# Consideration on EPoC Architecture

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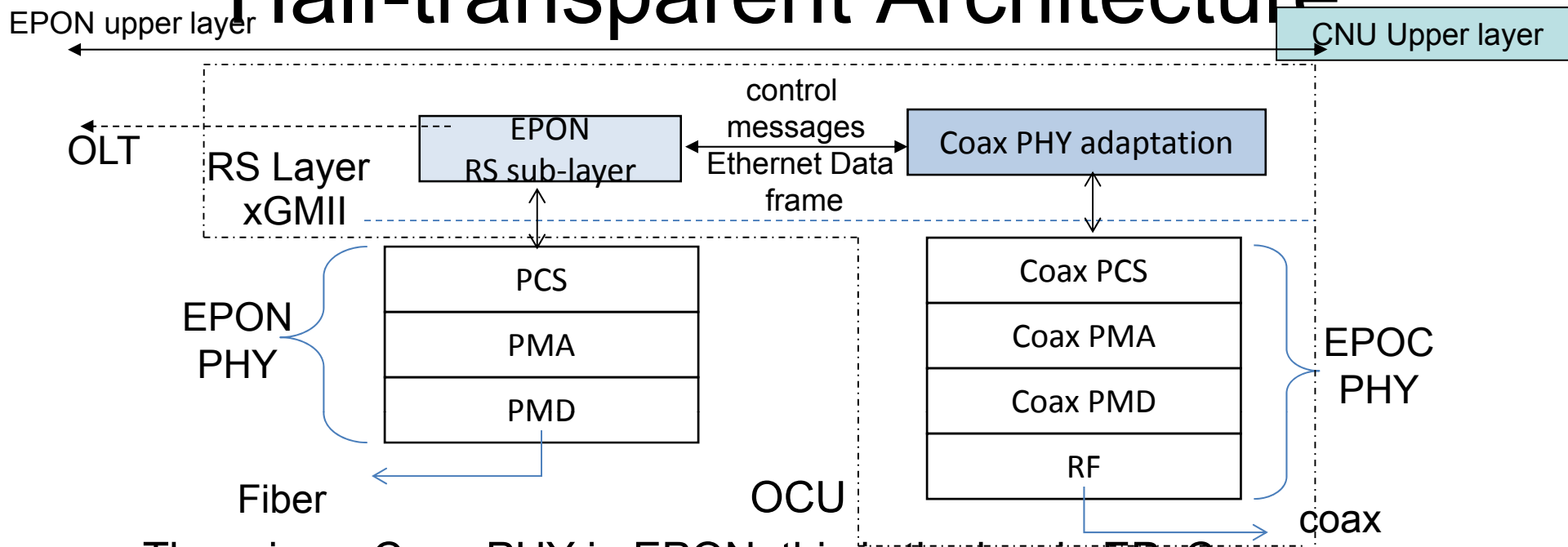
# Bridge or Repeater

- Repeater
  - OLT doesn't identify and control OCU
  - OCU conversion is automatic
  - Only fixed modulation can be used in coax, continuous modulation can't be used in coax
- Single carrier can be used in fixed modulation, segmentation is needed only if the bandwidth is too high
- EPON+EoC used in China is ONU+CLT，i.e. bridge
- End-to-End：EPoC≠EPON+EoC (Bridge Architecture)
- Repeater is feasible in downstream, because of continuous broadcast (control is not needed)
- Repeater is feasible in upstream, because of the burst mode
  - Burst control is needed, must be OLT controlled
  - No OCU definition and OCU burst control protocol defined in EPON s
  - Neither need the extended protocol to control OCU, or OLT doesn't control and manage directly

# Bridge or Repeater (Cont)

- If OCU is added in current EPON network, fiber transmission will be changed to Fiber + coax transmission, the convert time from Fiber to Coax should be included. Whether it will be conflicted with the protocol defined in EPON standard
- Whether there is jitter in the range process when OCU convert the CNU signal to optical in upstream
- Conclusion: It should be bridge, if the current architecture and OLT is not changed. Repeater needs to change OLT
- OLT can be changed, because 10GEPON was not be deployed. It can be changed even if 10GEPON deployed, the key is the termianl compatible

# Half-transparent Architecture




- There is no Coax PHY in EPON, this is the key in EPoC
- OCU can be implemented using half-transparent architecture. A new sub-layer should be added to implement the Coax PHY decomposition and parameter adaptive
- Signal channel negotiation, power adjusting and ranging in Coax PHY will be solved in Coax domain. OLT doesn't need to control
- Multiple access of CNU should be controlled by OLT MPCP, which can achieve end-to-end QoS and management
- OLT control CNU registration directly or OCU control CNU registration via proxy need to be researched
  - Registration is a part of end-to-end solution
  - OCU control CNU registration via proxy can shorten the registration time

# Half-transparent Architecture (Cont)

- OCU：special ONU
  - For OLT, it is ONU
  - For CNU, it is CLT in physical layer
- CNU：sub-ONU of OCU
- OLT controls and manages both OCU and CNU
- OCU buffer the data, and then forward it. The physical parameter in Coax, such as latency, should be adapted in the OCU
- OAM and MPCP should be extended in OLT. OLT should identify and control ONU, OCU and CNU
  - For ONU, OLT keeps the MPCP unchanged
  - For CNU and OCU, OLT uses the extended MPCP and OAM

# Thanks