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Two 25G downstream options?

25G wavelength plan in 1x50G PON scenario

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September 2017

Introduction

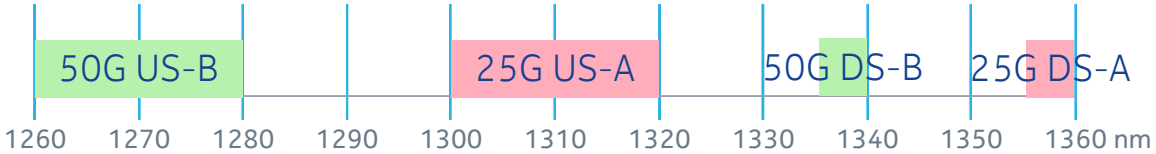
- Two DS0 wavelengths for 25G are proposed in effenberger_3ca_1_0717.pdf
  - *This makes each channel pair a complete system*
  - *They are on an equal footing*
  - *The E and O options can coexist with each other*
- What is the utility of two “complete systems… on an equal footing… that can co-exist with each other”?
  1. Two separate 25G PONs, WDM co-existing on the same ODN. A kind of TWDM-PON? Are there interesting use cases for this?
  2. 25G EPON and 50G EPON co-existence, in the case of 50G PON = 1x50G.
     - Consideration for 1x50G PON was proposed in wangbo_3ca_2_0717.pdf
     - This is the subject of this contribution

25G and 50G EPON co-existence

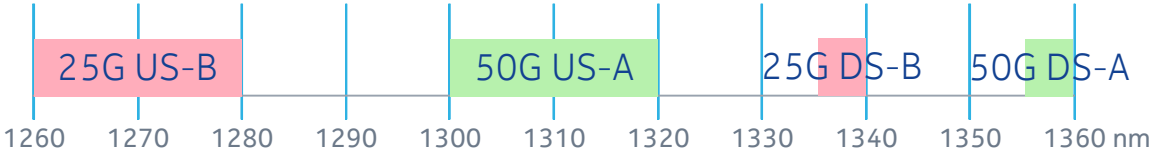
Wavelengths available:

DS-A and –B in O+ band, specific wavelengths are t.b.d.

If 25G option A is deployed, 50G option B will WDM co-exist with it



If 25G option B is deployed, 50G option A will WDM co-exist with it



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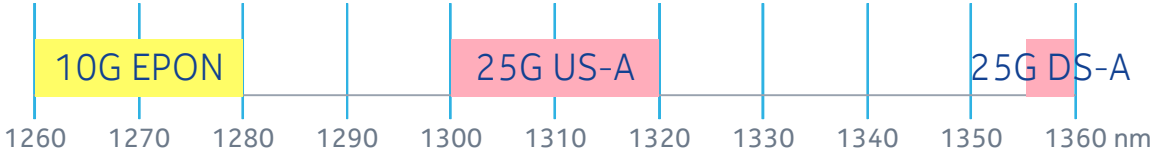
WDM co-existence with 10G EPON

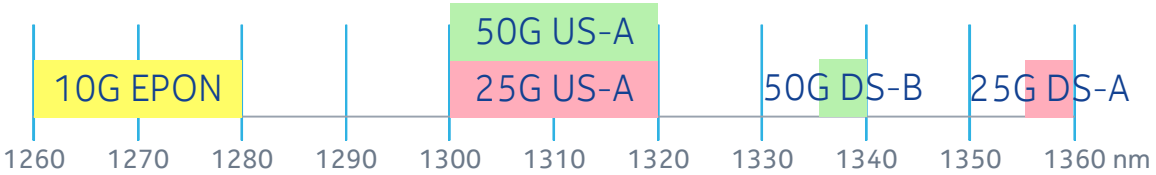
25G EPON WDM co-exists with 10G EPON (as already agreed)



50G EPON WDM co-exists with 10G EPON (comes automatically)

50G EPON – 25G EPON – 10G EPON triple co-existence is possible

- 25G and 50G WDM co-existence with 10G EPON; 50G-25G co-existence via TDM.
- A new 50G OLT variant with small DS/US gap is needed.



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Advantage for 25G EPON

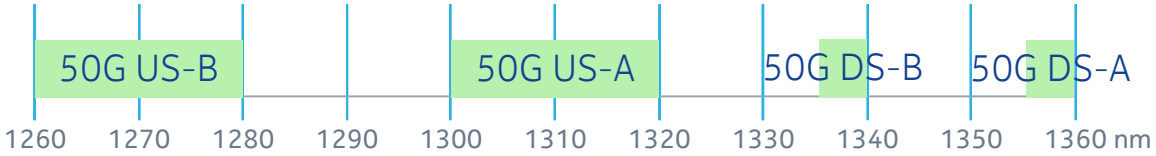
5 nm wide DS channels (like in 10G EPON) would lead to lower cost OLT EML transmitters.

- Vendor input: 10-15% chip yield improvement

Co-existence: looking forward to 100G EPON

Option 1: 2x50G + channel bonding

- DS-A and DS-B used for 50G channels. No 100G EPON - 25G EPON co-existence.
- US-B used for one of the 50G channels. No 100G EPON – 10G EPON co-existence



Option 2: 1x100G coherent

- Coherent PON may be consistent with the timing of the market need for 100G EPON, 2025-2030
  - Coherent PON is an active research topic
- With DSP, coherent PON can use the S/C/L bands
  - chromatic dispersion is fully compensated
  - co-existence issues with legacy PONs can be avoided

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