



***IEEE 802.3 Ethernet First Mile***  
***Exploring Optical Point to Point Options***

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## ***Motivations (1 of 2)***

- **Over the last 9 months, it has become obvious that there is significant demand for single-mode, 100 Mb/s, P2P optical links in the EFM space**
- **Rationale:**
  - **Sufficient for many near term applications**
  - **Easy and obvious upgrade to Gigabit, and beyond, P2P optical links**
  - **Less expensive than Gigabit P2P in near term**
  - **Requirement for extended temperature; OAM; and single fiber**

## *Motivations (2 of 2)*

- **Current deployments of 100 Mb/s and 1 Gb/s links (dual fiber) can be interfaced with future single fiber solutions of like speed**
  - **Help to kick start market (it could use it!)**
  - **Future-proofing reduces risks**
- **Multispeed transceivers (e.g. 100/1000) can provide even greater potential for future-proofing**

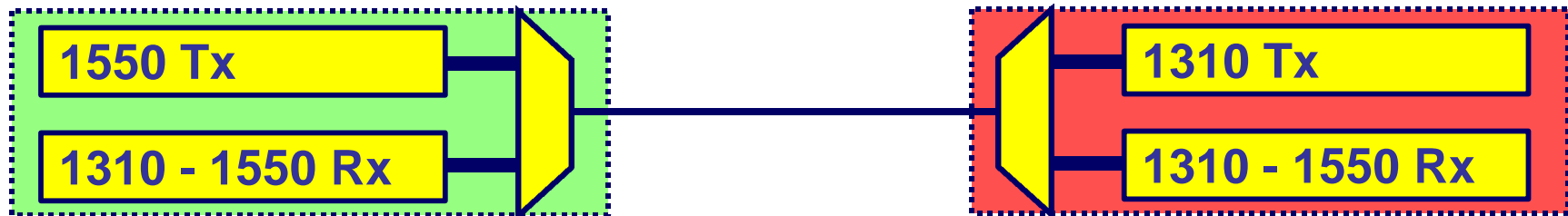
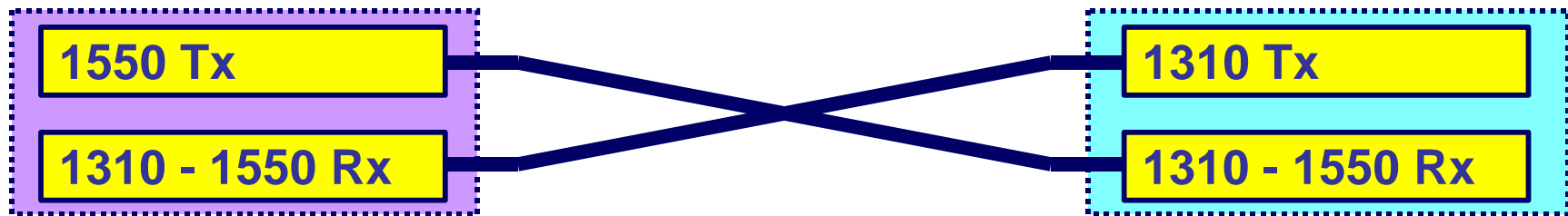
# *Exploring Point-to-Point Options*

- **100 Mb/s (4B/5B)**
  - Existing: “100BASE-SMX”
  - Potential new:
    - Single Fiber
    - Dual Fiber
- **Gigabit (8B/10B)**
  - Existing: 1000BASE-LX
  - Potential new:
    - Single Fiber -- PLANNED!
    - Dual Fiber

# *Pseudo-objectives*

- **Common set of optical specs for all**
  - Same values
  - Same specification and measurement methodology (jitter; OAM; TP3; stress Rx sensitivity)
  - Ensure potential interoperability
- **All support**
  - OAM
  - Extended temperature
  - 10 km
- **Interoperate with respective legacy XCVR**
- **Don't need to modify objectives to study potential**

# Single/Dual Fiber Interoperability



**NOTE: The optical MUX does low loss wavelength splitting**

# *Interoperability Considerations*

- **Which is key? Interoperation between:**
  - **100BASE-SMX, 100Mb/s-Dual and 100Mb/s-Single**
  - **1000BASE-LX, 1Gb/s-Dual and 1Gb/s-Single**
  - **100Mb/s-Dual and 100Mb/s-Single, 1Gb/s-Dual and 1Gb/s-Single**
    - **Requires ability to auto-negotiate between speeds**
  - **Combination of the above**

# *Optical Specification Direction*

- **Base off of 10GBASE (clause 52) for:**
  - **Link model**
    - **Tx specification**
      - TP3 only using Golden Fiber
      - Triple trade-off
      - General relaxation of specifications
    - **Rx specification (max power input and sensitivity)**
      - 1000BASE-SMX (existing 10km parts)
      - 100BASE-SMX
  - **Jitter**
- **Relax wavelengths for Rx to permit flexibility**



## *What Needs to be Done?*

- **Agree on (or assume) 802.3ae link model**
- **Survey Rx sensitivity/overload capabilities for existing 1000BASE-SMX and 100BASE-SMX at target wavelength range**
- **Plug values into model and see if there is a “lowest common denominator” solution that makes sense**
- **Survey interoperability priorities**
- **Report back in November**