OPEN RACK, POWER DESIGN

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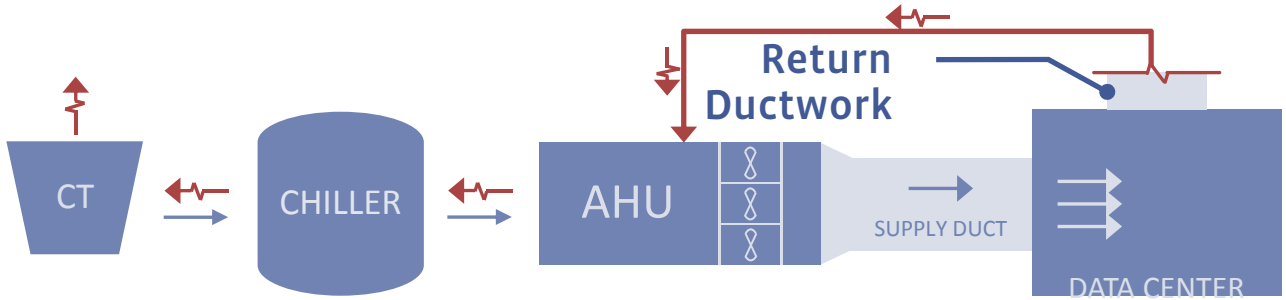
HW Tech Lead
Open Rack & Power

facebook

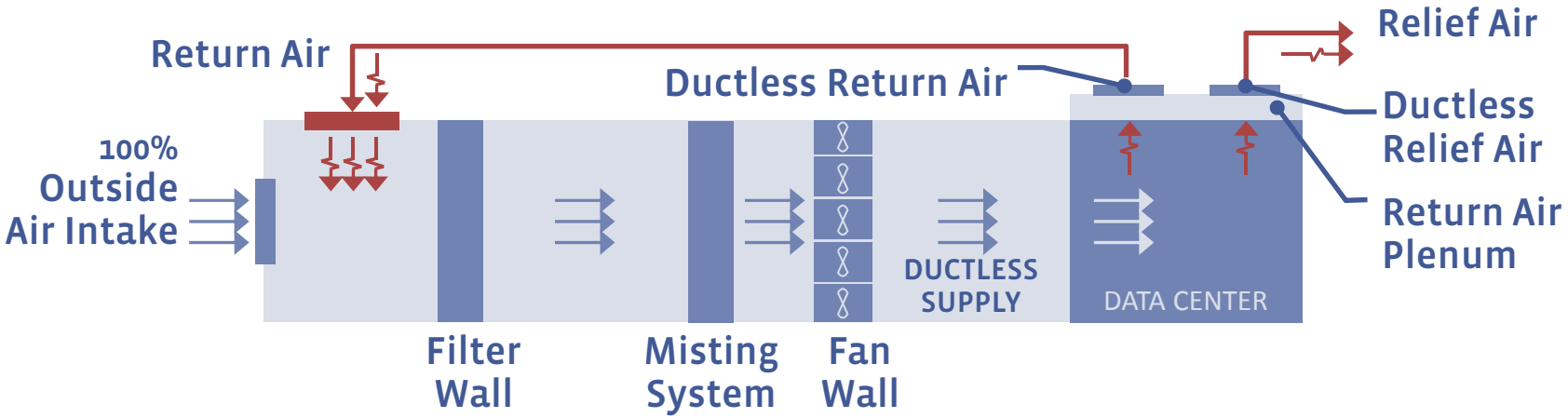
THERMAL

Facebook Data Center

Traditional Data Center cooling scheme



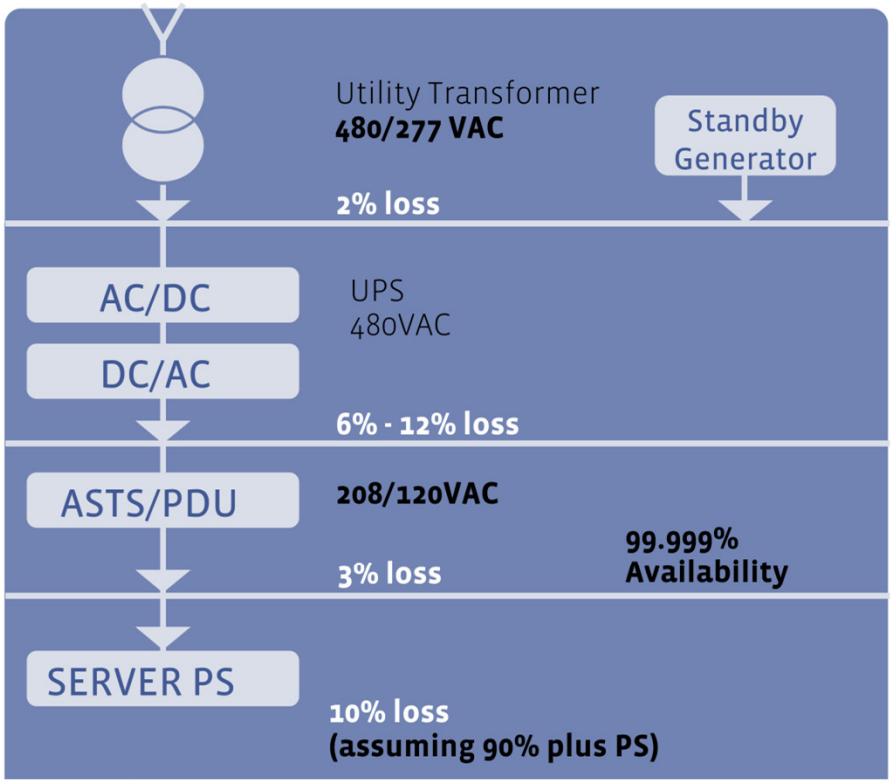
Facebook Data Center cooling scheme



ELECTRICAL

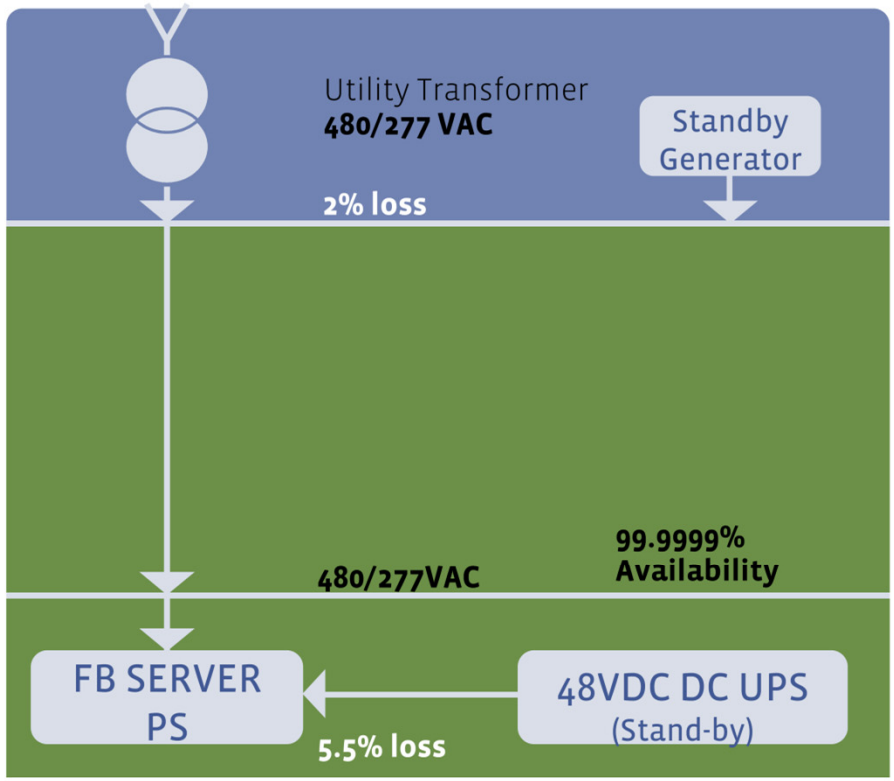
Facebook Data Center

Traditional Data Center power scheme (2009)



Total loss up to server:
21% to 27%

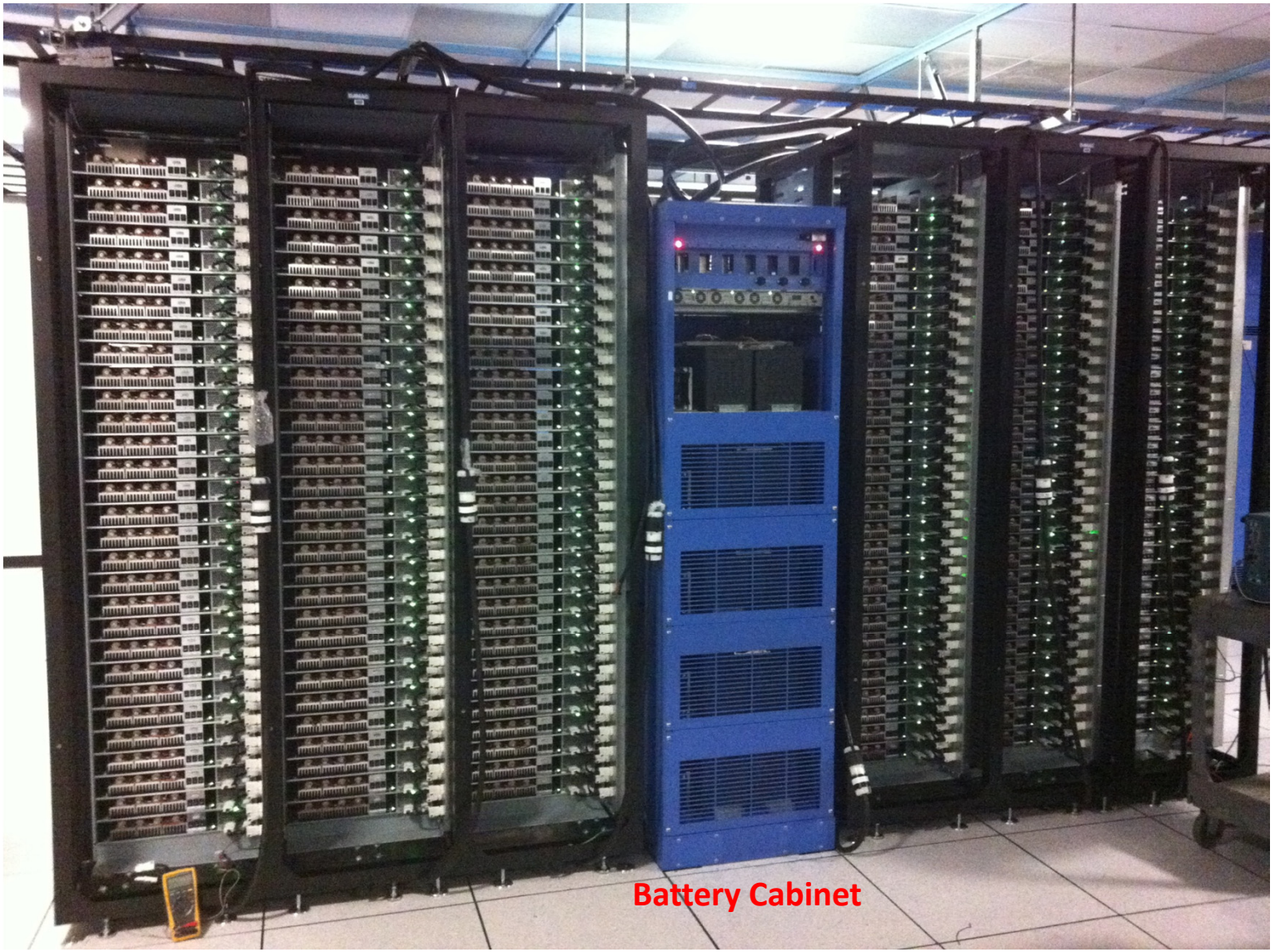
Facebook Data Center power scheme (2009)



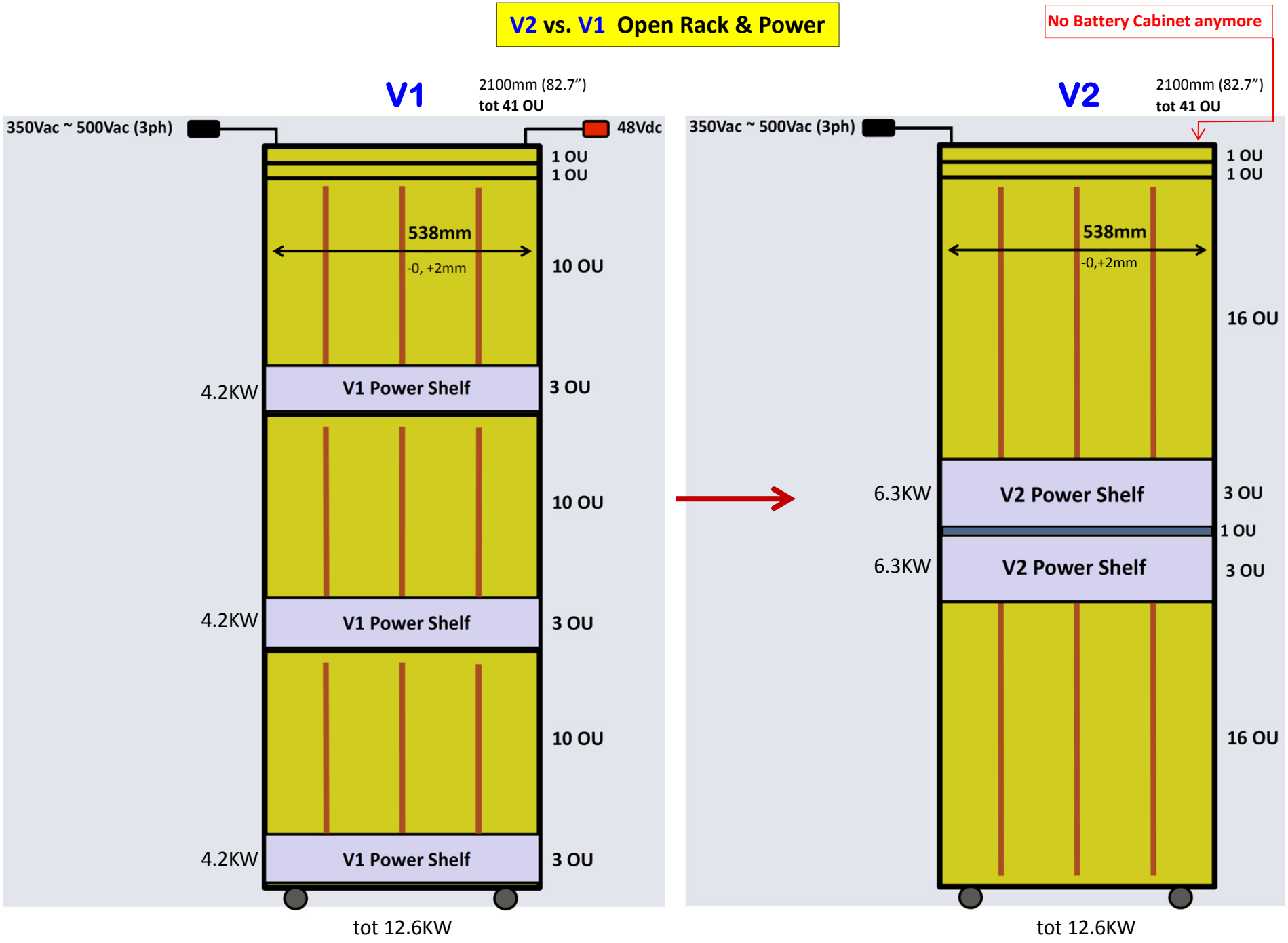
Total loss up to server:
7.5%

and substantial CapEx savings

FB first generation design
Whole System (Rack Triplets, 2010)

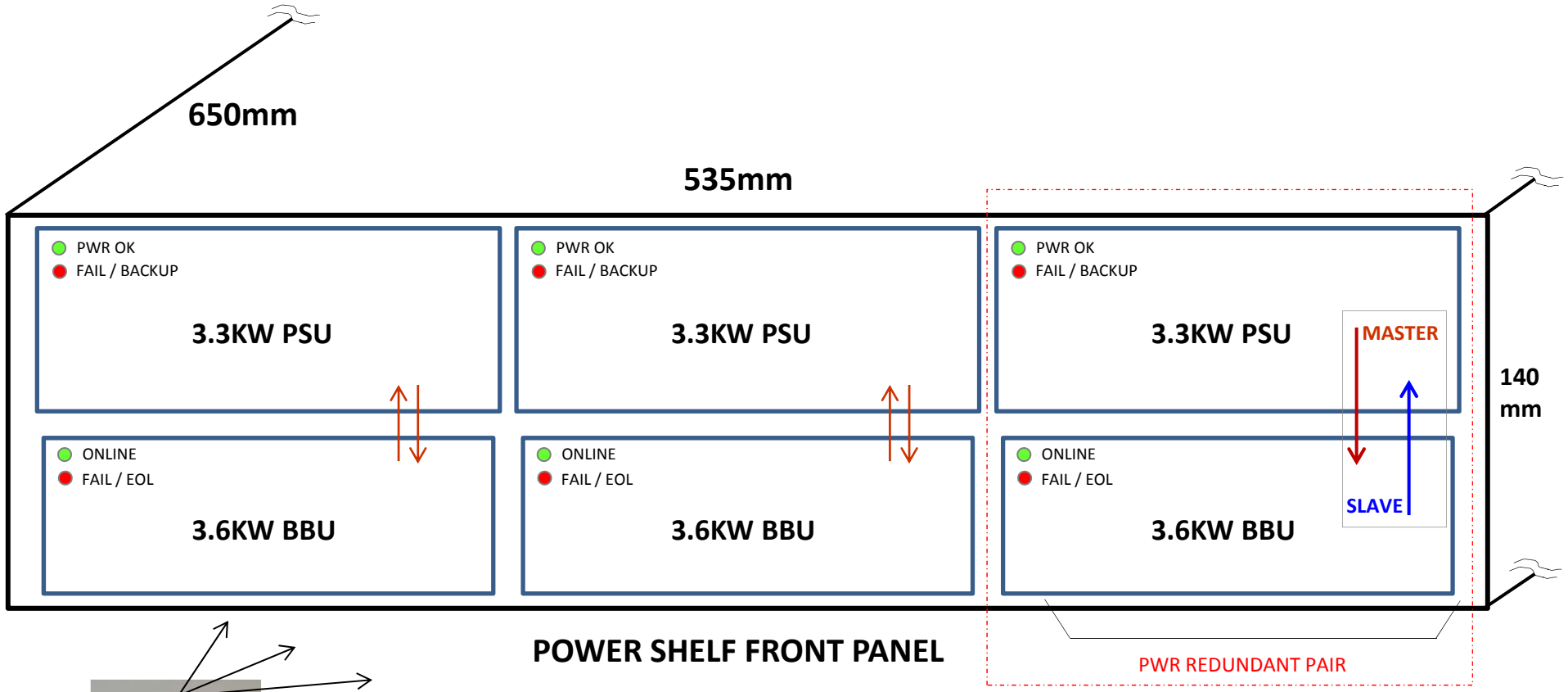


V2 vs. V1 Open Rack & Power



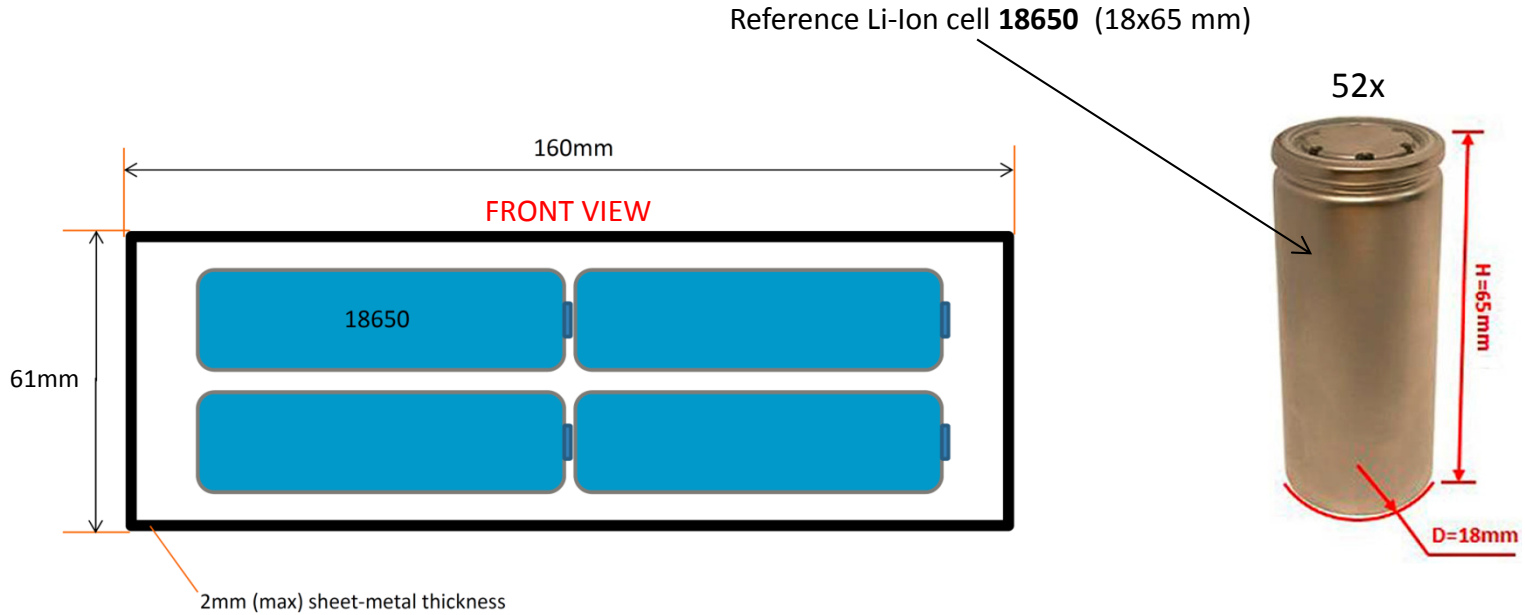
V2 Power Shelf (PSU + BBU)

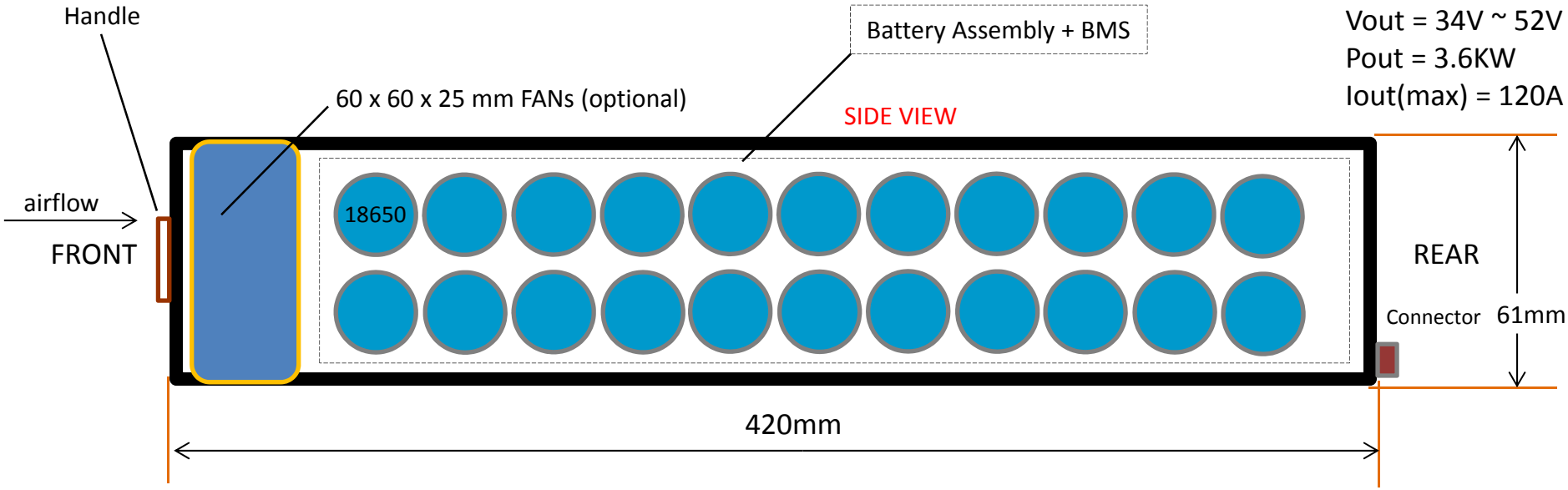
(2 + 1) redundant



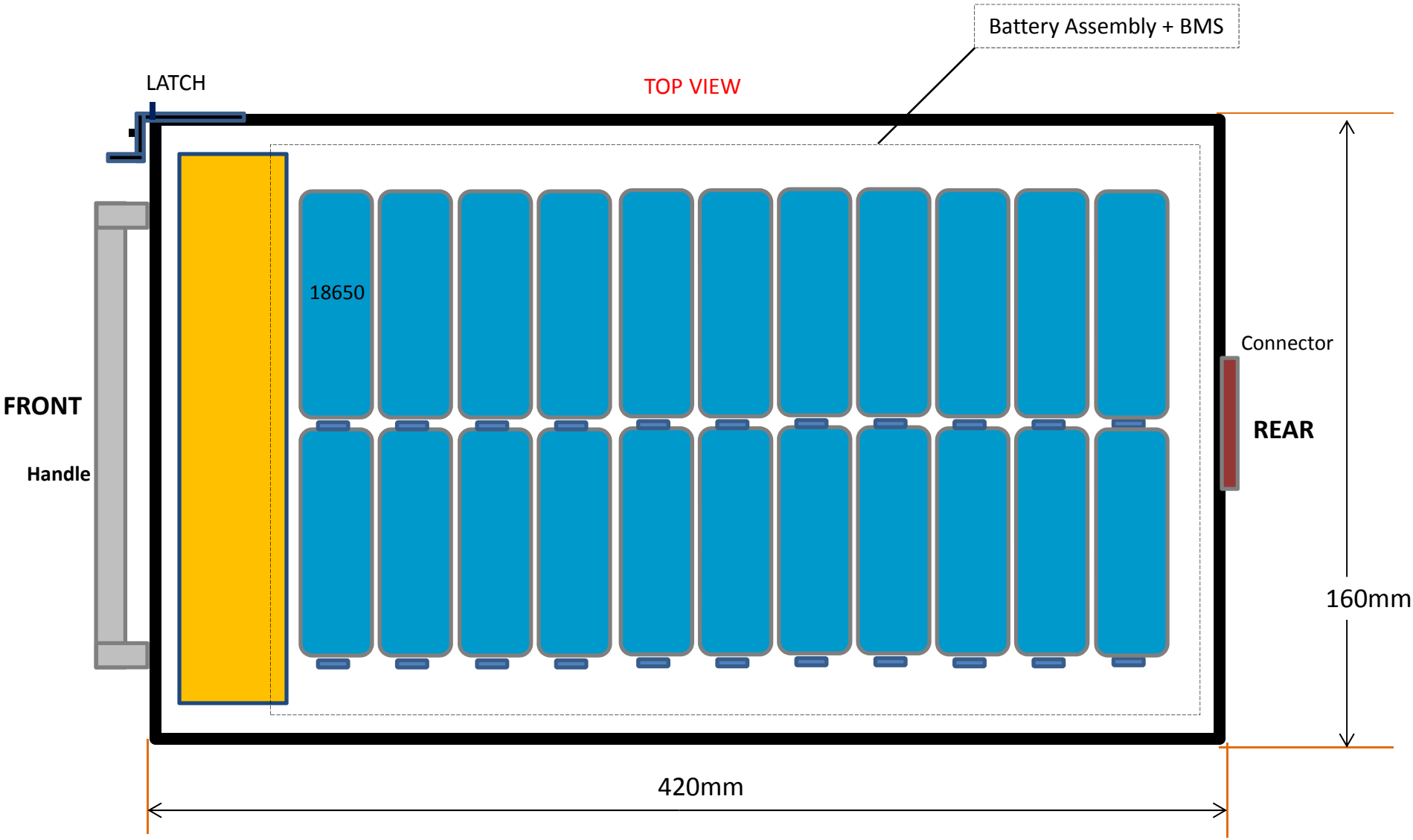
Reference Li-Ion cell: **18650 series** (3.7V, 1.5 to 2 Ah, 18x65 mm), high-current discharge

V2 BBU Module

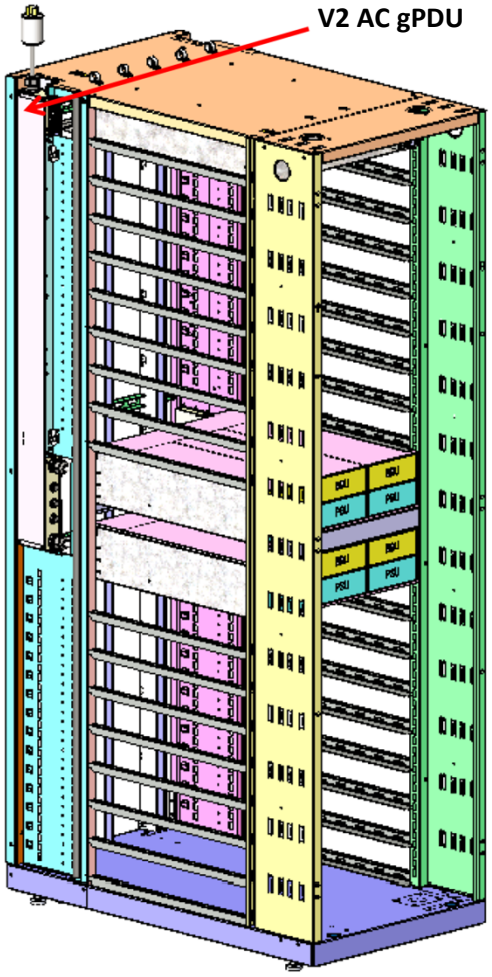




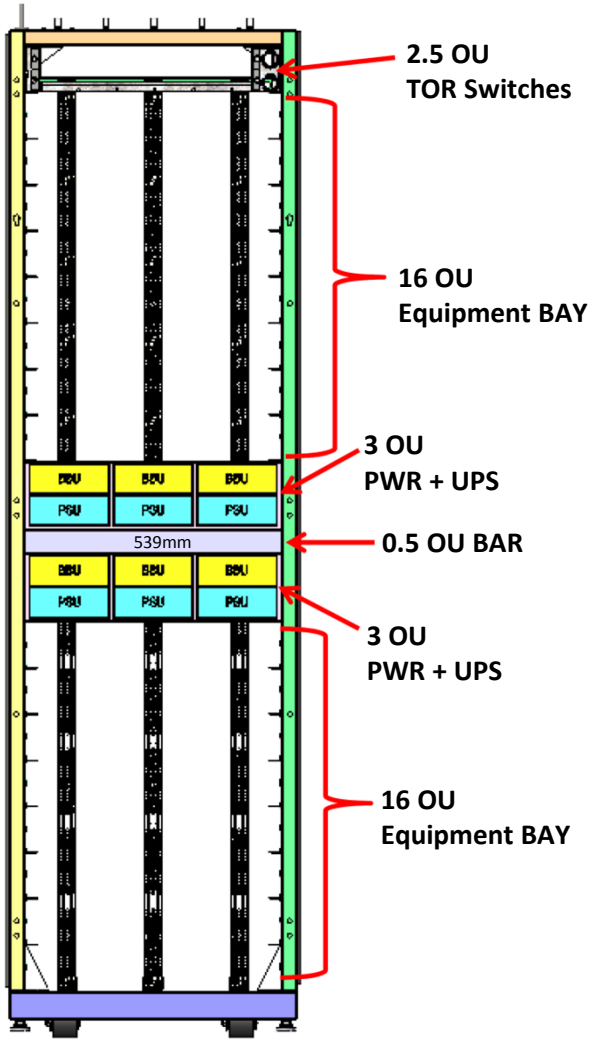
V2 BBU Module

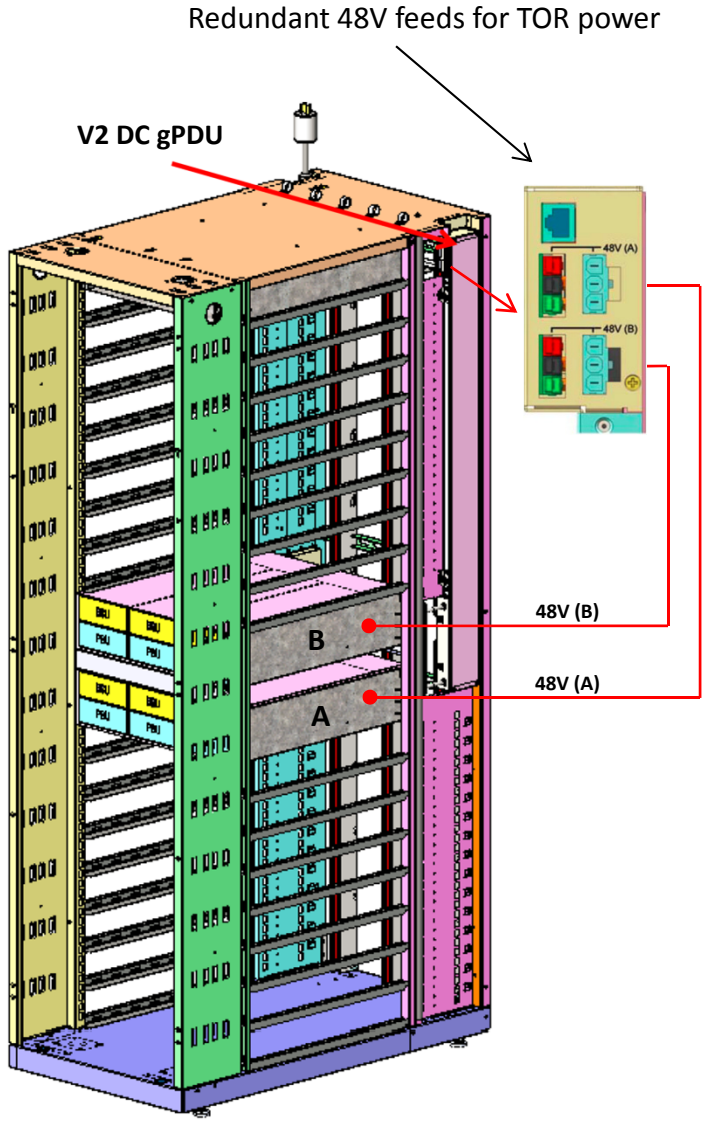


FB ‘V2’ Open Rack System



Two Independent Power Zones



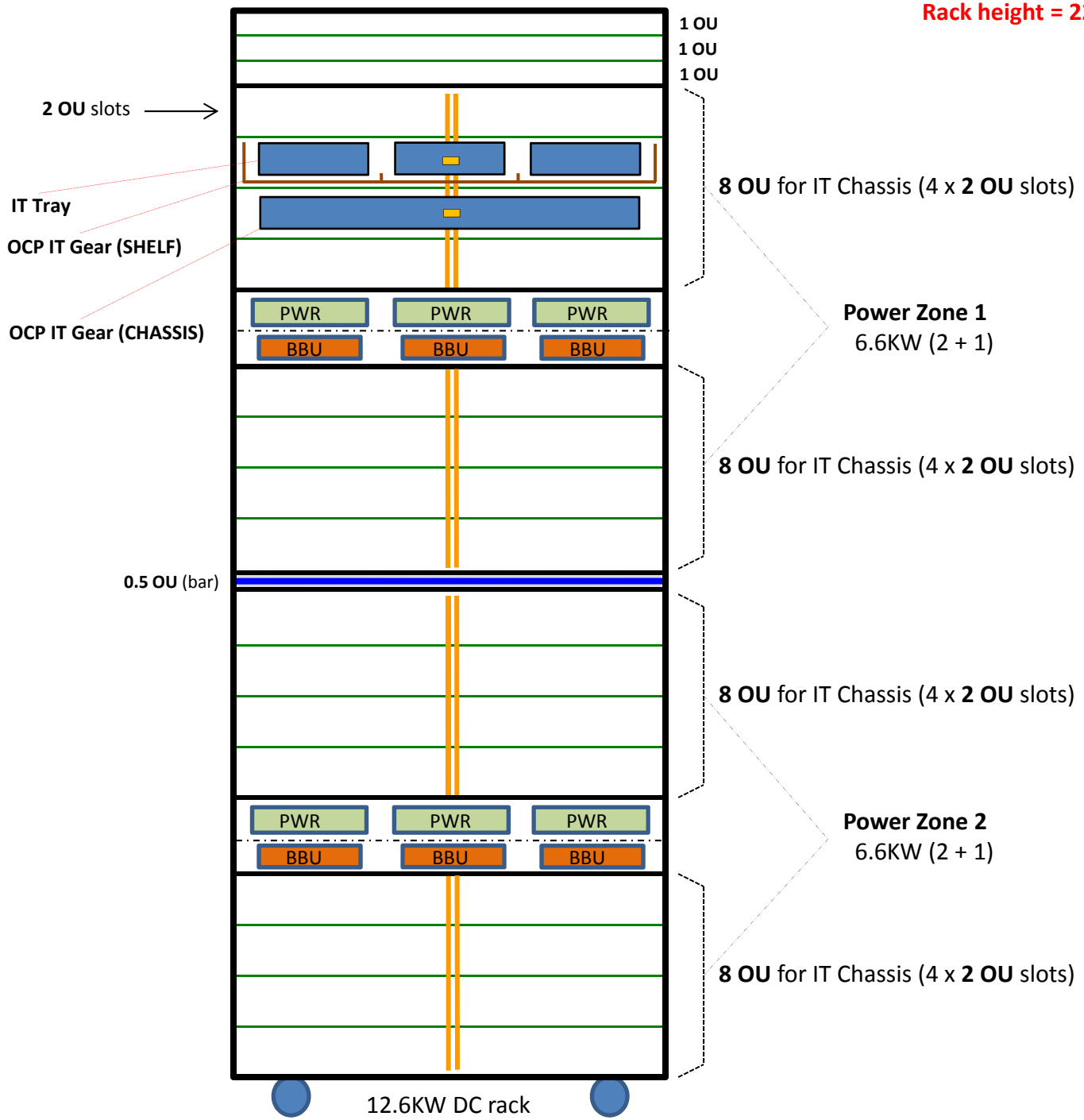


Two Independent Power Zones

V2 Open Rack

Facebook POR

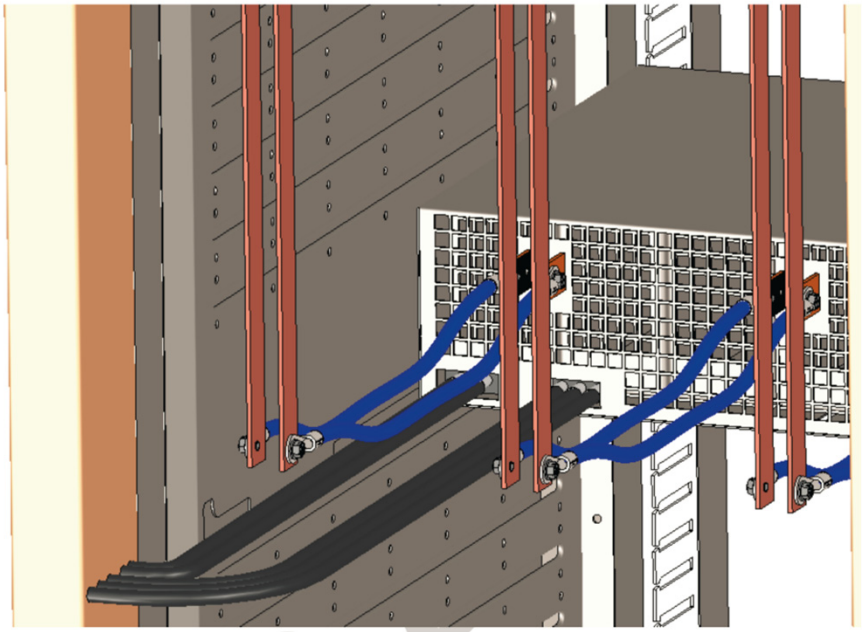
Rack height = 2200mm = 87”



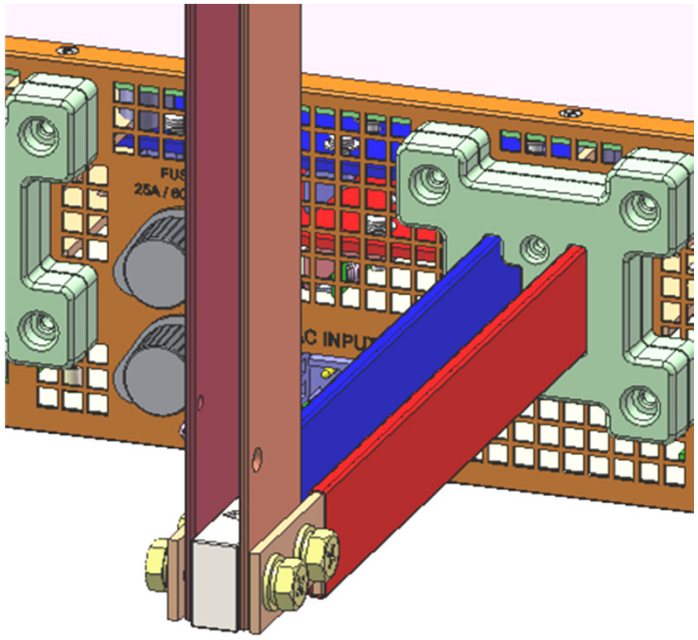
V1&V2 Power Shelf connection to Open Rack bus bars

V2 power shelf 12V output directly connected to Open Rack bus-bar pair

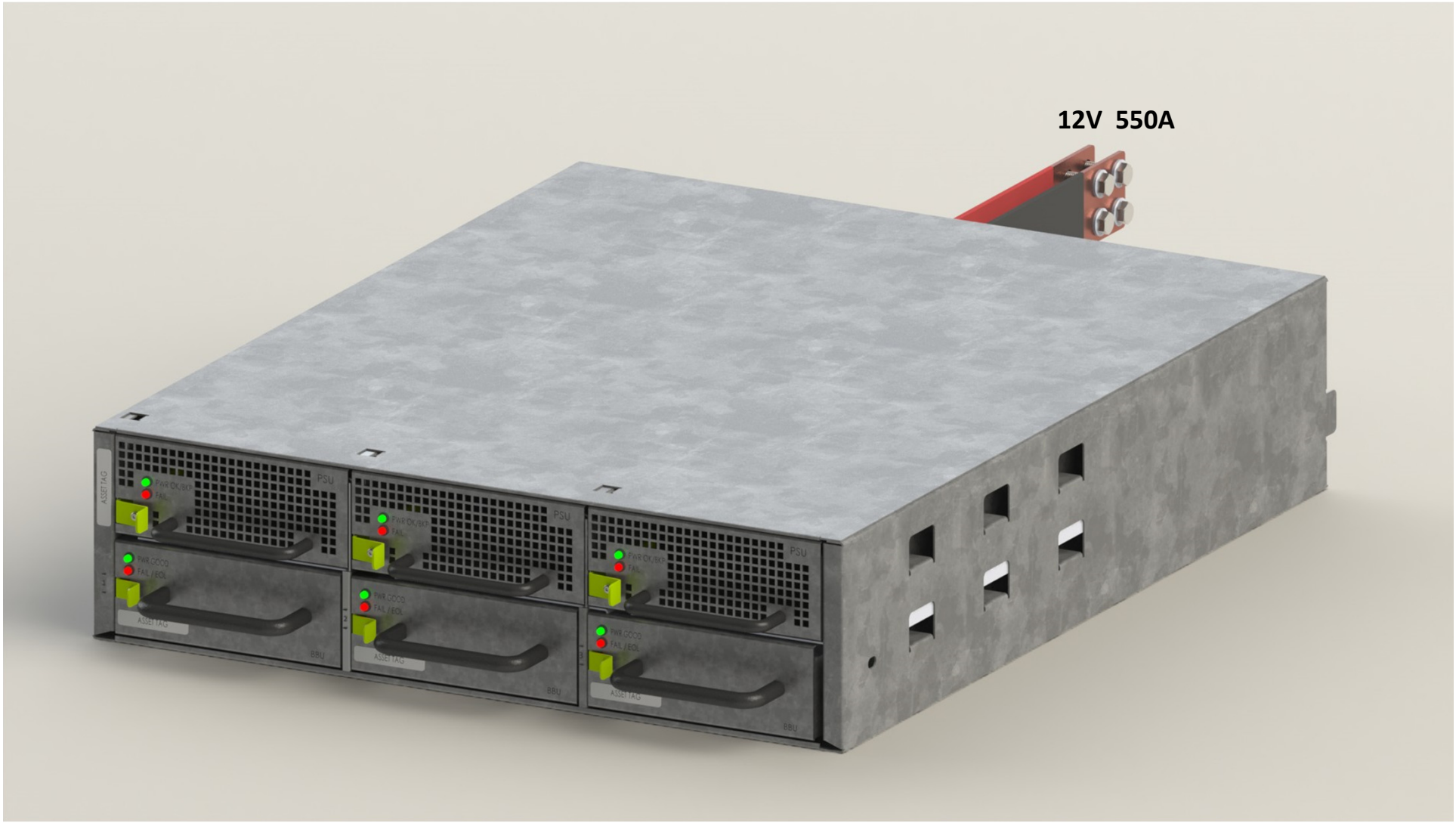
V1 approach



V2 approach



V2 Power Shelf for V2 Open Rack

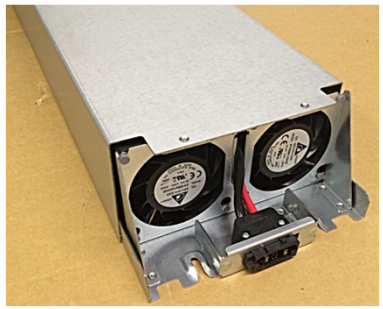


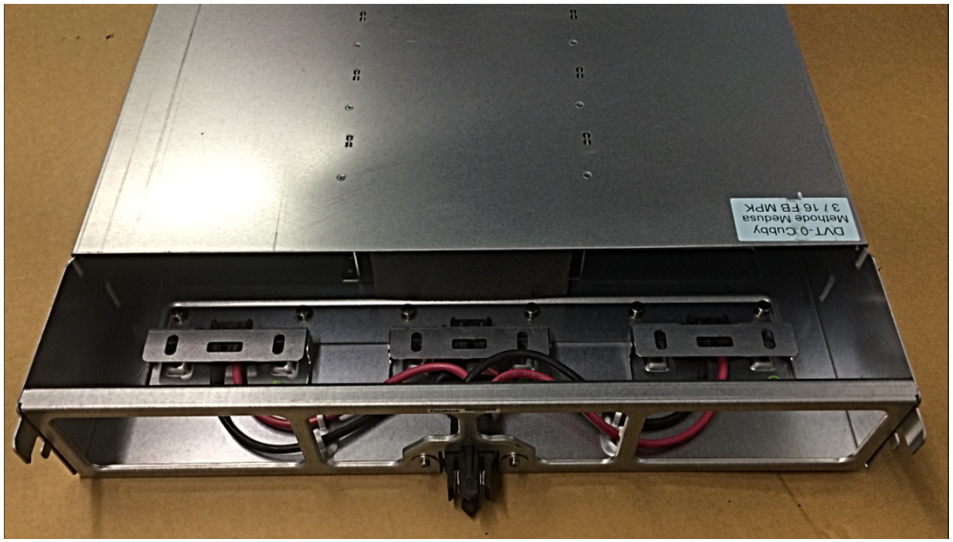
V2 Power Shelf to V2 Open Rack bus-bar

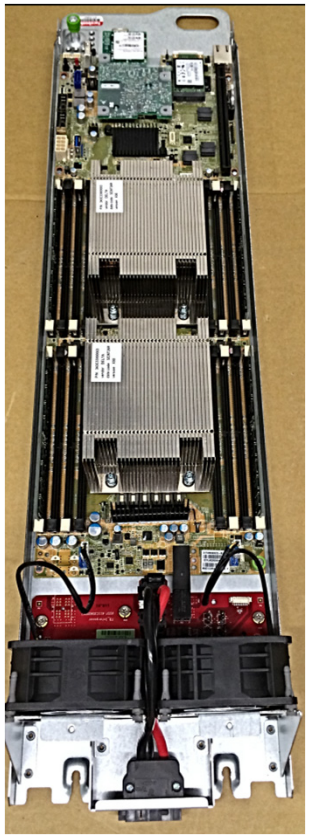
Rear View

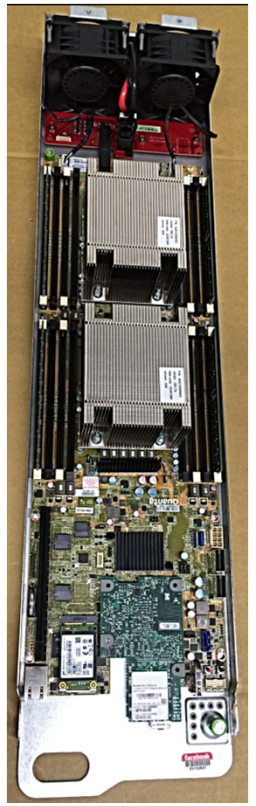
V2 Power Shelf at V2 Open Rack

V2 IT shelf at V2 Open Rack

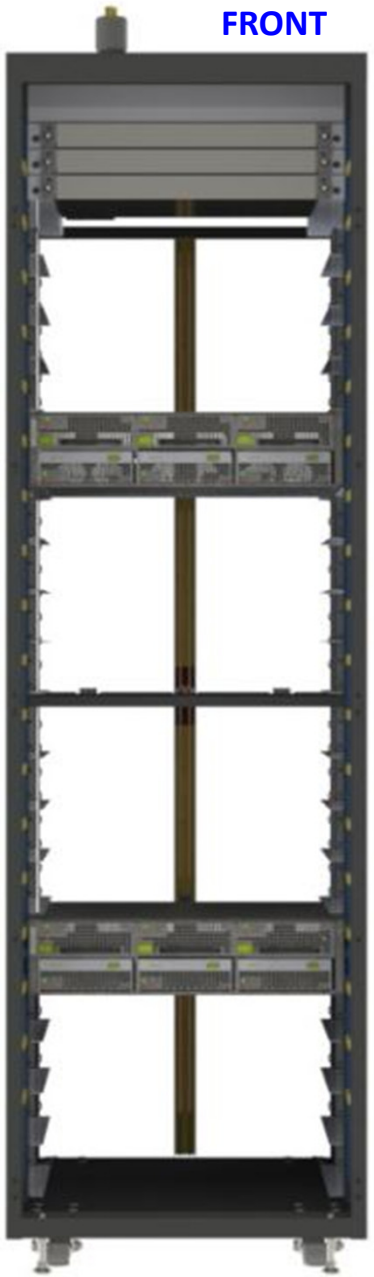








FB V2 Open Rack



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