Security Level:

A new compromise wavelength plan for 100G EPON

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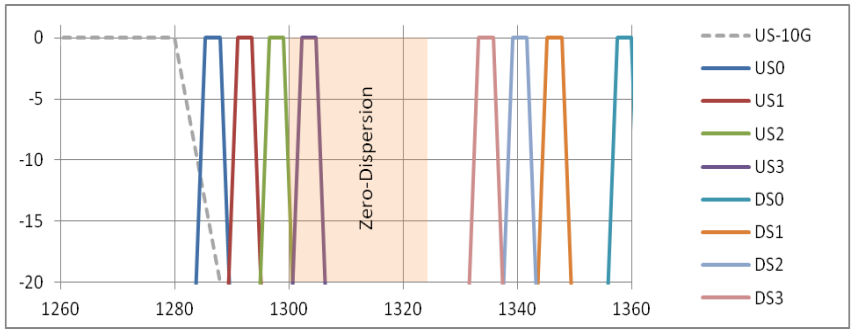
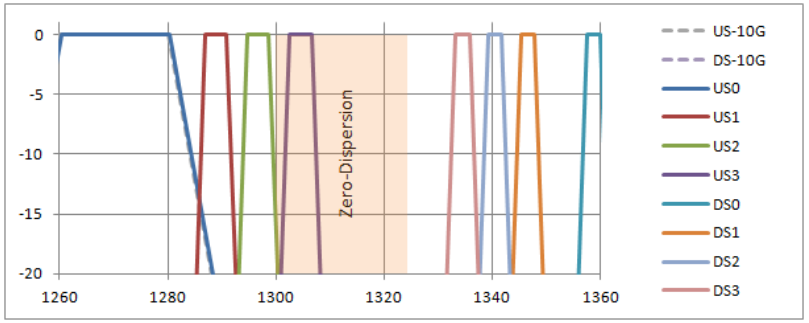
Background

Plan A

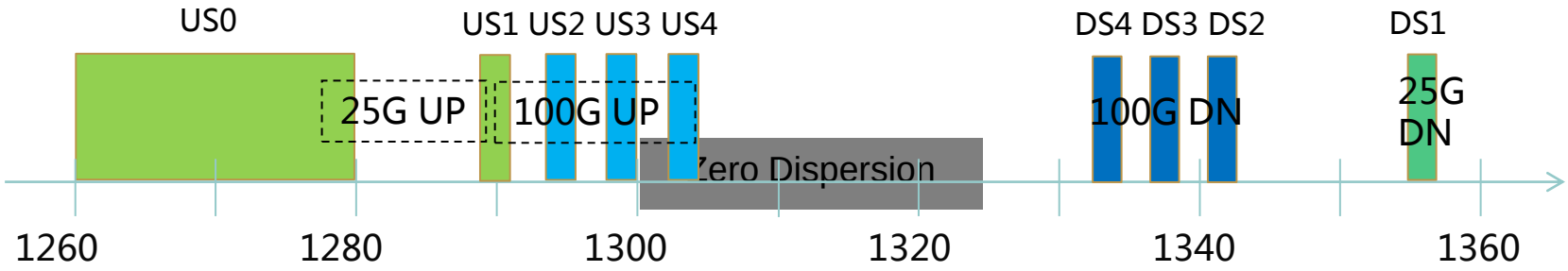


Plan B



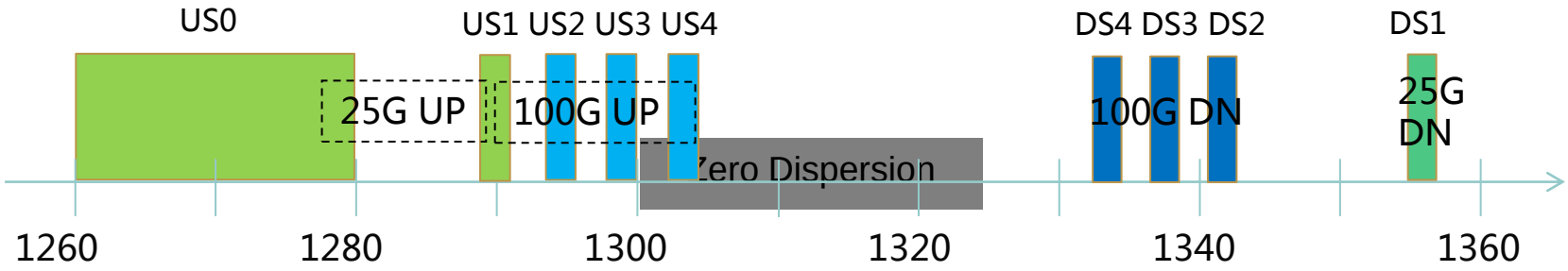
- Plan A vs Plan B is the major debate on wavelength plan
- The main advantage of plan A is its WDM coexistence with 10G and high upstream bandwidth efficiency
- While plan B has the advantage of low cost on first 25G channel
- This contribution propose a compromised wavelength plan and try to have some tradeoff on both of these two plans.

New compromise plan



- 100G downstream: DS1 DS2 DS3 DS4
- 100G upstream: US1 US2 US3 US4
- 25G downstream: DS1
- 25G upstream , two options:
  - Option 1: US1, WDM coexist with 10G PON(same with plan A)
  - Option 2: US0, TDM coexist with 10G PON

Compromise plan analysis



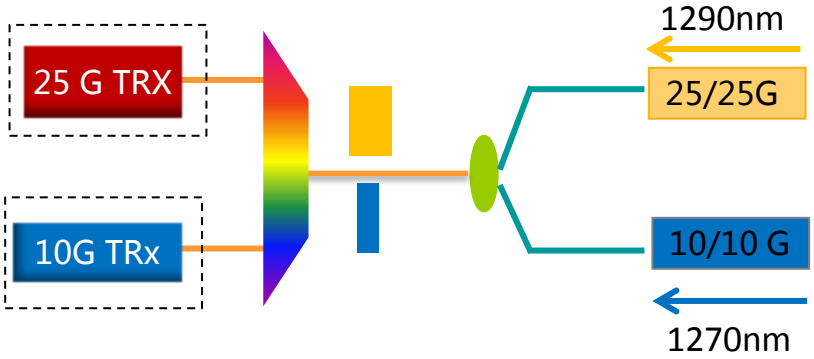
- 100G PON is always coexistent with 10G EPON by WDM
- 100G PON has uniform width for four channels, which will benefit the fabrication of 100G PON optics, and the sensitivity gain of preamplifier in OLT
- 25G can coexist with 10G EPON by WDM or TDM
- "Low cost" or "WDM" can be picked by specific operators and the market.

OLT variants

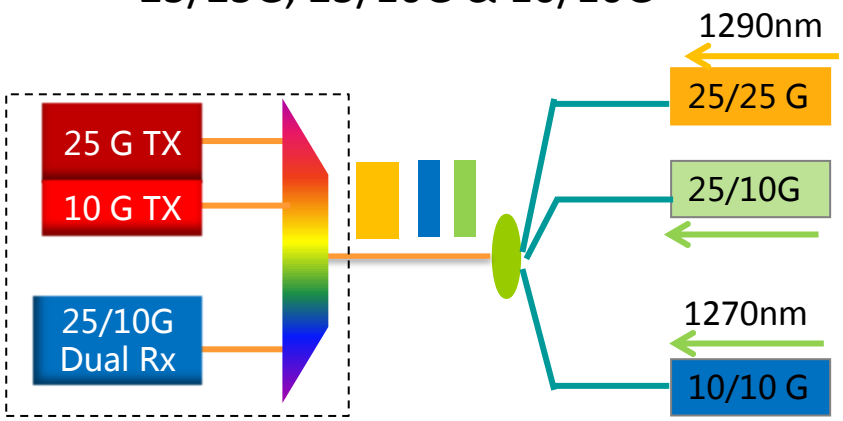
25G OLT

Option 1

25/25G & 10/10G

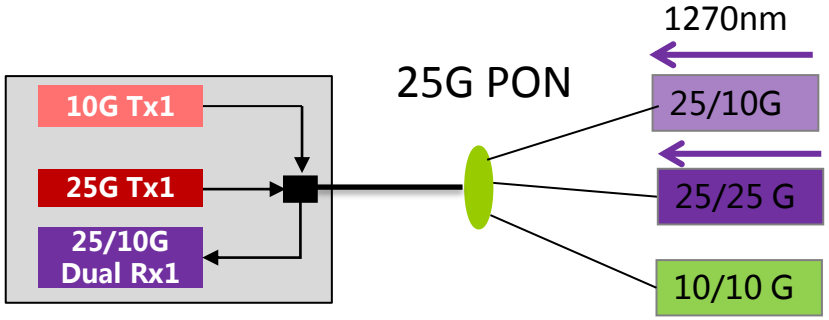


25/25G, 25/10G & 10/10G



Option 2

25/25G, 25/10G & 10/10G

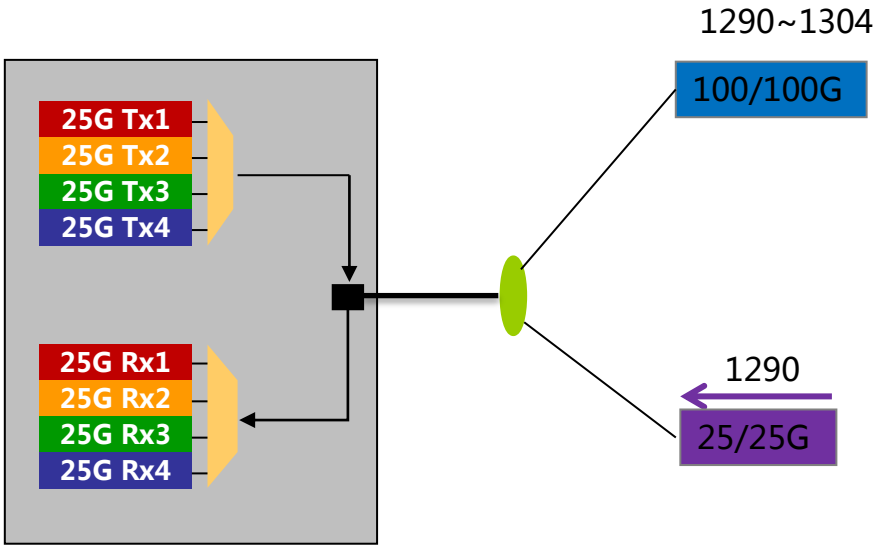


Option 2 has a more uniform 25G OLT, and can be used for both cases.

100G OLT(1)

Option 1

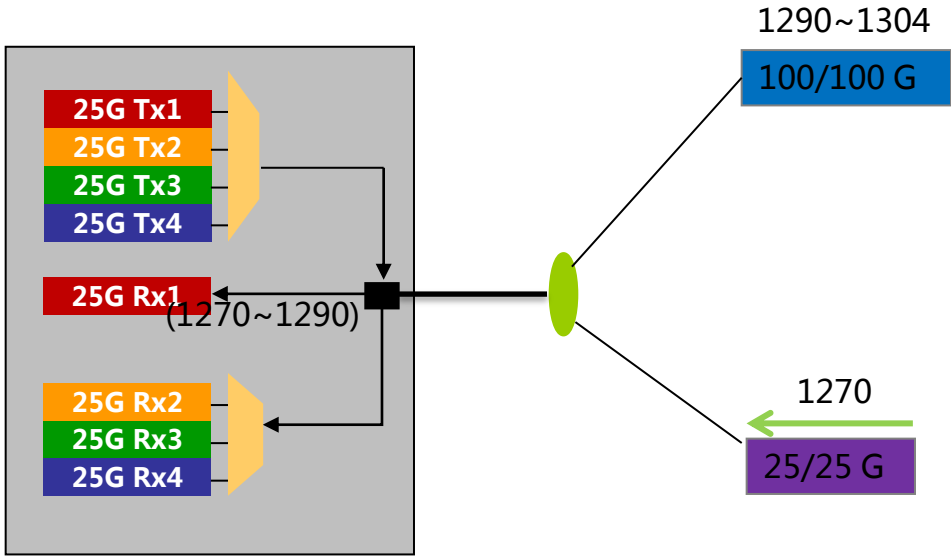
100/100G, 25/25G



4 25G Tx + 4 25G Rx

Option 2

100/100G, 25/25G

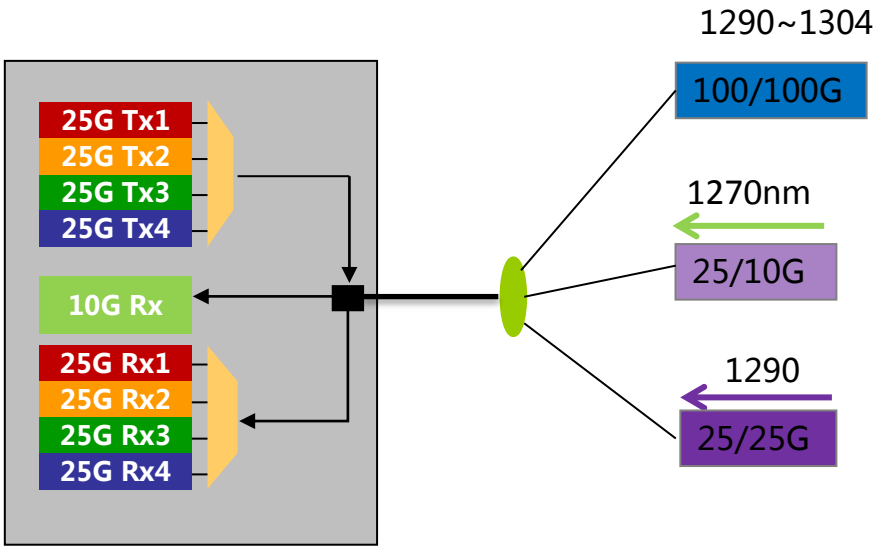


4 25G Tx + 4 25G Rx

100G OLT(2)

Option 1

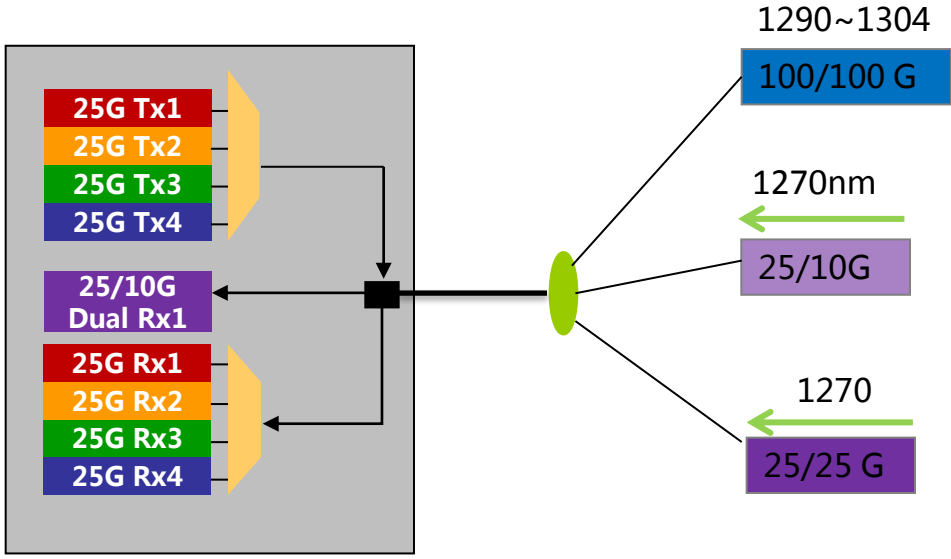
100/100G, 25/25G, 25/10G



4 25G Tx + 4 25G Rx and
1 10G Rx.

Option 2

100/100G, 25/25G, 25/10G

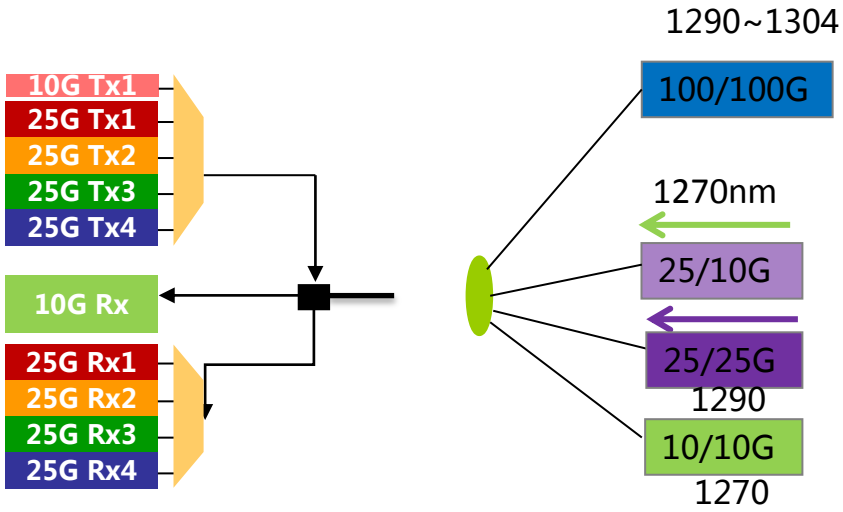


4 25G Tx + 4 25G Rx and
1 dual rate Rx.

100G OLT(3)

Option 1

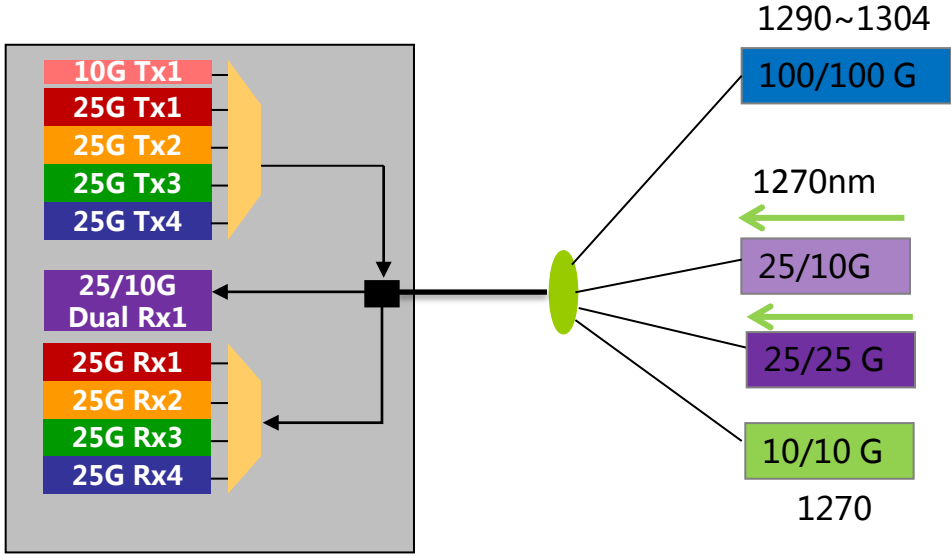
100/100G, 25/25G, 25/10G & 10/10G



4 25G Tx + 4 25G Rx and
1 10G Tx + 1 10G Rx.

Option 2

100/100G, 25/25G, 25/10G & 10/10G



4 25G Tx + 4 25G Rx and
1 10G Tx + 1 dual rate Rx.

ONU comparison

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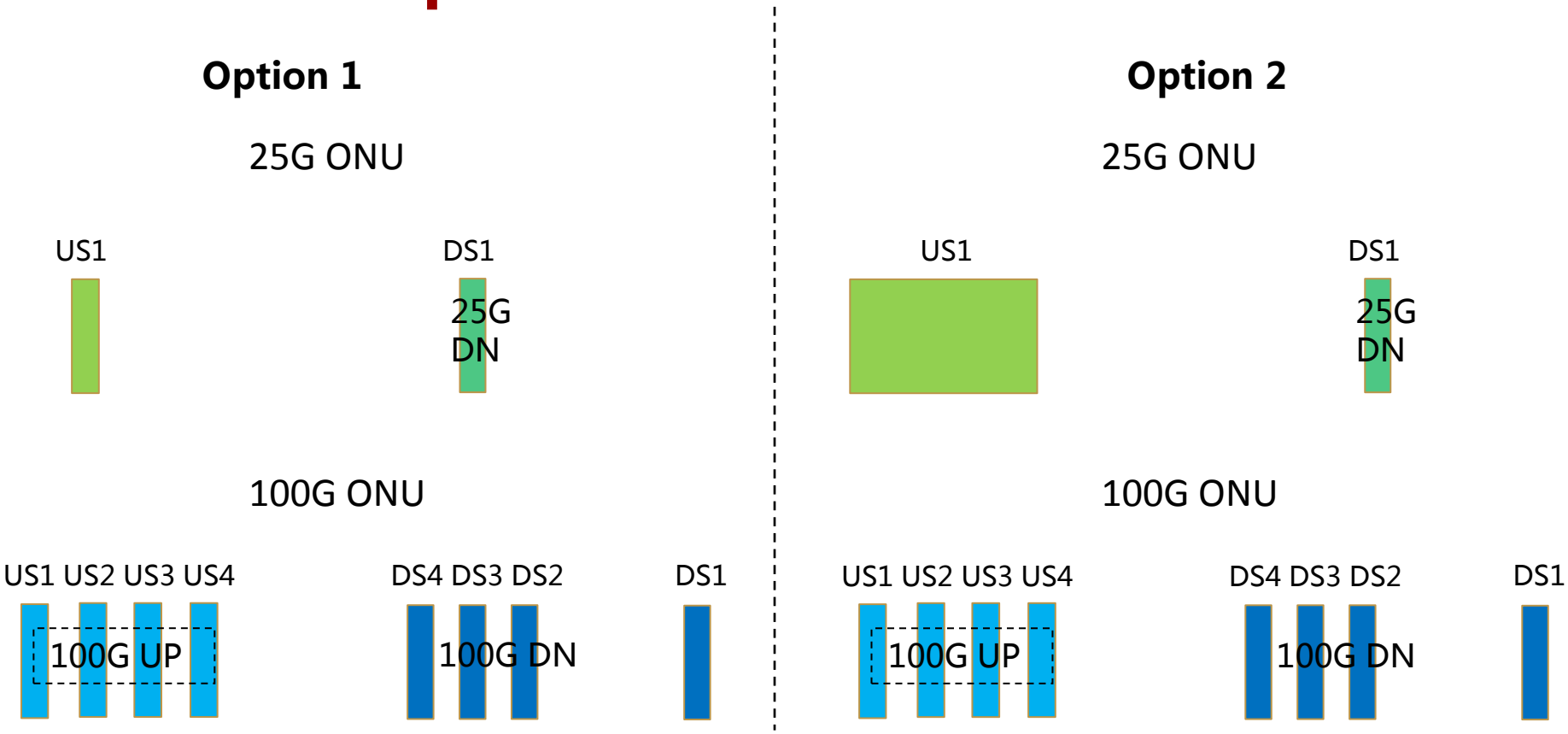

100G ONUs are same, while the 25G ONU in option2 has low cost advantage

Summary :

- A new compromise wavelength plan is proposed
- One option has the advantage of WDM coexistence, the other option has the advantage of low cost in first channel.
- There are only small impact on OLT between two options.
- 100G ONUs are exactly same, option 2 has low cost on 25G ONUs.

Thank you

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