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KPN: experiences first OCP deployment

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About KPN

Consolidated Customers numbers

Mobile postpaid: 5.826 m (Residential, Business & Wholesale)

Broadband lines: 3.232 m (Residential & Business)

Residential Interactive TV: 2.136 m

Residential Fixed-mobile phone households: 1.2599 m

Business multi-play workstations (SME) 525,000 workstations

Source: Yearly report 2017 & Investor presentation May 2018 & KPN Q2 2018 results factsheet
About KPN

Simplify
We are streamlining our portfolio and standardizing our work processes.

Grow
We are increasing value for the customer and KPN through customer-focused investment.

Innovate
We are innovating for the best customer experience today and in the future.

Source: Yearly report 2017 & Investor presentation May 2018
WHY OCP?

- **Good match: KPN Goals & OCP tenets**
  - **Efficiency & Impact:** “KPN is industry leader” in the telecommunications category of the Dow Jones Sustainability Index. The independent experts consider KPN the most sustainable telecom company in the world as it outranks all others in the index.\(^2\)
  - **Scalability:** The data traffic on our networks is growing, on average, by 45 percent per year, through the use of internet, video, and social media. OCP based solutions will make it easier to expand in, also in cost efficient manner.
  - **Openness:** KPN wants to benefits from Open Hardware & Open software.

- **This deployment: investigation to see how OCP Facebook spec hardware matches possible KPN needs**

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1: [The OCP tenets](#)
2: [KPN: worlds greentest Telco](#)
WHICH OCP hardware was used?

▪ Strong preference for “OCP Accepted”

▪ This deployment in KPN lab environment:
  ▪ Facebook OCP spec servers & storage
  ▪ Facebook OCP v2 spec racks
  ▪ Whitebox P4 programmable OCP switches
WHERE is KPN considering to use OCP?

- **Central Telco DC (4):**
  - Starting with a few, will increase over time

- **Metro Core (161):**
  - CORD based
  - Just a few racks @ each site
  - Servers:
    - Controller layer for our programmable whitebox switches
    - KPN Edge Network services
WHICH challenges did we encounter?

#1 Physical

- Pre-configured, pre-build, pre-cabled for “quick” upright rollout into KPN Telco DC:
  ⇒ Not possible

- Learning(s):
  - Not upright but sideways
  - Smaller Rack: will make things easier (~1,80M)
WHICH challenges did we encounter?

#2 Power

- KPN ordered 380V power shelves
- 380V: “special” in KPN Telco DC
- Rack design: power entry: Top of Rack
- KPN 380V: only below the lifted floor.

- Learning(s):
  - Use 48V power
  - Power entry: Top of Rack
WHICH challenges did we encounter?

#3 Cabling

- Cabling conflicts with easy access to servers
- Biggest headache: Rigid DAC cabling

Learning:
- Use Flexible DAC cables
- Rack Layout: huge impact on cabling complexity
Summary

- Using OCP Facebook spec based equipment offers large advantage, also for Telcos (like KPN).
  - However, using this in Telco (legacy) locations creates multiple challenges.
    - However, most challenges can be overcome with solutions available.
    - (Co-)creating a Telco/legacy specific Rack specification seems a good step to take.
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