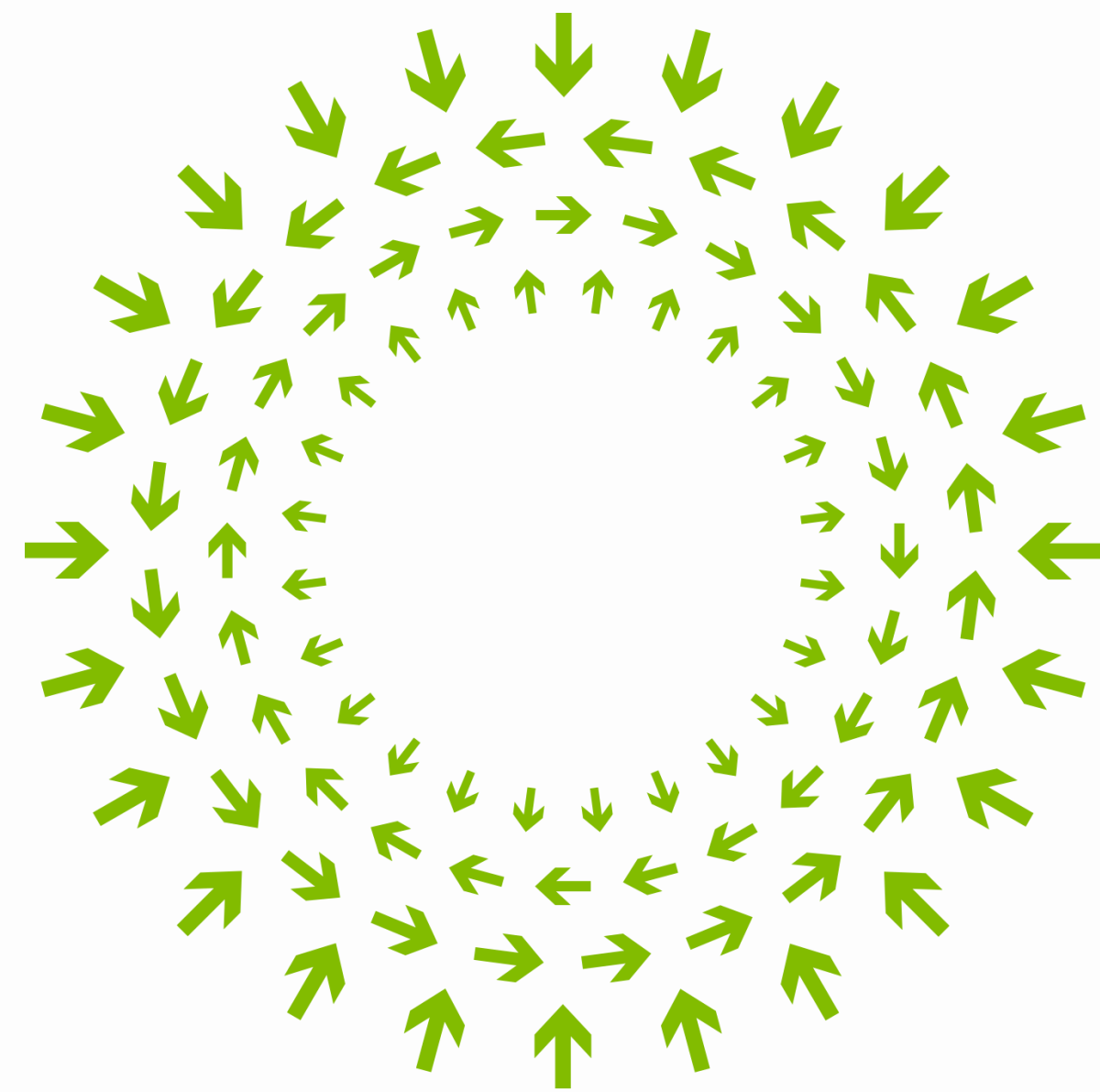
48V Power System

Rack-Level EMI Solution



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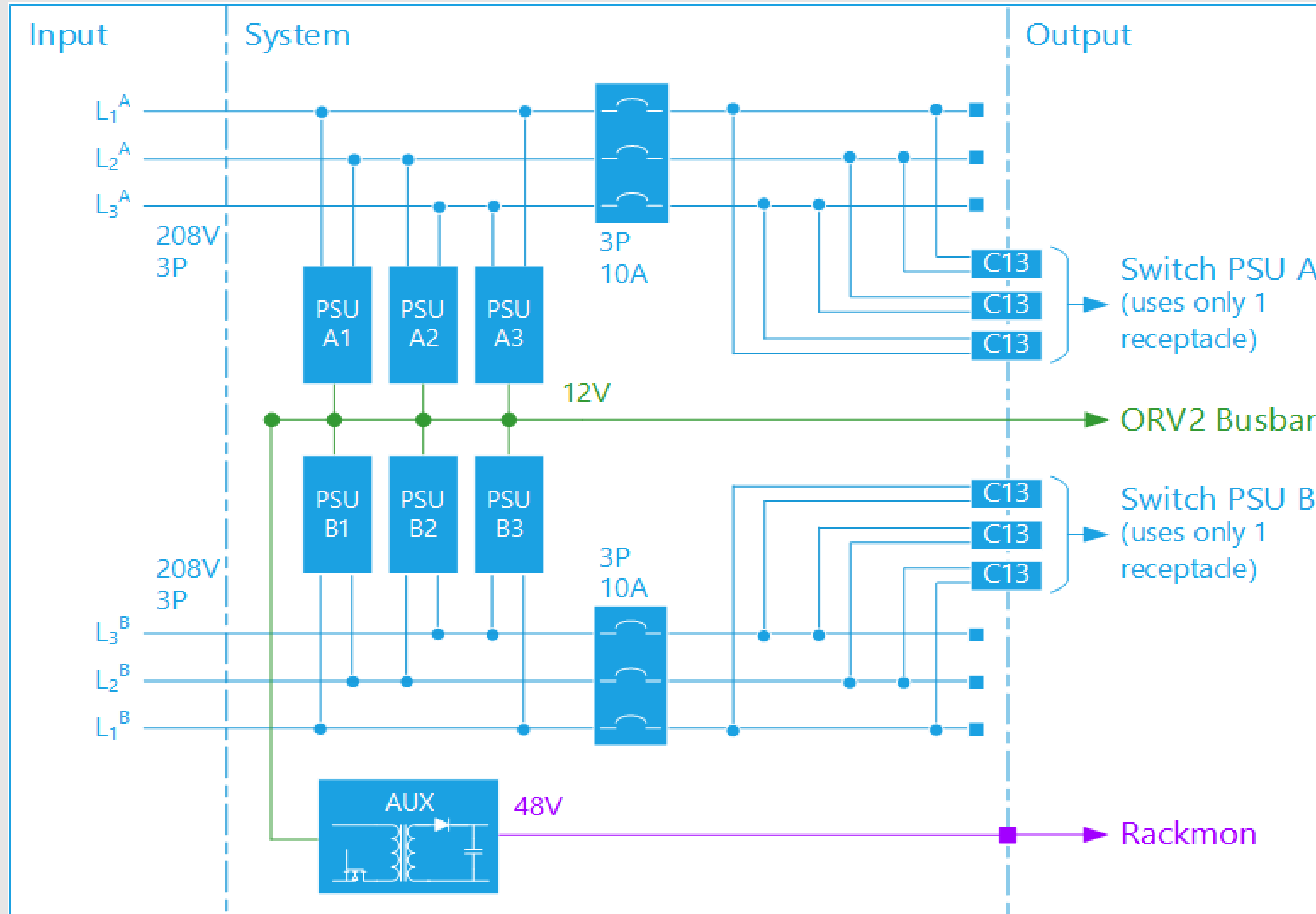
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V2 Stingray Schematic



Open Rack V2 All Cubby

