

802.3df

Leadership Observations:
March meeting cycle

Mark Nowell - Cisco
John D'Ambrosia, Futurewei, US Subsidiary of Huawei

29 March 2022

802.3df March meetings

- 5 meetings, 19 Technical presentations

This presentation is an attempt to make some **general observations** and **highlight/encourage some areas for contributions** in the next meeting cycle.

Decisions made (Motions)

https://www.ieee802.org/3/df/public/22_03/motions_3df_0322_220315.pdf

3/15

- Adopt new 400 Gb/s Physical Layer Specification Objective for 4 pairs @ 2km SMF
- Adopt baselines for 100G-based AUI/KR/CR Objectives based on 802.3ck work
- Adopt PAM4 modulation as basis for 200 Gb/s per lane optical (500 m & 2 km SMF) reach objectives
- Adopt baselines for 100G-based MMF objectives based on 802.3db work

Consensus tested (Straw polls)

https://www.ieee802.org/3/df/public/22_03/motions_3df_0322_220315.pdf

3/24

- Support indicated for leveraging existing 100 Gb/s signaling specs for 800 GbE electrical PMDs (Y:41 N:0 NMI:22 A:6)

Observations: Logic

- For 800 GbE
 - Two PCS options:
 - 2x Clause 119
 - Clause 119 sped up
 - For 100 Gbps / lane - leverage existing FEC approaches
 - For 200 Gbps / lane
 - Good insights into the problem space. Further contributions sought on all aspects
 - FEC discussion on going
 - We need to not lose sight of “holistic” approach
- For 1.6 TbE
 - For 200 Gbps / lane:
 - Good insights into the problem space. Further contributions sought on all aspects
 - FEC discussion on going

Need more contributions for April Ad hocs

Observations: Electrical

- Great progress on 100 Gbps/lane solutions!
 - Several open gaps remain: AN73, Link Training, MDI mappings, etc.
- C2M contributions show paths forward
 - Need more channel contributions
- Many presentations related to copper interfaces and cable assemblies
 - Discussion/analysis necessary
 - Need channel contributions
- Modulation choice (by interface/PMD type) is a big topic
 - Largest debate appears centered around CR solutions based on 200 Gbps / lane
- Proposed revision to COM package model for consideration

Need more contributions for April ad hocs

Observations: Optical

- Low-hanging-fruit decisions made (100 Gb/s based SMF & MMF PMD baselines)
- PAM4 modulation will be the basis for 200 Gb/s per lane based optical (500m & 2km SMF) baselines
- 800 Gb/s 10 km and 40 km - good technical contributions
 - Debate between direct detect vs coherent modulation choice

- No detailed technical contributions towards 500 m and 2 km objectives
- FEC discussions require some inputs on requirements from optical PMDs
 - 100 Gb/s based is known
 - Requirements from 200 Gb/s based optical PMDs are needed
- Ad hoc might be good time to sort through SMF nomenclature topic
 - Preview: We have 2 km parallel fiber objectives. Which takes priority “D” = parallel fiber or “F” = 2 km?

More contributions needed for April ad hocs

April ad hocs

- Three separate sets of meetings (Logic, Electrical and Optical)
 - See <https://www.ieee802.org/3/df/public/adhoc/index.html>
- Ad hocs vs regular Task Force meetings
 - Ad hocs focus is primarily for technical discussion, debate and consensus building (and testing)
 - No decisions (motions) can be made in an ad hoc meetings.
 - Only approval of agenda and minutes
 - Straw polls can be run to test whether consensus exists or get directional insights
- Goal of ad hocs is to allow a deeper level of technical discussion with knowledge that you have time to consider next steps
- Ad hocs will report back summaries into May Task force meetings

Adopted Physical Layer Objectives & Nomenclature

Ethernet Rate	Assumed Signaling Rate	AUI	BP	Cu Cable	MMF 50m	MMF 100m	SMF 500m	SMF 2km	SMF 10km	SMF 40km
200 Gb/s	200 Gb/s	Over 1 lane 200GAUI-1		Over 1 pair 200GBASE-CR1			Over 1 Pair TBD	Over 1 Pair TBD		
400 Gb/s	100 Gb/s							Over 4 Pair TBD		
	200 Gb/s	Over 2 lanes 400GAUI-2		Over 2 pairs 400GBASE-CR2			Over 2 Pair TBD			
800 Gb/s	100 Gb/s	Over 8 lanes 800GAUI-8	Over 8 lanes 800GBASE-KR8	Over 8 pairs 800GBASE-CR8	Over 8 pairs 800GBASE-VR8	Over 8 pairs 800GBASE-SR8	Over 8 pairs TBD	Over 8 pairs TBD		
	200 Gb/s	Over 4 lanes 800GAUI-4		Over 4 pairs 800GBASE-CR4			Over 4 pairs TBD	1) Over 4 pairs TBD 2) Over 4 λ's TBD		
	TBD								Over single SMF in each direction TBD	Over single SMF in each direction TBD
1.6 Tb/s	100 Gb/s	Over 16 lanes 1.6TAUI-16								
	200 Gb/s	Over 8 lanes 1.6TAUI-8		Over 8 pairs 1.6TBASE-CR8			Over 8 pairs TBD	Over 8 pairs TBD		

Thank you