Comments on two DS wavelengths for greenfield

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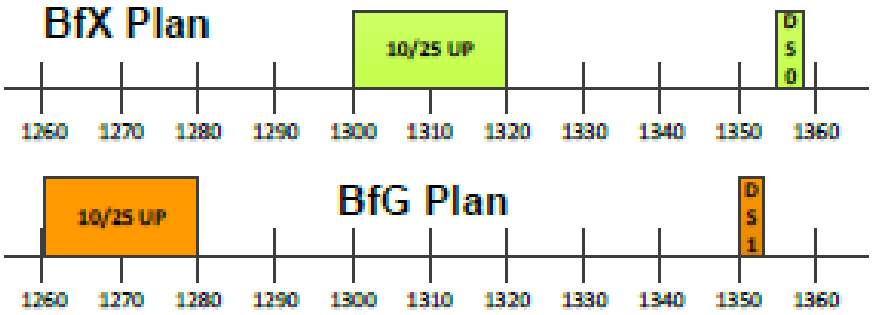
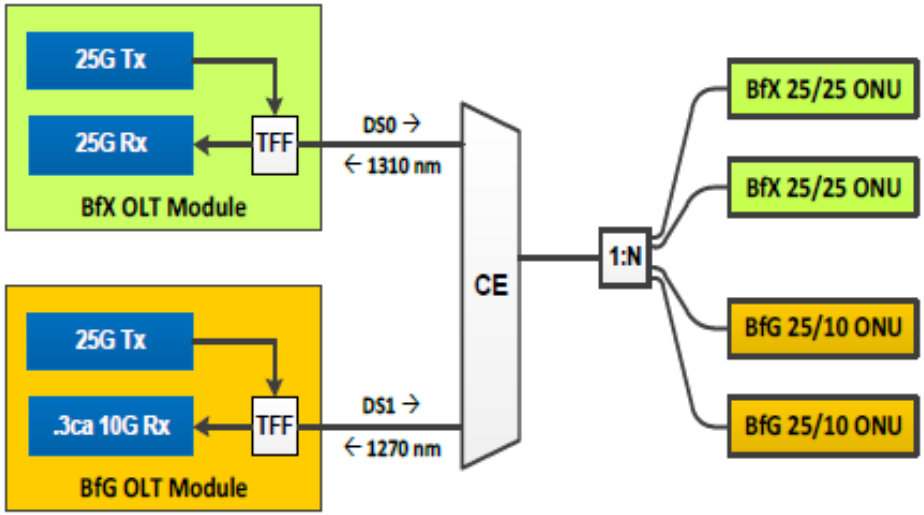
Introduction

- Scenario:
  - Greenfield ODN
  - Mix of 25/10 and 25/25 ONUs
  - Use two separate upstream wavelengths for 10G and 25G to avoid variable upstream capacity (harstead_3ca_1_0917)
- Possible use cases:
  - Low cost 25/10 ONUs for residential and high cost 25/25 ONUs for premium services, e.g. business customers
  - Deploy low cost 25/10 ONUs first, and when the cost premium of 25/25 ONUs decreases, switch deployment to 25/25 ONUs
- Compare supporting this scenario with one or two DS wavelengths

Two DS wavelengths

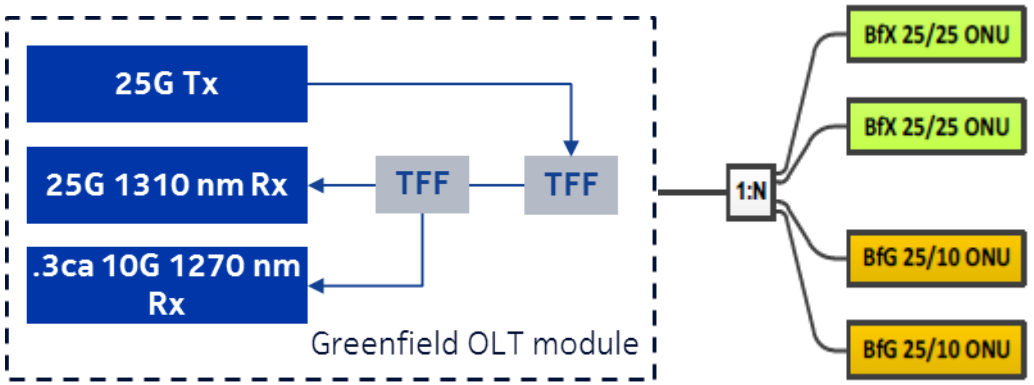
- Per kramer_3ca_2_0917
- Two separate downstream wavelengths, one for 25/10 ONUs and one for 25/25 ONUs.
- In implementation, two OLT transceivers and a WDM (CE)



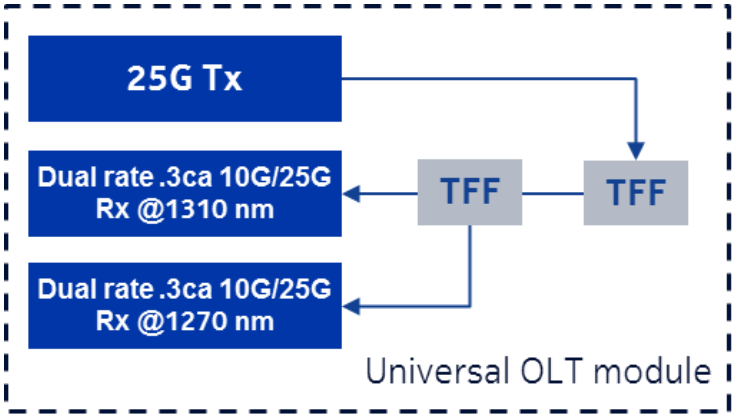


One DS wavelength

- One downstream wavelength, serves both 25/10 and 25/25 ONUs.
- In implementation, a single OLT transceiver

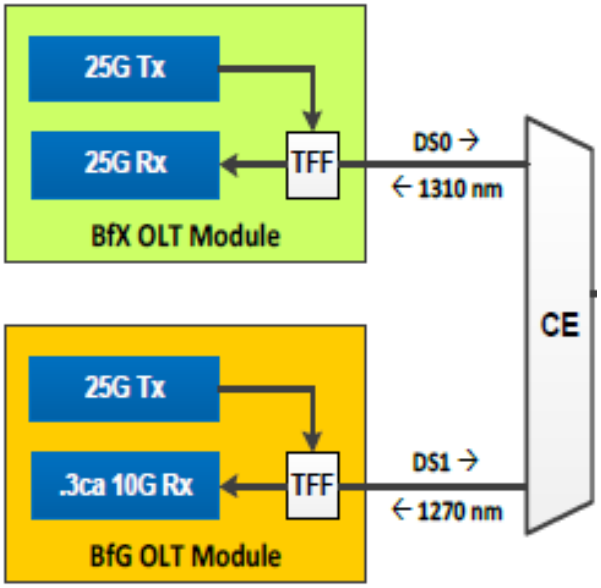


- Vendors can opt for a single universal OLT module that supports all scenarios: both brownfield scenarios and the greenfield scenario

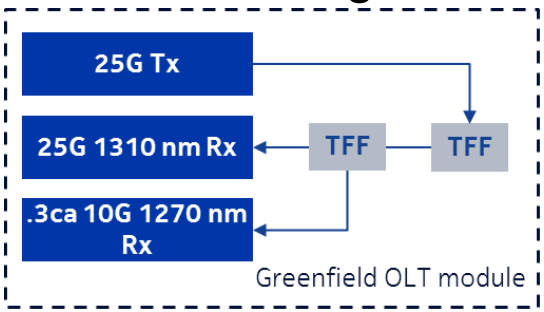


Comparison

Two DS wavelengths



One DS wavelength



2 DS compared to 1 DS:

- Higher OLT cost, up to ~2x more
- Lower OLT density, as low as 50% less
- If implemented in separate modules:
  - Two OLT module codes to support
  - More fiber interconnect
  - External WDM to manage
- Leaves less spectrum for co-existence with future PONs.