



OCP
SUMMIT

October 1-2
2018
Amsterdam

OPEN.



**FOR
BUSINESS.**





LIFE IS FOR SHARING.



OCP SUMMIT

October 1-2
2018
Amsterdam

OPEN. FOR BUSINESS



OCP
SUMMIT



LIFE IS FOR SHARING.

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

Paul WAGNER,
Senior Engineer Fiber Optics & PON
Deutsche Telekom, Darmstadt/Germany
Paul.Wagner@telekom.de

OPEN. FOR BUSINESS



OCP
SUMMIT

DEUTSCHE TELEKOM CONTRIBUTES THIS DOCUMENT TO THE COMMUNITY :

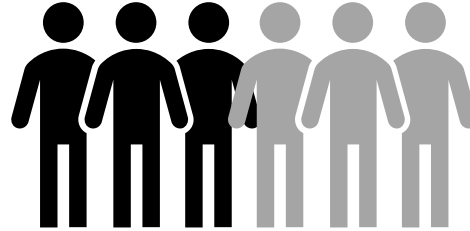


LIFE IS FOR SHARING.



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 ...

OPEN. FOR BUSINESS





LIFE IS FOR SHARING.

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

OPEN. FOR BUSINESS



**OCP
SUMMIT**

MOTIVATION FOR THIS CONTRIBUTION



LIFE IS FOR SHARING.

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 ...

OPEN. FOR BUSINESS



OCP
SUMMIT



LIFE IS FOR SHARING.

FILLING THE VOID : THE DT GPON OLT SPECIFICATION

OPEN. FOR BUSINESS



OCP
SUMMIT

DT OLT SPECIFICATION AT OCP



LIFE IS FOR SHARING.

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 !

OPEN. FOR BUSINESS



OCP
SUMMIT



LIFE IS FOR SHARING.

DESIGN CHOICES & SIZE VARIANTS

OPEN. FOR BUSINESS



OCP
SUMMIT

Design choices and details :

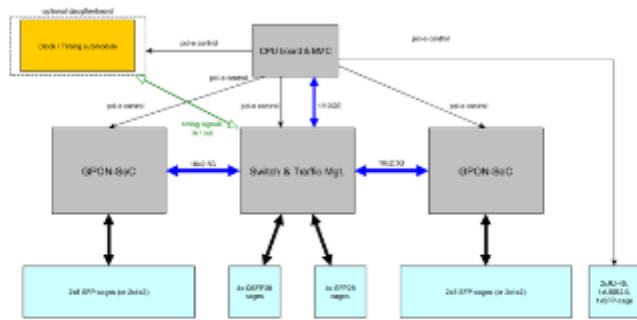
- Specification selects a first straight forward solution, derive from what works for XGS-PON :
 - Well known merchant silicon combination from Broadcom (Maple/Qumran) with off the shelf driver software (BAL) to be integrated into open source VOLTHA framework.
- 32 and 64 port variants : good fit to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

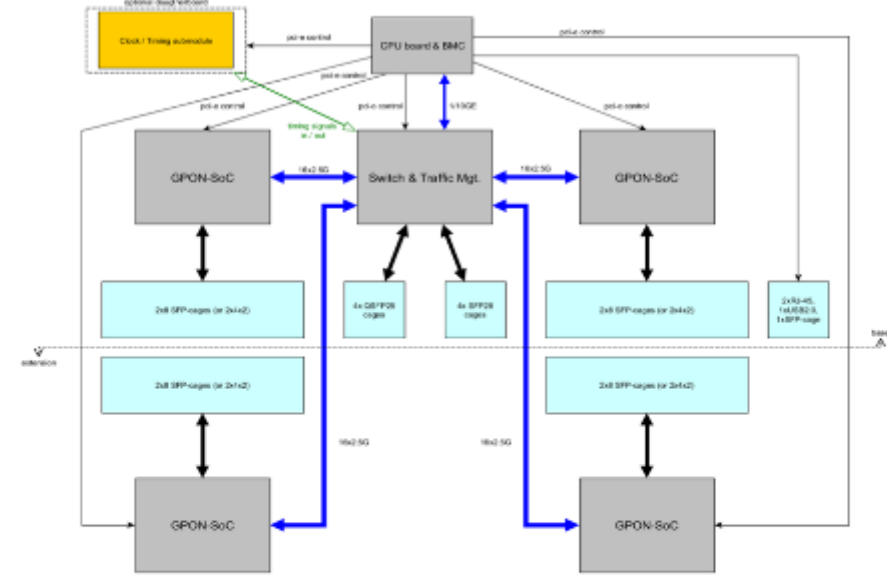


LIFE IS FOR SHARING.

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



OPEN. FOR BUSINESS





LIFE IS FOR SHARING.

WHY OUR SPECIFICATION FITS TO THE OPEN COMPUTE PROJECT ?

OPEN. FOR BUSINESS



OCP
SUMMIT



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)



LIFE IS FOR SHARING.

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

OPEN. FOR BUSINESS



OCP SPECIFICATIONS CALL FOR A REAL PRODUCT

LIFE IS FOR SHARING.

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.

OPEN. FOR BUSINESS



**OCP
SUMMIT**



LIFE IS FOR SHARING.

THANK YOU !

CONTACT :

Paul WAGNER

Deutsche Telekom Technik GmbH

Darmstadt/Germany

Paul.Wagner@telekom.de

OPEN. FOR BUSINESS



**OCP
SUMMIT**

APPENDIX : FIRST IMPLEMENTATION PROPOSAL



LIFE IS FOR SHARING.



Accton
Making Partnership Work

Images Courtesy of Accton / Edgecore October 1st 2018!

OPEN. FOR BUSINESS



OCP
SUMMIT

APPENDIX : FIRST IMPLEMENTATION PROPOSAL



LIFE IS FOR SHARING.



Accton
Making Partnership Work

Images Courtesy of Accton / Edgecore October 1st 2018!

OPEN. FOR BUSINESS



OCP
SUMMIT

OPEN.



FOR
BUSINESS.



OCP
SUMMIT