

50Gb/s Per Lane Specification Considerations

400 Gb/s Ethernet Task Force
802.3 Plenary Session
San Antonio, TX
4 – 6 November 2014
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Ethernet Rates

- 802.3 Ethernet Router & Switch MAC rates Gb/s:
1 → 10 → 40 → 100 → 400
- Technology per lane mainstream rates Gb/s:
1 → 2.5 → 5 → 10 → 25 → 50
- 802.3 Ethernet Server & Switch MAC rates Gb/s:
1 → 2.5 → 5 → 10 → 25 → 40
- 25 Gigabit Ethernet Consortium MAC rates Gb/s:
25 → 50
- Observations:
 - Technology per lane rates increase in ~2x steps
 - Ethernet rates both drive and follow technology rates
- Conclusion: There will be 50 & 200 Gb/s Ethernet rates

40/50G CFI Status

- CFI Planning Meeting: 40Gb/s Single Lane PMD
IEEE 802.3 Interim Meeting, Norfolk, Virginia, 5/13/14
Straw Poll #1
Would you support a 40Gb/s single lane PMDs CFI?
Yes: 52 No: 8
- 40/50G Serial CFI Strategy Brainstorming Flash Mob Mtg.
802.3 Plenary Session, San Diego, CA, 7/17/14
Room count not taken, 12 pizzas consumed
- Post Flash Mob Mtg. SurveyMonkey, 7/30/14
When should 40/50G CFI be held?

Nov 2014	4	(11%)
Mar 2015	21	(57%)
July 2015	9	(24%)
Other	3	(8%)

802.3 Status

- 25G Ethernet Project Approved
- 2.5/5.0G Ethernet CFI planned for current Plenary meeting
- Likely 2014 simultaneous projects in 802.3
 - 2.5/5.0 Ethernet
 - 25G Ethernet
 - 400G Ethernet
- 802.3bs TF Status
 - Considering 8x 50G SMF PMDs
 - Working on 8x 50G electrical I/O (CDAUI-8) specification
- Starting a 4th 802.3 Project (40/50G) in 2014 will create serious resource and scheduling conflicts, especially for .bs
 - same PMD resources
 - same logic resources if 50G MAC rate is included

802.3bs 50G per lane Specification Proposal

- Specify 50G electrical and optical lanes so they support:
 - operation down to 40G
 - Nx 50G optical and electrical lane configurations
N = 1, 2, 4, 8, 16
- Example considerations
 - 400G FEC easily stripped across 1, 2, 4, 8, & 16 lanes
 - Optical PMD specs. that make sense for various wavelength and fiber pair counts
- This approach is synergistic with the OIF CEI-56G Project whose output is defined as:
 - Single IA (Implementation Agreement) specifying chip-to-module (or chip-to-chip) interface of 1 to N lanes
 - One or more electrical specifications for operation across a single lane for speeds from 39 to 56 Gb/s

Nx 50G SMF & MMF PMD Use Cases

- 40/50G Modules
 - 1x 50G (single 50G)
 - Ex. SFP (how about a prize from Scott Kipp for this?)
- 160/200G Modules
 - 4x 40/50G parallel (quad 40/50G)
 - Ex. QSFP, CFP4
- 200G Modules
 - 4x 50G WDM (single 200G)
 - 2x 2x50G parallel WDM (dual 100G)
 - Ex. QSFP, CFP4
- 400G Modules
 - 8x 50G WDM (single 400G)
 - 4x 2x50G parallel WDM (quad 100G)
 - Ex. CFP2

802.3bs 50G Specification Considerations

Thank you

