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October 1-2  
2018  
Amsterdam

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

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# DEUTSCHE TELEKOM CONTRIBUTES THIS DOCUMENT TO THE COMMUNITY :

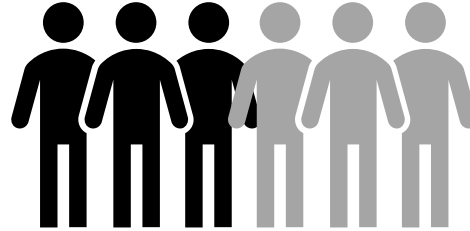


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**OPEN**  
Compute Project

Academia & other interested parties



Fellow Telco Operators



Open Networking Foundation



DT believes that shared hardware designs (combined with open source) will reduce cost and foster innovation  
that's why we joined the communities ...

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**WE WANT TO DESIGN AN SDN BASED ACCESS NETWORK...  
BUT THERE IS NO CARRIER GRADE DISAGGREGATED GPON OLT  
DEVICE !**

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# MOTIVATION FOR THIS CONTRIBUTION



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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 ...

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# FILLING THE VOID : THE DT GPON OLT SPECIFICATION

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# DT OLT SPECIFICATION AT OCP



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## 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 !

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# DESIGN CHOICES & SIZE VARIANTS

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## Design choices and details :

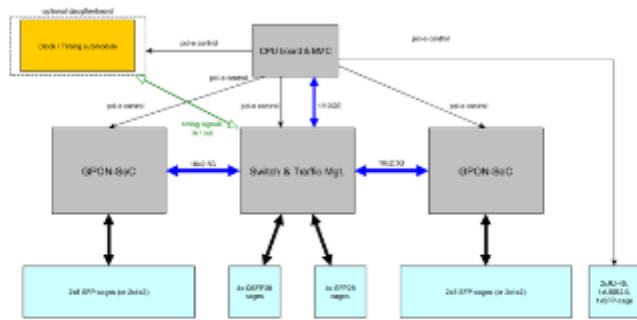
- Specification selects a first straight forward solution, derive from what works for XGS-PON :
  - Well known merchant silicon combination from Broadcom (Maple/Qumran) with off the shelf driver software (BAL) to be integrated into open source VOLTHA framework.
- 32 and 64 port variants : good fit to 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 allows 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

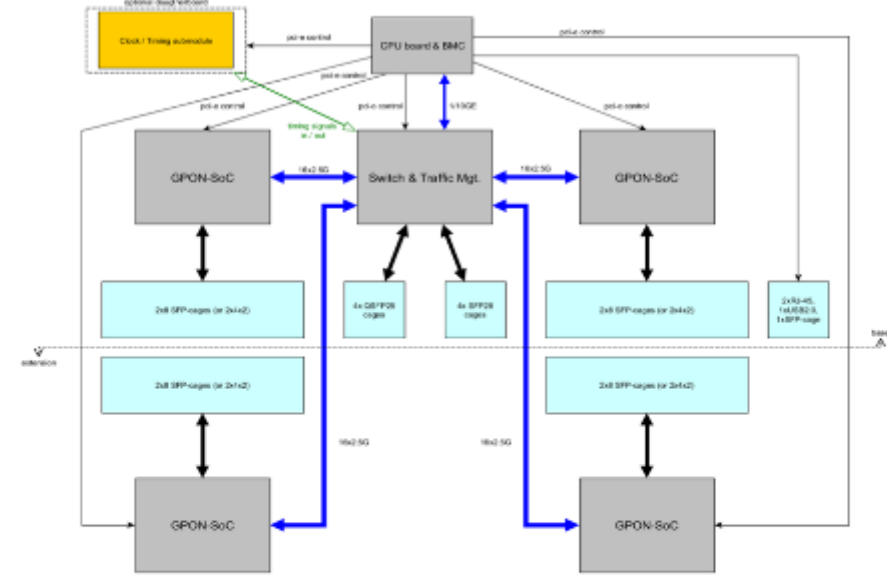


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Two size variants to appeal to most use-cases : large deployment & tiny COs or labs  
 (but maximum HW communality – same PCB populated with more or less SoCs and transceiver cages)



OCP Open GPON-OLT 32port v1.2



OCP Open GPON-OLT 64port 2HU v1.2



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# WHY OUR SPECIFICATION FITS TO THE OPEN COMPUTE PROJECT ?

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## 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)



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## 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

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# OCP SPECIFICATIONS CALL FOR A REAL PRODUCT

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**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.**

**A SPECIFICATION SHALL  
RESULT IN AN ORDERABLE  
DEVICE !**

**AN ORDERABLE PRODUCT IS EXPECTED TO BE AVAILABLE IN 1H2019.**

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**THANK YOU !**

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# APPENDIX : FIRST IMPLEMENTATION PROPOSAL



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**Accton**  
Making Partnership Work

Images Courtesy of Accton / Edgecore October 1<sup>st</sup> 2018!

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# APPENDIX : FIRST IMPLEMENTATION PROPOSAL



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