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**OCP U.S. SUMMIT 2017**

Santa Clara, CA



# OCP for Telco

## The challenge and the solution part II

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OCP engineering workshop 9.3.2017

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# OCP for Telco

## The challenge and the solution part II

### TOPICS:

- NEBS GR-63 Seismic solution
- Telco -48VDC solution
- Concept study items:
  - Liquid cooling
  - 400VDC
- Summary

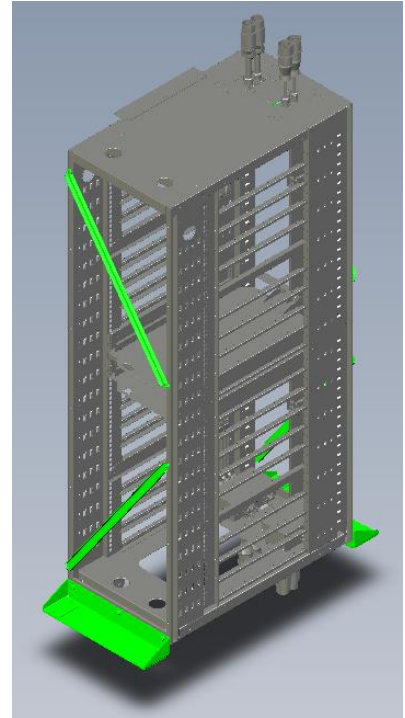
# NEBS GR-63 Zone 2/4 seismic solution for OCP

## Baseline Requirements :

- Single rack NEBS Zone 2 with 850kg IT load
- Dual rack NEBS Zone 4 with 850kg IT load
- Seismic kit compatible with Open Rack v2
- To achieve toolless serviceability

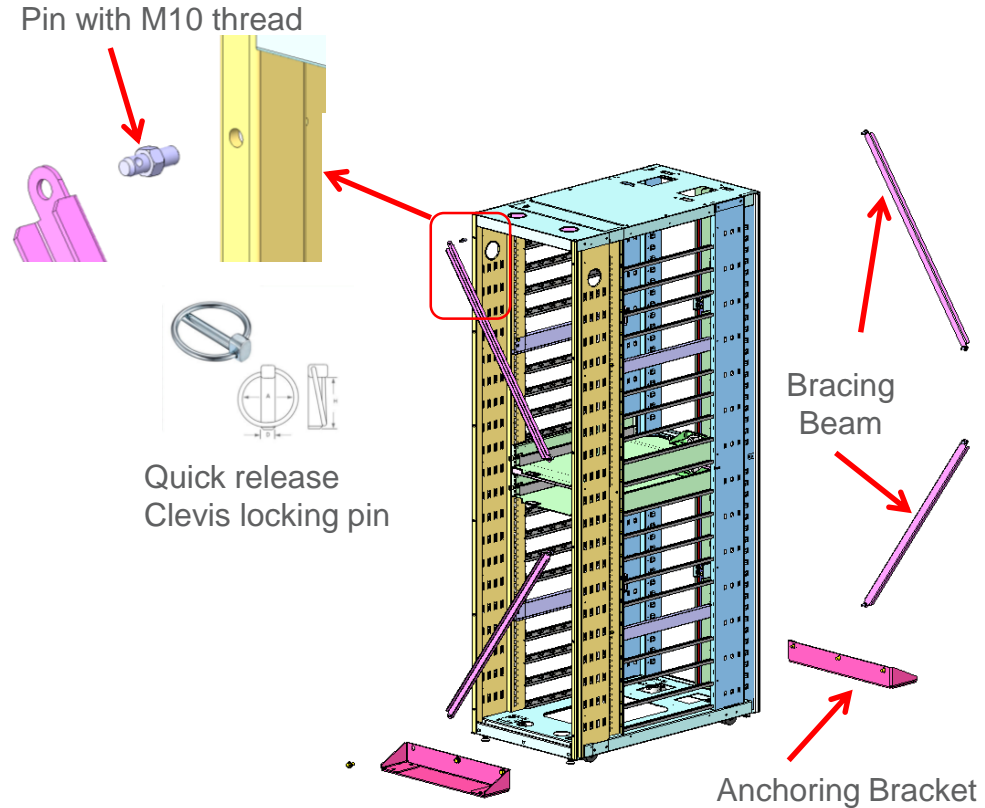
## The Optional Seismic kit includes:

- Quick release bracing beams
- Floor mounting kit
- Bolt kit for securing the cubby & switch adaptors



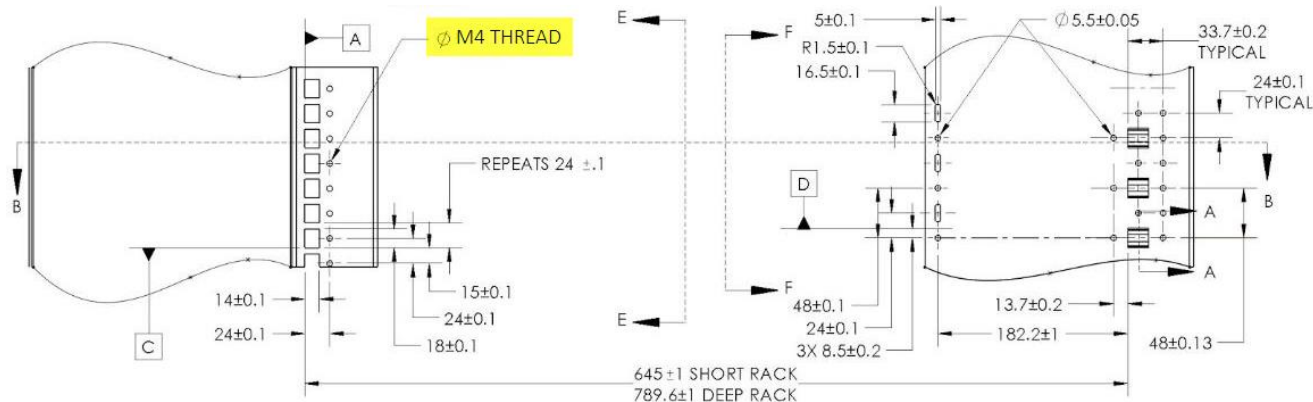
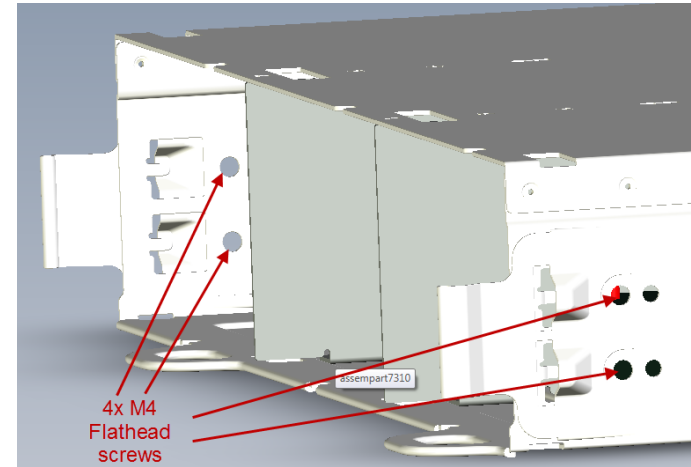
# NEBS GR-63 Zone 2/4 seismic solution for OCP

- Bracing beams with quick release locking : full toolles serviceability front and rear
- Anchoring bracket outside of frame: Drilling the 4 x 4 M12 expansion bolts trough the bracket holes: fast installation



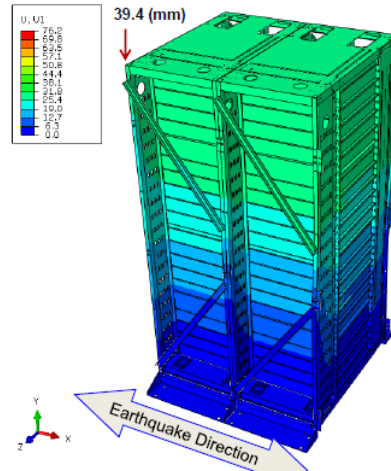
# NEBS GR-63 Zone 2/4 seismic solution for OCP

- The three bay cubby is used as strengthening member for the v2 rack frame
- Cubby sides fixed with flathead screw 2+2 M4 to the v2 rack vertical posts to provide additional strength
- Vertical post M4 threads introduced

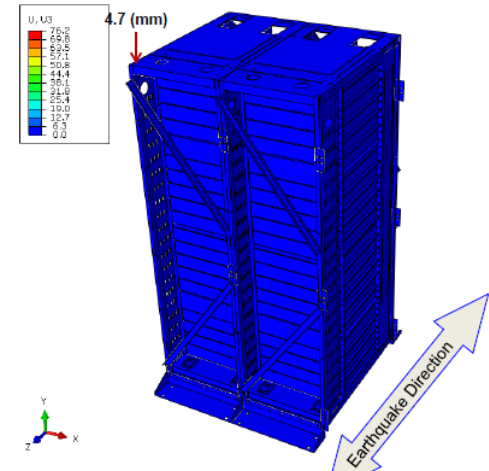


# OCP rack seismic simulation results (case 1)

- Dual rack bayed together.
- Zone 4 criteria with 850kg IT load.
- Rack with seismic kit ; bracing kit (front and rear side) on place, cubby bolted on place only from front side with 4 pcs of 4mm screws.



Earthquake direction : Side to Side  
Max. displacement = 39.4 (mm)

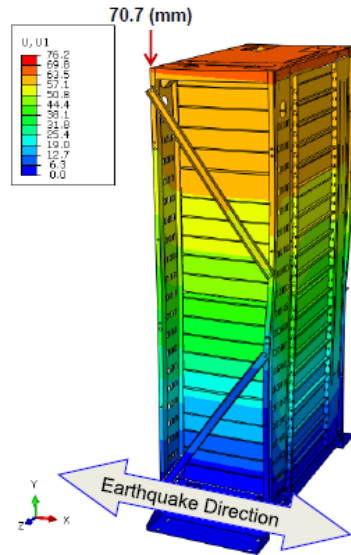


Earthquake direction : Front to Rear  
Max. displacement = 4.7 (mm)

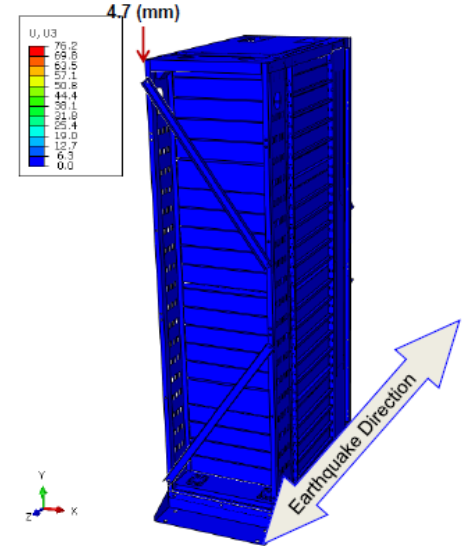
Dual rack	Criteria	Simulation Results	
		Simulation results	Pass/Fail
GR-63 CORE Zone 4	Natural frequency > 2 (Hz.)	Side to Side = 8.1 (Hz.) Front to Rear = 16.2(Hz.)	Pass
	Displacement of top of frame < 76.2 (mm)	Side to Side = 39.4 (mm) Front to Rear = 4.7 (mm)	Pass

# OCP rack seismic simulation results (case 2)

- Single rack alone
- Zone 4 criteria with 850kg IT load.
- Rack with seismic kit ; bracing kit (front and rear side) on place, cubby bolted on place only from front side with 4 pcs of 4mm screws.



Earthquake direction : Side to Side  
Max. displacement = 70.7 (mm)



Earthquake direction : Front to Rear  
Max. displacement = 4.7 (mm)

Single rack	Criteria	Simulation Results	
		Simulation results	Pass/Fail
GR-63 CORE Zone 4	Natural frequency > 2 (Hz.)	Side to Side = 6.3 (Hz.) Front to Rear = 16.1(Hz.)	Pass
	Displacement of top of frame < 76.2 (mm)	Side to Side = 70.7 (mm) Front to Rear = 4.7 (mm)	Pass

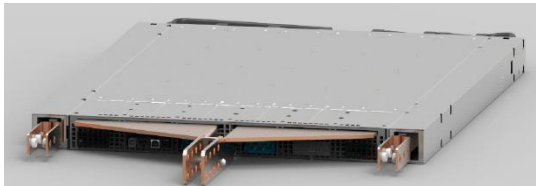
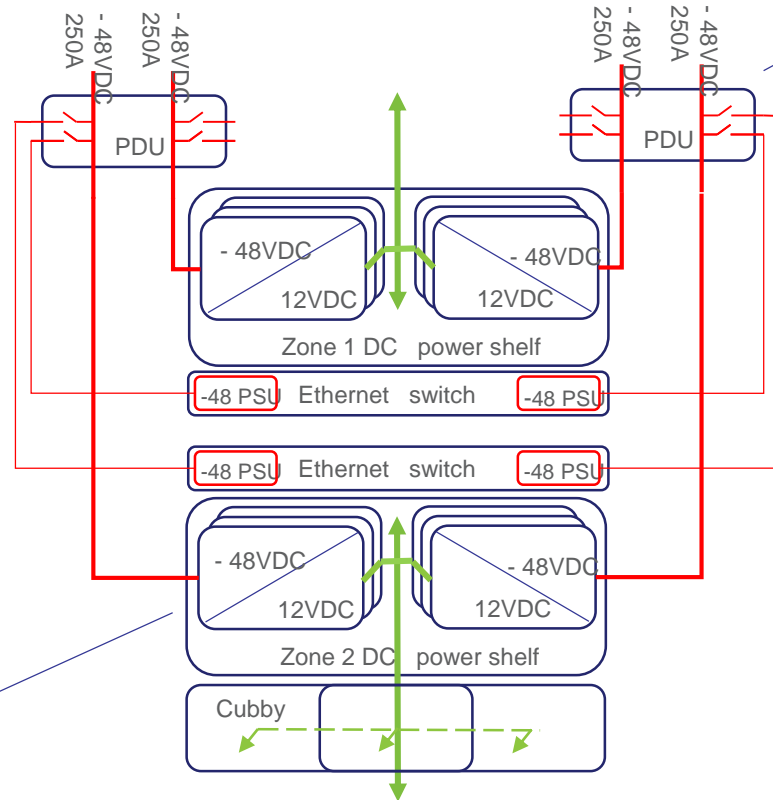
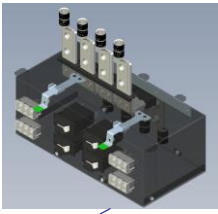


# Telco -48VDC power feed option for Open rack v2

- Power shelf & PDU Compatible with Open Rack v2 standard with 12VDC busbar
- -48VDC solution follows the ETS 300 132-2 Power supply interface at the input to telecommunications and datacom (ICT) equipment standard
- Flexible redundancy options from small scale cloud to hyperscale cloud deployments
- Support for single power zone and dual power zone options for optimizing the rack power capability
- Solution for legacy telco CO locations to deploy OCP

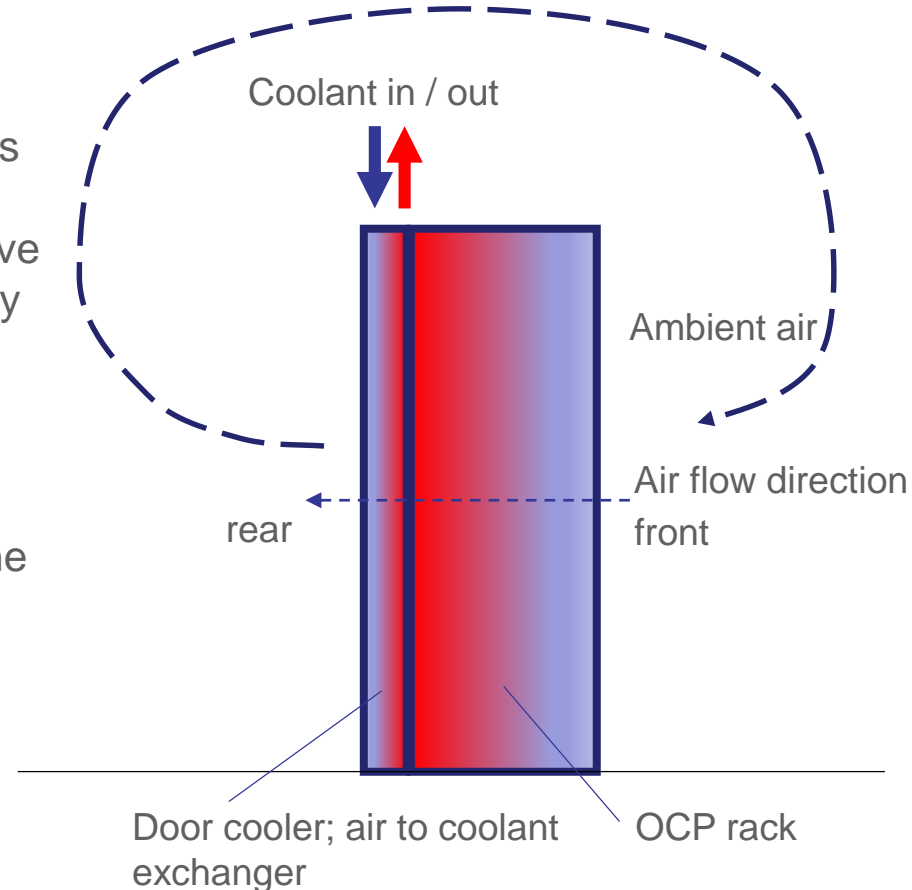
# -48VDC power feed implementation

- Dual feed, 2N PSU redundancy @ 17,4kW per rack
- With 5+1 PSU redundancy @ 25kW per rack
- Networking devices under same power domains (PDU MCB protected outputs for 4 x switches)
- EIA to OU switch tray support direct connection to 12V busbar
- 4 x 250A feeds per OCP rack with heavy duty dual hole lugs



# Study item: Liquid cooling concept

- Rear door cooler is solution for sites with limited cooling capacity to deploy high power OCP racks
- Ambient air is pulled into the cabinet via the active equipment fans. The hot exhaust air produced by the active equipment then passes over a heat exchanger matrix either by its own velocity or pulled through via fans mounted within the door; heat is then transferred and rejected to coolant. The resulting chilled air then passes back into the room at the predetermined room ambient
- Rear door cooler allows full serviceability rear of OCP rack



# Study item: ETSI EN 300132-3-1 400VDC for OCP

- Clear benefits compared to legacy -48VDC distribution systems
- PSU exist to support both 400VAC & 400VDC with same power shelf design
- Need to have new PDU design (in three phase plugs limiting factor neutral pin current). One possibility for datacenter 400VDC busway connector:

## SBE®80 / SBO®60 - UP TO 80 AMPS



- ▶ Touch Safe Interface
- ▶ Up to 8 Last Mate / First Break Auxiliary's
- ▶ Silver Plated Wire Contacts up to #4 (25 mm<sup>2</sup>)

Current Rating Amperes <sup>1</sup>	SBO60	SBE80
Primary Power (6 AWG)	70	80
Powerpole® Auxiliary (12 AWG)	20	20
1x4 Auxiliary (12 AWG)	20	20
PPMX Auxiliary (20 AWG)	7 UL	5 CSA
Voltage Rating AC/DC	UL 1977	EN 1175-1
Primary Power	600	150 <sup>4</sup>
Powerpole® Auxiliary	600	150 <sup>4</sup>
1x4 Auxiliary	200	
PPMX Auxiliary	300	

# Summary



- Seismic kit specification to fulfill NEBS GR-63-CORE for open rack v2
- Telco -48VDC solution available to support legacy telco CO locations
- Open rack v2 with seismic kit and -48VDC powerfeed at Booth C18
- Concept study items:
  - Liquid cooling to support locations with limited cooling capacity to deploy high power OCP racks
  - 400VDC solution for OCP

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