

A person with glasses is holding a smartphone to take a photo of a woman in a blue patterned shirt. The scene is outdoors with trees and a bright sky in the background. A large pink semi-transparent banner is overlaid on the bottom half of the image.

DT USE CASES – VOLTHA

December 2017



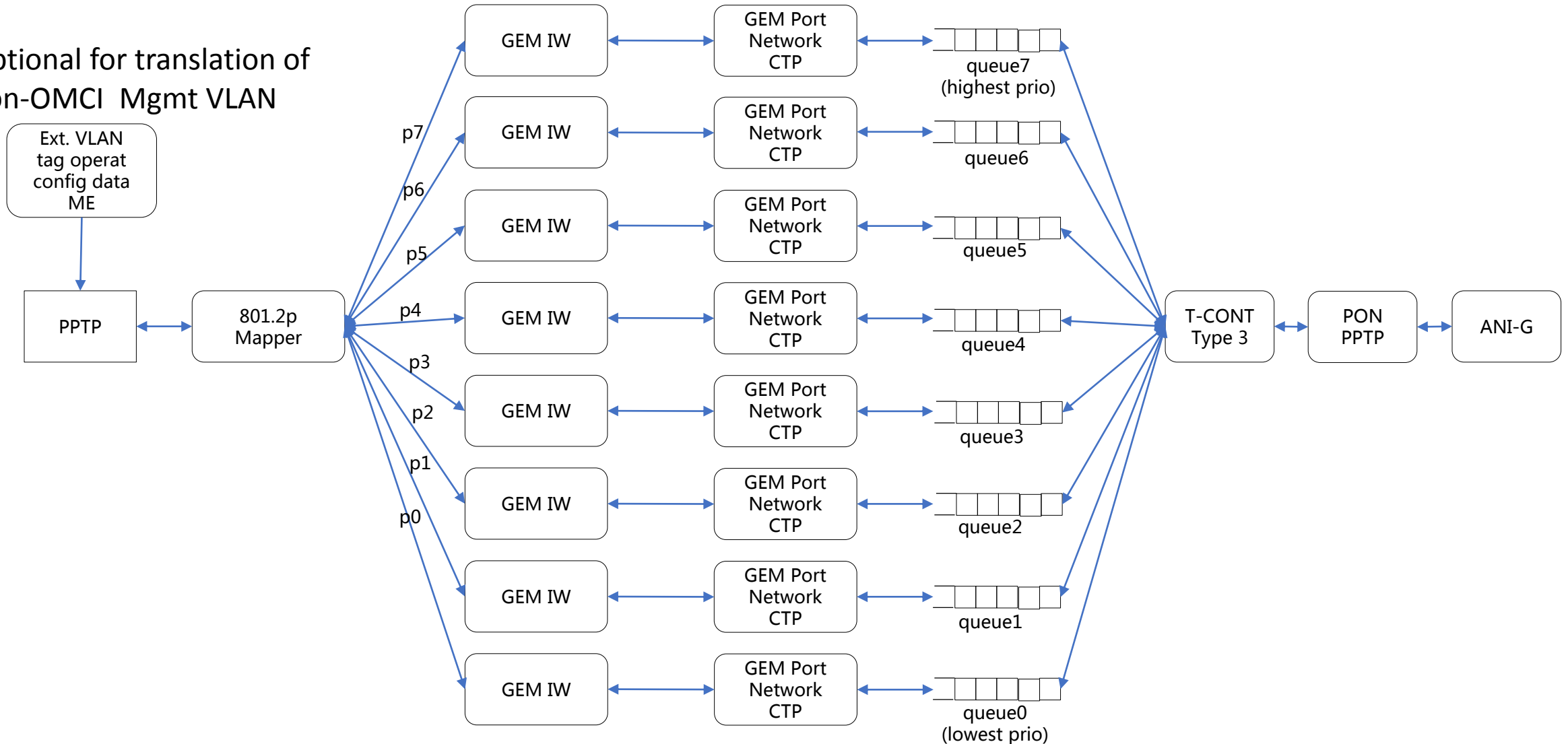
LIFE IS FOR SHARING.

DT use cases for VOLTHA – FTTH

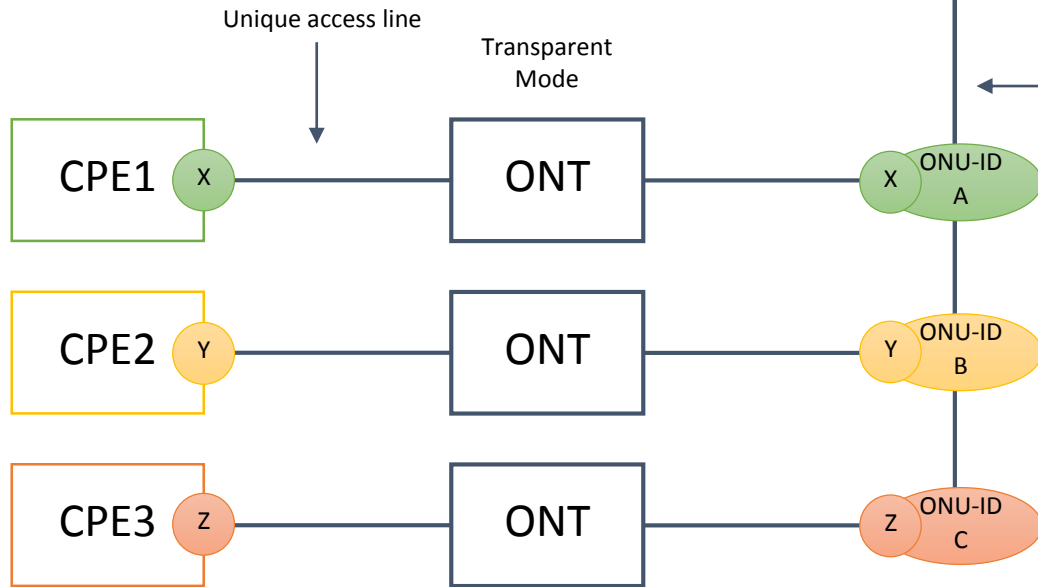
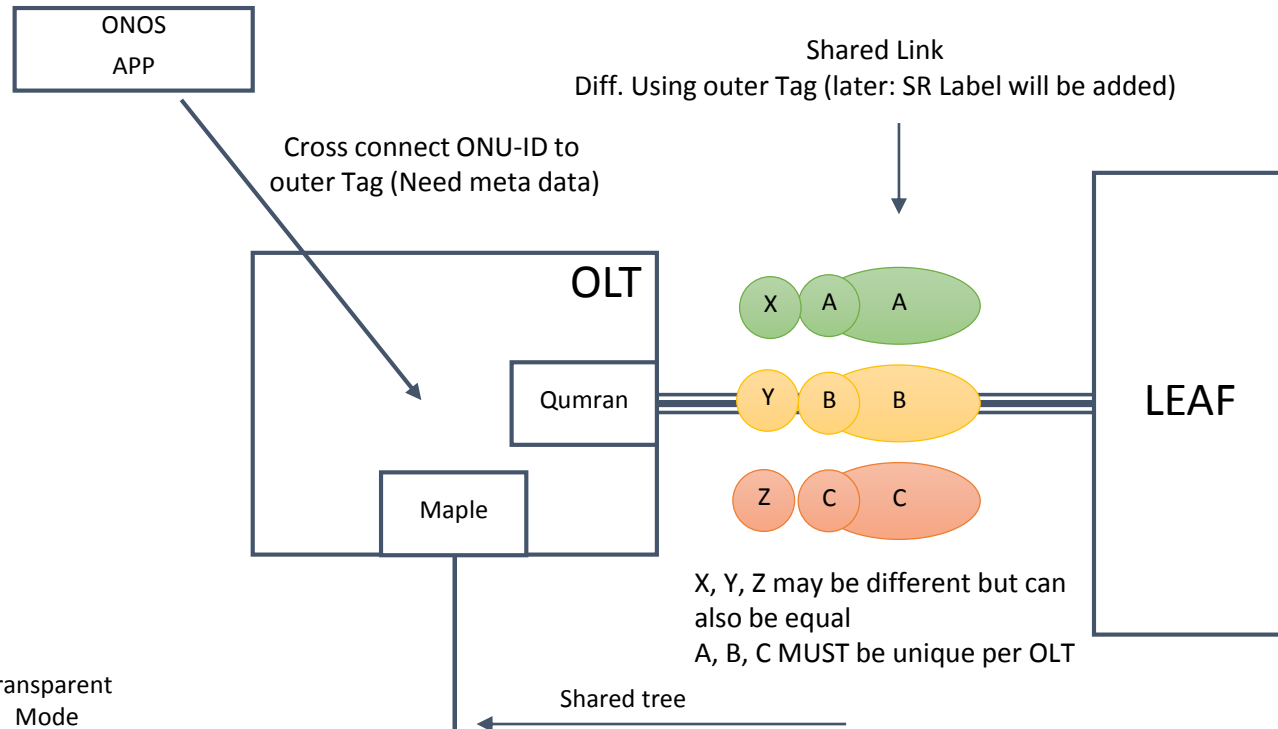
- FTTH use case (using bridged version with single physical Eth. port to customer)
 - Discovered ONT must trigger a port up message with at least SN and Reg-ID, nevertheless additional information like ONT-type, SW version etc. are welcome
 - Accepting and provisioning of ONT incl. assigning ONU-ID, Lineprofile with GEM port and T-CONT setting etc. (see next slide for optional OMCI model)
 - ONT must use a .1p mapper to map traffic in to queues and schedule it acc. to strict priority – one GEM port per queue and one T-CONT per user
 - OMCI (ONT management) in general use a separate path with its own GEM port and T-CONT
 - ONT or OLT (preferred) must support adding an outer VLAN-tag (s-tag) to the upstream packets coming from a user; p-bit value must be set according to special rules – not only copied from customer packet
 - This outer VLAN-tag (s-tag) represents the customer (for FTTH each ONU-ID has a one-by-one relation to a dedicated VLAN-tag ID) → VLAN cross-connect model
 - All customer tags at UNI port of ONT must be transferred transparently. This includes any VLAN-ID value and also multiple layer of VLAN tags. The VLAN tags coming from customers are considered as payload and must not be processed.

FTTH use case – OMCI model (optional)

Optional for translation of non-OMCI Mgmt VLAN



- In DT residential case all CPEs will send packets tagged with the same CTAG
- In general the entire VLAN range is allowed as CTAG
- ONT will transparently forward frames to OLT on PON Port
- Later release will cater for enterprise customers that require multiple VLANs transparently switched



- There will be eight GEM port per ONT (CPE) for Data traffic (OMCI traffic is carried in a separate one with own T-CONT)
- Each ONT will have unique Registration ID, i.e. one Registration ID belongs to a certain customer (maybe also ONU-ID)
- The Reg-ID will survive ONT hardware exchange, that means it is not related to ONT SN
- The traffic belongs to the same ONU-ID is mapped acc. to the p-Bit value to eight GEM ports
- APP will configure rules in OLT per ONU-ID to tag upstream frames with STAG representing the user (Registration ID) and vice versa in downstream
- (later release will use SR Labels additionally)

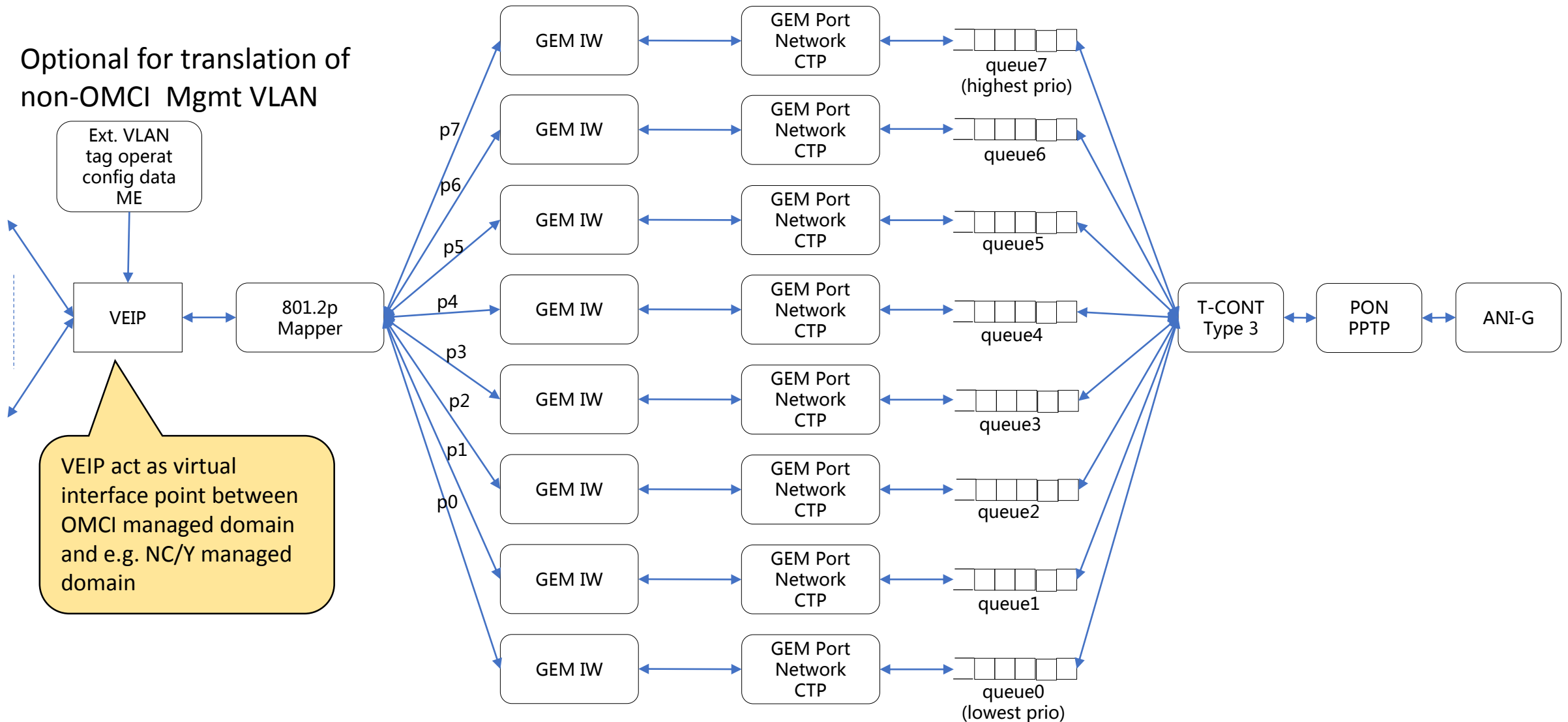
Relation of ONU-ID and Reg-ID (not SN) MUST be stable also after reboot

DT use cases for VOLTHA – FTTB (using G.fast DPU)

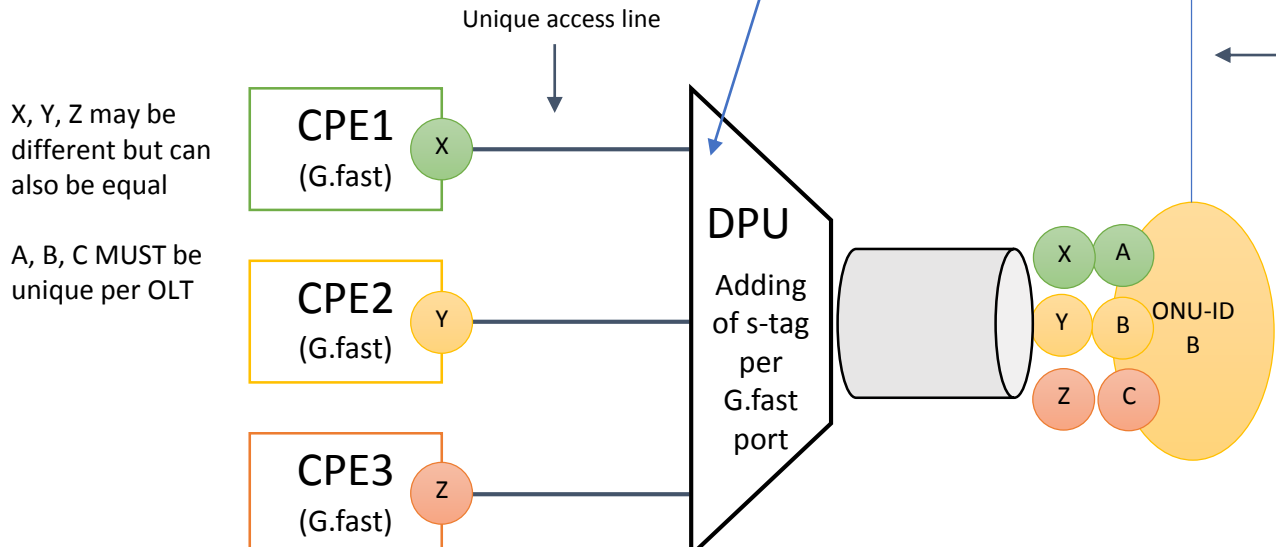
- FTTB use case

- Discovered DPU must trigger a port up message with at least SN and Reg-ID, nevertheless additional information like DPU-type, SW version etc. are welcome
- Accepting an provisioning of DPU incl. assigning ONU-ID, Lineprofile with GEM port and T-CONT setting etc. via OMCI and configure Ethernet related functions as well as all G.fast related things via “something non-OMCI” (more detailed OMCI model proposal is depicted on next slide)
- DPU must add an outer VLAN-tag (s-tag) to the upstream packets coming from a user; p-bit value must be set according to special rules – not only copied from customer packet
- This outer VLAN-tag (s-tag) represents the customer (for FTTB each G.fast port has a one-by-one relation to a dedicated VLAN-tag ID) → VLAN cross-connect model
- VLAN-tag (s-tag) must be unique per access node
- All customer tags at UNI port of DPU must be transferred transparently. This includes any VLAN-ID value and also multiple layer of VLAN tags. The VLAN tags coming from customers are considered as payload and must not be processed.
- DPU must use a VEIP as demarcation between OMCI managed domain and non-OMCI managed domain
- OMCI domain use .1p mapper to map user traffic and non-OMCI traffic into queues and schedule it acc. to strict priority – one GEM port per queue (all users and non-OMCI mgmt share these 8 queues) and one T-CONT per DPU
- VID and p-bit of management channel for non-OMCI domain must be able to manipulate via OMCI
- OMCI (managing the PON part of a DPU) in general use a separate path with its own GEM port and T-CONT

FTTB use case – OMCI model (optional)



- In DT residential case all CPEs will send packets tagged with the same CTAG
- In general the entire VLAN range is allowed as CTAG
- DPU will add an outer tag (s-tag) to the frames and forward it to OLT on PON Port
- Later release will cater for enterprise customers that require multiple VLANs transparently forwarded with outer tag added



X, Y, Z may be different but can also be equal

A, B, C MUST be unique per OLT

Relation of ONU-ID and SN MUST be stable also after reboot, that may require a special DPU exchange process

- There will be eight GEM port per DPU for Data and non-OMCI traffic (OMCI traffic is carried in a separate one with own T-CONT)
- The traffic belongs to the same DPU is mapped acc. to the p-Bit value to eight GEM ports
- ONOS APP will configure rules in OLT and DPU to tag upstream frames with s-tag representing the user (G.fast port) and vice versa in downstream
- (later release will use SR Labels additionally)

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