THE OPEN GPON OLT
A CONTRIBUTION OF DEUTSCHE TELEKOM
TO THE OPEN COMPUTE PROJECT

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DT believes that shared hardware designs (combined with open source) will reduce cost and foster innovation. That’s why we joined the communities...
WE WANT TO DESIGN AN SDN BASED ACCESS NETWORK...
BUT THERE IS NO CARRIER GRADE DISAGGREGATED GPON OLT DEVICE!
MOTIVATION FOR THIS CONTRIBUTION

Eco system for white box PON devices leaves room for improvement!
  - Few devices from few vendors – with little telco experience

Carriers want at least two suppliers – need more choice!

DT wishes to foster the community & there was a need for more participation ...

Last but not least:

We hope to instigate other contributions to create competition, innovation and better economics ...
FILLING THE VOID:
THE DT GPON OLT SPECIFICATION
Our design guidelines:

- Reuse existing work to allow for quick implementation
- Use mainstream merchant silicon & COTS (Commercial Off The Shelf) components
- Comply to relevant standards
- Allow & promote the use of open source software
- Aim for state of the art performance at optimum total cost of ownership
- Create something that „the world“ needs!
DESIGN CHOICES & SIZE VARIANTS
Design choices and details:

- Specification selects a first straightforward solution, derive from what works for XGS-PON:
  - Well known merchant silicon combination from Broadcom (Maple/Qumran) with off the shelf driver software (BAL) to be integrated into open source VOLTHA framework.
- 32 and 64 port variants: good fit to chip granularity, uplink capacity and Central Office size (as number of subscribers)
- Redundant AC/DC PSUs (hot swappable, 110-230VAC, 50-60Hz autoranging & 48VDC), high efficiency
- Flexible Uplinks:
  - 2x100G as QSFP28 to allow in-rack AOC/DAC
  - plus 8x10/25G SFP28 cages or (C)WDM transceivers for longer reach and WDM for fiber saving
- Telco environment implies a long life span – 10 years is typical
- The control SW & interface is evolving rapidly - Our spec explicitly embraces this fact!
DT OLT SPECIFICATION AT OCP

Two size variants to appeal to most use-cases: large deployment & tiny COs or labs
(but maximum HW communality – same PCB populated with more or less SoCs and transceiver cages)
WHY OUR SPECIFICATION FITS TO THE OPEN COMPUTE PROJECT?
ATTAINING OCP TENETS – OUR GOALS

Most important guiding principle: Efficiency

- Minimize energy consumption and cost: 64 port version shares common functions (CPU) over twice as many PON-ports than 32 port version & requires fewer uplinks per PON.
  Side effect: fewer uplinks mean fewer interfaces in the fabric/backbone.

Scale:

- sufficient port number with reasonable density to handle many thousand customers /rack.
- automatically commissioned, provisioned and maintained remotely by Zero Touch Provisioning mechanisms of ONIE and a BMC to provide for remote supervision and disaster recovery.
ATTAINING OCP TENETS – OUR GOALS (2)

We call for Openness:
- open source Linux distribution such as ONL as OS; BMC shall use OpenBMC or similar.
- Today proprietary HW-driver layer is “normal” BUT an open access to these API/SDK layers is required.
- No restrictions shall limit possibilities for innovative open network solutions. Interfaces to the device shall be fully open, non-proprietary and standardized.

This OCP contribution designed to have substantial Impact:
- first incarnation of an open GPON OLT with state of the art silicon, sufficient flexibility and maturity
  Shall allow a viable lifecycle in a telco network.
- Shall be carrier grade for international application
- Single box solution but flexible deployment options, transceivers, factory choice of CPU types, optional time&sync
A RENOWNED VENDOR OF WHITEBOX DEVICES HAS EVALUATED THE SPECIFICATION AND PROMISED TO REALIZE THIS PRODUCT IN BOTH SIZE VARIANTS.

PROTOTYPES SHALL BE DONE WITHIN ABOUT 6 MONTHS.

AN ORDERABLE PRODUCT IS EXPECTED TO BE AVAILABLE IN 1H2019.
THANK YOU!

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APPENDIX : FIRST IMPLEMENTATION PROPOSAL

Images Courtesy of Accton / Edgecore October 1st 2018 !
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OPEN FOR BUSINESS.