OCP Telco Rack for Telco Central Office CORD Deployments

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KPN
A lot of telcos are implementing using components.

But what does this mean for deployment?

Does this mean Telcos can deploy OCP racks like a Hyperscaler does into a Hyperscaler OCP Datacenter?
Comparison of traditional and OCP architecture

IT Architecture Evolution

Standard Rack With Servers

Open Compute Project (OCP) V2

✓ Simplified architecture
✓ Enhance the efficiency (reduced # power supplies)
✓ Less Maintenance

UPS Sys

Rack PDU

Standard Rack

3 Phase PDU (RPP)

Multi Module LV UPS System

3 Phase

PDU

PSU

Switch

PSU

SVR

PSU

SVR

PSU

SVR

PSU

SVR

PSU

SVR

PSU

SVR

PSU

SVR

PSU

SVR

PSU

SVR

OCP Switch

OCP Svrs

PSU w/ LI

OCP Svrs

PSU w/ LI

OCP Svrs

OCP Switch

Rack PDU

Rack with 12V bus

Rack level UPS with 12VDC output
Consolidated server power supplies with local energy storage
How do Hyperscalers put OCP racks into a Datacenter?

- According to: [https://www.opencompute.org/documents/colo-facility-guidelines-for-ocp-racks-v20](https://www.opencompute.org/documents/colo-facility-guidelines-for-ocp-racks-v20): Racks arrive fully loaded: OCP gear is pre-installed into the rack by integrators, also known as solution providers.

=> they just “roll” fully loaded racks into the DC
However, this is challenging in Telco Central Offices

- Pre-configured, pre-build, pre-cabled OCP v2 rack for “quick” upright rollout into KPN Telco CO:

Not possible

Example 1

Example 2
Not just KPN with this challenge

Photos above: courtesy of Alfonso Aurelio Carrilo from Telefonica
Other challenges in OCP V2 rack (1)

Cabling

- Standard OCP rack Cabling conflicts with easy access to components
- Disaggregated network components (BNG example: many, many interconnects in a single rack)
- Example uses DAC cables, but even with fiber it will remain challenging.
Other challenges in OCP V2 rack (2)

Power

- Hyperscaler OCP V2 rack in new, modern DC can use a lot of power.
- OCP V2 Rack specification & Design:
  - Rack is divided in 2 power zones
  - 15KW each

- 30KW is way, way more than the Telco Central Office can handle (typically 4k-10k max per cabinet due to cooling limitations (and to avoid hotspots in CO rooms).

Source: OCP v2 rack photo
Proposed solution Telco CO rack, collaboration with Schneider Electric

New rack: adapted OCP v2 Rack: Telco CO Rack with 1 power shelf

### Special key points of KPN solution with Schneider Electric OCP Architecture

- **600mm width for IT device and 200mm width for cable routing**
- **Height of rack is 31 OU, 1658.6mm**
- **If need add door at rear, the depth will increase to 1100mm**
- **1 OU Power shelf at 17 OU place, 2 OU is also compatible solution**
- **One group DC output busbar is standard design, 3 groups is optional**
- **Switch space is 2 OU design for 2 sets of 1 OU switch bracket**

### Rack Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rack Height</td>
<td>1658.6±3mm</td>
</tr>
<tr>
<td>Rack Width</td>
<td>800mm+0/-2mm</td>
</tr>
<tr>
<td>Rack Depth</td>
<td>1067mm+/−3mm</td>
</tr>
<tr>
<td>Server size/ Q’ty (Max)</td>
<td>2 OU/ 14 sets 1 OU/ 28 sets</td>
</tr>
<tr>
<td>Power shelf Q’ty</td>
<td>1 OU</td>
</tr>
<tr>
<td>Power shelf Location</td>
<td>17 OU</td>
</tr>
<tr>
<td>Switch bracket/Q’ty</td>
<td>1OU/ 2sets</td>
</tr>
<tr>
<td>Busbar Q’ty</td>
<td>1 sets</td>
</tr>
<tr>
<td>Busbar Location</td>
<td>Full height: 1 sets</td>
</tr>
</tbody>
</table>

Intention to make this new rack

OCP ACCEPTED
Typical solution of PS + BBU

- Full Rack Power Configuration in 3OU (2OU BBS + 1OU PSU Shelf)
- Full Shelf Power: 5 x 3.0kW PSU + 1 x 3.0kW BBU
- Hot Swappable
- Fully Modular
- 120 ~ 180 sec Runtime or long runtime >3 mins

Telco CO Rack solution
Telco CO Rack with 1 one Power Shelf or Power Shelf + BBS

Total max 15kW, N+1 Rack
OCP Rack overviews

Notes:
All OU place have holes for different configure, like replace 4 sets 1OU switch bracket with one 4OU switch bracket etc.
Additional cable space design:
1. Finger guard, integrated space with finger guard for cable management makes data cable laying, management and operation more convenient for customer;
2. Rotatable metal cover design makes cable space safety and overall organized with great visual expression.
But how to get the rack up the stairs?

- **Current plan:**
  - Logistic partner with “electric stair climbers”
  - Example how this could look like:

- Disadvantage: Max weight (400 Kg)

- Feasibility: currently under investigation

Source: photo electric stair climber
Questions, Comments, suggestions

- Any questions, comments or suggestions concerning this rack: please reach out to me (contact details: next slide).
About me

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Thank You