Feb 4, 2021 IEEE liaison report

Tom Palkert
Macom
Mabud Choudhury
OFS optics
T11-2021-00048-v000
P802.3ck 100 Gb/s per lane Electrical Task Force
Adopted Objectives (1 of 2)

- Support a MAC data rate of 100 Gb/s, 200 Gb/s, and 400 Gb/s
- Support full-duplex operation only
- Preserve the Ethernet frame format utilizing the Ethernet MAC
- Preserve minimum and maximum FrameSize of current IEEE 802.3 standard
- Support the existing bit error ratios (BERs) at the MAC/PLS service interface (or the frame loss ratio equivalent) for 100 Gb/s, 200 Gb/s, and 400 Gb/s Ethernet

- Define a single-lane 100 Gb/s Attachment Unit interface (AUI) for chip-to-module applications, compatible with PMDs based on 100 Gb/s per lane optical signaling
- Define a single-lane 100 Gb/s Attachment Unit Interface (AUI) for chip-to-chip applications
- Define a single-lane 100 Gb/s PHY for operation over electrical backplanes supporting an insertion loss ≤28 dB at 26.56 GHz.
- Define a single-lane 100 Gb/s PHY for operation over twin-axial copper cables with lengths up to at least 2m
P802.3ck 100 Gb/s per lane Electrical Task Force
Adopted Objectives (2 of 2)

• Define a two-lane 200 Gb/s Attachment Unit interface (AUI) for chip-to-module applications, compatible with PMDs based on 100 Gb/s per lane optical signaling
• Define a two-lane 200 Gb/s Attachment Unit Interface (AUI) for chip-to-chip applications
• Define a two-lane 200 Gb/s PHY for operation over electrical backplanes supporting an insertion loss \( \leq 28 \text{ dB} \) at 26.56 GHz.
• Define a two-lane 200 Gb/s PHY for operation over twin-axial copper cables with lengths up to at least 2m

• Define a four-lane 400 Gb/s Attachment Unit interface (AUI) for chip-to-module applications, compatible with PMDs based on 100 Gb/s per lane optical signaling
• Define a four-lane 400 Gb/s Attachment Unit Interface (AUI) for chip-to-chip applications
• Define a four-lane 400 Gb/s PHY for operation over electrical backplanes supporting an insertion loss \( \leq 28 \text{ dB} \) at 26.56 GHz.
• Define a four-lane 400 Gb/s PHY for operation over twin-axial copper cables with lengths up to at least 2m
802.3ck status: Reviewing comments against D1.4

We are here...

154 comments received
20 closed
33 in bucket #1 (9 removed)
110 to address

For the open comments, there are many repeat comments with ~50 responses referring to other comments.

We are recommending that 14 comments be deferred to Working Group ballot.

120G = Chip to Module (Fibre Channel delta point)
120F = Chip to Chip
162 = Copper Cables
163 = Backplane
802.3ck web site

• The TF web page is here: –

• Next draft:
  – Leadership focusing on technical completeness
    • Technical gaps
    • TBDs
    • Postpone editorial comments and ‘tweaking’ of numbers
IF WE GO IN THIS DIRECTION... HERE’S WHAT TO EXPECT

- Targeting 3-week review as many have holiday during this time.
- SUBJECT TO CHANGE.

Posting of Draft 1.4

Close of ballot

D1.4 Comment resolution (Prioritized)

Final sweep for technical completeness & address major concerns

Pre-submit Draft 1.5

Closing Plenary
P802.3db 100 Gb/s, 200 Gb/s, and 400 Gb/s Short Reach Fiber Task Force

- Task Force Interim meeting (Teleconference) 21 January 2021
  - Meeting Minutes: https://www.ieee802.org/3/db/public/January21/unapproved_meeting_minutes_3db_01_0121.pdf
- Consensus building on adopting a baseline is ongoing
- Optical specifications will be generated in parallel with 53 G VCSEL/100 Gb/s per wavelength VCSEL development
- TF and WG adopted updated Objectives at November plenary.
  - Adopted additional objectives for physical layer specification that supports 100 Gb/s operation, 100 m MMF
- TF Adopted Timeline at November Plenary
  - Target date for Adopted Baseline: January 2021 (not met), CWV: February 2021
  - Target date for authorizing D1.0: March 2021 (may or may not be met)
  - Target date for Standard: June 2022
P802.3db 100 Gb/s, 200 Gb/s, and 400 Gb/s Short Reach Fiber Task Force

Adopted Objectives (1 of 2)

1. Support a MAC data rate of 100 Gb/s, 200 Gb/s and 400 Gb/s
2. Support full-duplex operation only
3. Preserve the Ethernet frame format utilizing the Ethernet MAC
4. Preserve minimum and maximum FrameSize of current IEEE 802.3 standard
5. Provide appropriate support for OTN
6. Support a BER of better than or equal to $10^{-12}$ at the MAC/PLS service interface (or the frame loss ratio equivalent) for 100 Gb/s operation
7. Support a BER of better than or equal to $10^{-13}$ at the MAC/PLS service interface (or the frame loss ratio equivalent) for 200 Gb/s and 400 Gb/s operation
8. Define a physical layer specification that supports 100 Gb/s operation over 1 pair of MMF with lengths up to at least 50 m

9. Define a physical layer specification that supports 200 Gb/s operation over 2 pairs of MMF with lengths up to at least 50 m

10. Define a physical layer specification that supports 400 Gb/s operation over 4 pairs of MMF with lengths up to at least 50 m

11. Define a physical layer specification that supports 100 Gb/s operation over 1 pair of MMF with lengths up to at least 100 m

12. Define a physical layer specification that supports 200 Gb/s operation over 2 pairs of MMF with lengths up to at least 100 m

13. Define a physical layer specification that supports 400 Gb/s operation over 4 pairs of MMF with lengths up to at least 100 m
IEEE P802.3db Task Force Timeline
Adopted by TF November 2020

1st Task Force Mtg

Baseline

Last New Proposal

Last Feature

Request IEEE-SA Ballot

IEEE-SA Ballot complete

Legend

- IEEE 802 Plenary
- IEEE 802.3 Interim
- IEEE-SA Standards Board


2020 2021 2022

D1.0 D1.1 D1.2 D2.0 D2.1 D3.0 D3.1 D3.2

TF Reviews WG Ballots IEEE-SA Ballots

Draft is attached to meeting at which editors are authorized to produce it
The IEEE 802 LMSC Executive Committee has chartered a Study Group under the IEEE 802.3 Ethernet Working Group to develop a Project Authorization Request (PAR) and Criteria for Standards Development (CSD) responses for:
(1) Beyond 400 Gb/s Ethernet
(2) Physical Layer specifications for existing Ethernet rates based on Physical Layer specifications for beyond 400 Gb/s Ethernet.

Call for interest Consensus presentation:
IEEE 802.3 Beyond 400 Gb/s Ethernet Study Group

• Main webpage:

• Study Group Interim meeting (Teleconference) 14 January 2021:
  – Meeting Minutes: https://www.ieee802.org/3/B400G/public/21_0114/minutes_b400g_a_210114_approved.pdf

• Study Group Interim meeting (Teleconference) 18 January 2021:
  – Meeting Minutes: https://www.ieee802.org/3/B400G/public/21_0118/minutes_b400g_210118_unapproved.pdf
Relevant Excerpt from a presentation

- Webscale deployments are driving the Ethernet switch and interconnect industry to develop solutions to allow them to continue to scale their networks.
- Unfortunately, not a lot of consistency on how they build their networks
- Radix, Fabric speed, Port speed, over-subscriptions, interconnect infrastructure
- Therefore, focus on key building blocks is important, with knowledge that the range of implementations and usage may be broad
- For Webscale deployments, Multi-rate requirements needs to be considered (a.k.a. signaling backwards compatibility –not module backwards compatibility )
- e.g. A host and module that supports 400GBASE-FR4, that can also be able to support 200GBASE-FR4, or even 100G-CDWM4
Tom P. opinions on Beyond 400G study group

• The consideration of multi-rate brings Ethernet closer to Fibre Channel requirements
• This group will probably initiate a 224G electrical interface
• Lanes for optical channel will probably stay with PAM4 modulation but there is talk of PAM6 and PAM8.
• Both 800G and 1.6Tbit being considered for aggregate data rates. (I don’t think this decision is relevant for T11)
## Future Meetings

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