WDM C-Band Recommendation for 100G nR4

IEEE P802.3bm - 40 Gb/s & 100 Gb/s Fiber Optic Task Force – Sept 2012

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The timing is right for task force to evaluate new channel plans

- Sometimes we say “do nothing” is an acceptable alternative
- Others propose “one and only one” solution for nR4
- Potential problems with either position
  - LR4, SR10 and SR4 may not provide the customer with much choice for those needing a 500m nR4 solution
  - Innovations solutions get developed outside of the IEEE
  - The market chooses non-IEEE solutions
  - The IEEE becomes irrelevant for those customers

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At the same time we need a vision of an Ethernet fabric that scales gracefully to terabits/per second

- Today there is no clear roadmap from 100G SR and LR to 400 G and 1.6 T
- Many of our core technologies take years to develop
- Not having a long term plan may result in suboptimal short term solutions
- Companies may be reluctant to invest in technologies that cannot readily adapt to changes in the market

We should consider the ITU-T G.694.1 Recommendation for C-band

- Spectral grid for WDM applications
- Since ITU approval in 2002, C-Band is the most widely used grid in the optical industry
- Recall that the ITU reference point is193.1 THz, (~1550 nm)
  - IEEE should standardize a wavelength plan that gracefully scales from 100G to 400G and 1.6T
- Supported by broad base of technologies:
  - Muxes in silicon photonics, silica, LC, InP, and TFF
  - Lasers and laser arrays: EMLs, DMLs, and external cavity
  - Modulators: silicon photonics and InP
  - Detectors: Ge, InP, and InGaAs

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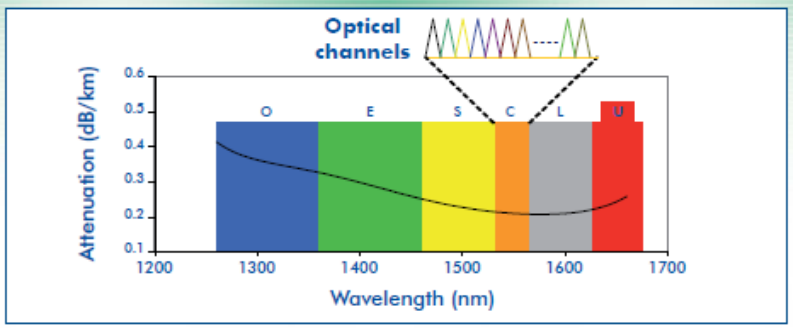
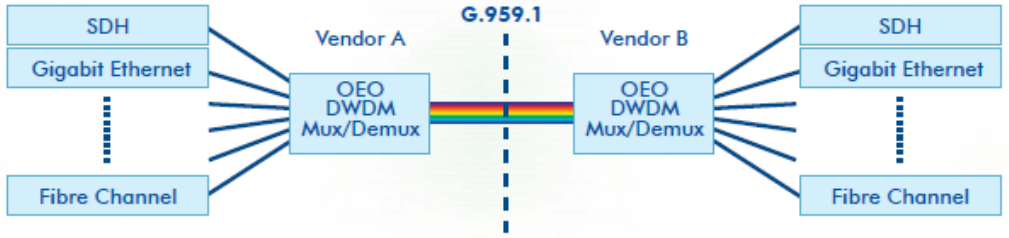
Highlights

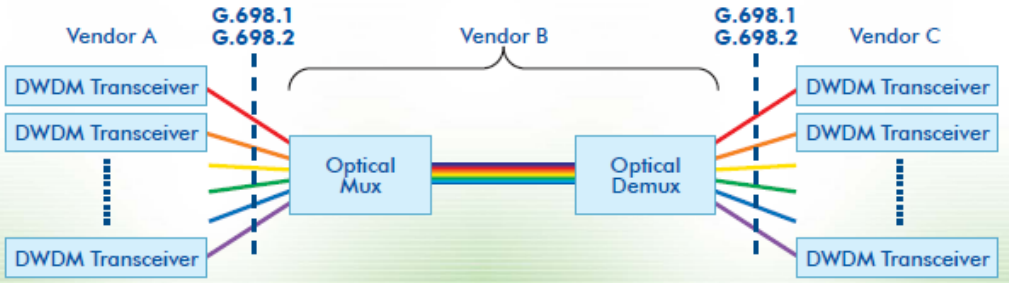
- 100 GHz, 50 GHz, 25 GHz channel spacing (G.694.1)
- Unidirectional
- Up to forty 10 Gbit/s optical channels 100 GHz spaced per DWDM system, in C-band
- G.652, G.653, G.655 optical fibre-supported



- Multichannel (DWDM) interfaces (G.959.1)
- Multivendor interoperability:
  Vendor A Mux/Demux can be connected to Vendor B Mux/Demux.



- Single channel (coloured) interfaces (G.698.1, G.698.2)
- Multivendor interoperability:
  Vendor A transceiver can be connected through Vendor B Mux/Demux to Vendor C transceiver



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The benefits of an ITU-T C-band option for nR4

- Wide availability of C-band lasers and WDM components
- Huge infrastructure already in the market:
  - Test equipment, test beds, labs, etc.
  - Knowledgeable customer base
- Flexible, adaptable solutions
- Roadmap to 400 G, 1.6T and beyond

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