

# **Backward Compatibility and Co-existence for 10Gb/s EPON**

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# Bandwidth Efficiency for Backward compatibility

## ■ Bandwidth efficiency

- Should be considered as same bandwidth efficiency as the current 1Gb/s EPON system to meet for future various broadband services.
- Should be considered the Impact for MAC (MPCP) layer to get the required 10Gb/s EPON bandwidth efficiency.

## ■ Impact to MPCP standard

- If 10Gb/s EPON needs same bandwidth efficiency as Gigabit EPON, MPCP layer may change.
- Gigabit EPON uses a 16-ns time quantum as an upstream unit. But, the 64B/66B coding is used in 10 Giga Ethernet, the upstream burst signal should include a multiple of 66 bits.
- 165 bits of 64B/66B coding signal are accommodated in 16 ns. These bits are not decoded in receiver. So, 2 Time quanta have 330 bits. This is 5 times 66 bits.
- The grant should be a multiple of 2 time quanta. Current 802.3ah does not consider such case.

Reference:[http://www.ieee802.org/3/10GEAPON\\_study/public/may06/index.html/mukoujima\\_1\\_0506.pdf](http://www.ieee802.org/3/10GEAPON_study/public/may06/index.html/mukoujima_1_0506.pdf)  
“Technical feasibility of 10Gb/s PHY for EPON ”

## Co-existence applications

### ■ Should be Considered PMD of 10Gb/s symmetric EPON for co-existence the following applications

- Existing PON (GE-PON,BPON) infrastructure should be used.
- 10Gb/s EPON and 1Gb/s EPON should coexist in a same fiber.
- Optical overlay of RF video should be supported.

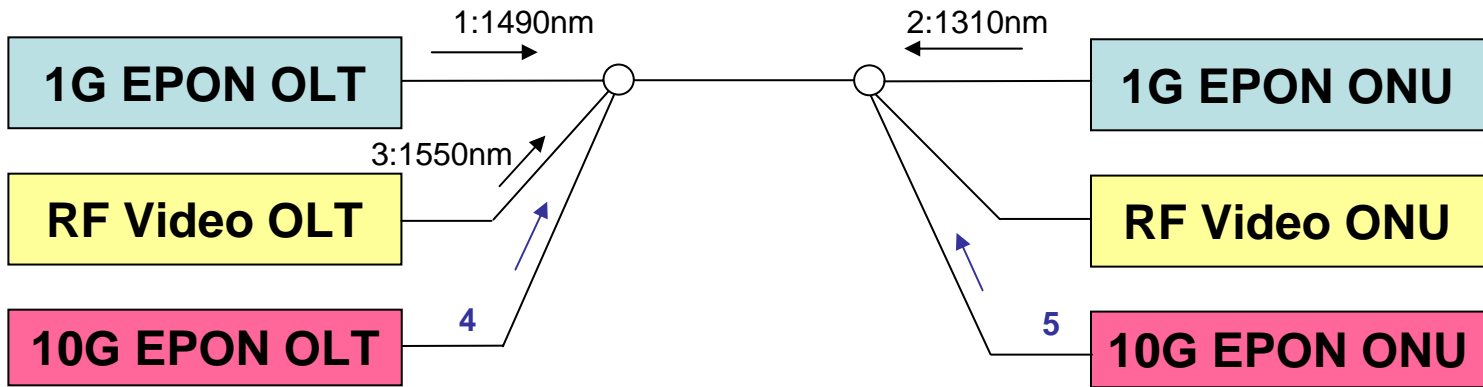


Fig.1 System model

## Conclusion

**We propose adding the following items to Objectives.**

- **Bandwidth efficiency and impact for MAC(MPCP) layer.**
- **Should consider PMD for 10Gb/s symmetric EPON for co-existence the following applications.**
  - **Existing PON (GE-PON,BPON) infrastructure should be used**
  - **10Gb/s EPON and 1Gb/s EPON should coexist in a same fiber.**
  - **Optical overlay of RF video should be supported.**