IEEE802.3 Liaison Report

August 15 2019

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2019-00253v0

IEEE 802.3 Task Forces, Study Groups, CFIs of interest to T11

- P802.3ck 100 Gb/s per Lane Electrical Task Force
- P802.3cm Next Generation 400 Gb/s Ethernet over Multimode Fiber Task Force
- P802.3cn 50 Gb/s, 200 Gb/s, and 400 Gb/s over single-mode fiber Task Force
- P802.3ct 100 Gb/s and 200 Gb/s Ethernet over DWDM systems Task Force
- P802.3cu 100 Gb/s per lane optical PHYs for 2km and 10km for 100 GbE and 400 GbE Task Force
- In-progress CFI: Lower cost, shorter reach optical PHYs using 100 Gb/S wavelengths

P802.3ck 100 Gb/s per lane Electrical Task Force

- 7th Task Force meeting 21-23 May 2019, Salt Lake City, UT
  - Meeting Materials: http://www.ieee802.org/3/ck/public/19_05/index.html
  - Meeting Minutes: http://ieee802.org/3/ck/public/19_05/minutes_3ck_0519_unapproved.pdf
- 8th Task Force meeting 16-18 July 2019, Vienna, Austria
  - Meeting Materials: http://ieee802.org/3/ck/public/19_07/index.html
  - Meeting Minutes: http://ieee802.org/3/ck/public/19_07/minutes_3ck_0719_unapproved.pdf
- Adopted a link training baseline in May interim
- Editors produced preview Draft 0.1 after May interim, not yet intended for a comment cycle
- Adopted baselines for backplane reference receiver and mated test fixture for copper cables in July plenary. Revised timeline, slipping 2 meeting cycles later.

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 ≤28 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 ≤28 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

P802.3cm – Next generation 400 Gb/s MMF PHYs Task Force

- 7th Task Force meeting 20 May 2019, Salt Lake City, UT
  - Meeting Materials: http://www.ieee802.org/3/cm/public/May19/
  - Meeting Minutes: http://www.ieee802.org/3/cm/public/May19/unapproved_meeting_minutes_3cm_01_0519.pdf
- 8th Task Force meeting 17 July 2018, Vienna, Austria
  - Meeting Materials: http://www.ieee802.org/3/cm/public/July19/
  - Meeting Minutes: http://www.ieee802.org/3/cm/public/July19/unapproved_meeting_minutes_3cm_01_0719.pdf
- Resolved 58 comments against initial Working Group ballot Draft 2.0 in May interim and agreed to produce Draft 2.1 for Working Group ballot recirculation
- Resolved 19 comments against Draft 2.1 in July plenary and agreed to produce Draft 3.0 for the initiation of Standards Association ballot

P802.3cm – Next generation 400 Gb/s MMF PHYs Task Force – Adopted Objectives (1 of 2)

1. Support full-duplex operation only
2. Preserve the Ethernet frame format utilizing the Ethernet MAC
3. Preserve the minimum and Maximum FrameSize of the current Ethernet standard
4. Provide appropriate support for OTN
5. Specify optional Energy Efficient Ethernet (EEE) capability
6. Support a BER of better than or equal to 10^{-13} at the MAC/PLS service interface (or the frame loss ratio equivalent)
7. Support a MAC data rate of 400 Gb/s

P802.3cm – Next generation 400 Gb/s MM`F PHYs Task Force - Adopted Objectives (2 of 2)

8. Define a physical layer specification that supports 400 Gb/s operation over 8 pairs of MMF with lengths up to at least 100m
9. Define a physical layer specification that supports 400 Gb/s operation over 4 pairs of MMF with lengths up to at least 100m

P802.3cn 50 Gb/s, 200 Gb/s, and 400 Gb/s Ethernet over Single-Mode Fiber Task Force

- 4th Task Force meeting 20-21 May 2019, Salt Lake City, UT
  - Meeting Materinals: http://www.ieee802.org/3/cn/public/19_05/index.html
  - Meeting Minutes: http://www.ieee802.org/3/ct/public/19_05/minutes_3cnct_01_0519_unapproved.pdf
- 5th Task Force meeting 16-17 July 2019, Vienna, Austria
  - Meeting Materials: http://ieee802.org/3/cn/public/19_07/index.html
  - Meeting Mintues: http://www.ieee802.org/3/ct/public/19_07/minutes_3cnct_01_0719_unapproved.pdf
- Resolved 45 comments against Draft 2.0 from initial Working Group ballot in May interim meeting and agreed to produce Draft 2.1 for Working Group ballot recirculation
- Resolved 10 comments against Draft 2.1 in July plenary and agreed to produce Draft 3.0. IEEE 802.3 agreed to the start of Standards Association Ballot
- Contingent interim teleconference scheduled for 20 August to produce Draft 3.1 if necessary. Hope is to request unconditional approval to send to RevCom for approval at September interim

P802.3cn 50 Gb/s, 200 Gb/s, and 400 Gb/s Ethernet over Single-Mode Fiber Task Force

Adopted Objectives – 1/2

- Support full-duplex operation only
- Preserve the Ethernet frame format utilizing the Ethernet MAC
- Preserve minimum and maximum FrameSize of current Ethernet standard
- Provide appropriate support for OTN

50 Gb/s Ethernet

- Support a MAC data rate of 50 Gb/s
- Support a BER of better than or equal to 10^{-12} at the MAC/PLS service interface (or the frame loss ratio equivalent) for 50 Gb/s
- Provide a physical layer specification which supports 50 Gb/s operation over at least 40km of SMF

200 Gb/s Ethernet

- Support a MAC data rate of 200 Gb/s
- 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
- Provide a physical layer specification supporting 200 Gb/s operation over four wavelengths capable of at least 40km of SMF

P802.3cn 50 Gb/s, 200 Gb/s, and 400 Gb/s Ethernet over Single-Mode Fiber Task Force

Adopted Objectives – 2/2

400 Gb/s Ethernet

- Support a MAC data rate of 400 Gb/s
- Support a BER of better than or equal to 10^{-13} at the MAC/PLS service interface (or the frame loss ratio equivalent) for 400 Gb/s
- Provide a physical layer specification supporting 200 Gb/s operation over four wavelengths capable of at least 40km of SMF

P802.3cu 100 Gb/s per lane Optical PHYs Task Force

- First Task Force meeting 23-24 May 2019, Salt Lake City, UT
  - Meeting Materials: http://www.ieee802.org/3/cu/public/May19/
  - Meeting Minutes: http://www.ieee802.org/3/cu/public/May19/minutes_3cu_0519_unapproved.pdf
- 2nd Task Force meeting 15 July 2019, Vienna, Austria
  - Meeting Materials: http://www.ieee802.org/3/cu/public/July19/
  - Meeting Minutes: http://www.ieee802.org/3/cu/public/July19/minutes_3cu_0719_unapproved.pdf
- Adopted nomenclature (100GBASE-FR/LR, 400GBASE-FR4/LR4) and baselines for 100GBASE-FR/LR and 400GBASE-FR4 PMDs in May Interim. Further work required on 400GBASE-LR4 including choice of grid
- Updated nomenclature to 100GBASE-FR1/LR1 in July plenary (consistent with P802.3ck where multi-lane variants exist). Still no consensus on 400G 10km grid. Considering alternative approaches (additional objective, loss-based specification, or reduced reach)

P802.3cu 100 Gb/s per lane Optical PHYs Task Force
Adopted objectives – Page 1/2

- Support a MAC data rate of 100 Gb/s
- Support a MAC data rate of 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
- Provide appropriate support for OTN
- 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
- Support a BER of better than or equal to 10^{-13} at the MAC/PLS service interface (or the frame loss ratio equivalent) for 400 Gb/s operation

P802.3cu 100 Gb/s per lane Optical PHYs (future) Task Force

Adopted objectives – Page 1/2

- Define a single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 2 km
- Define a single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 10 km
- Define a four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 2 km
- Define a four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 10 km

In-progress CFI for Lower cost, shorter reach optical PHYs using 100 Gb/s wavelengths Page 1/3

- Presentation by Robert Lingle (OFS) on July 30 NEA call
  - Lingle_nea_01a_190730.pdf
- Define a single-wavelength 100 Gb/s PHY for switch to server data center connections
  - Could be SMF of MMF but I think the focus will be MMF
- Data center transition from ToR to MoR/EoR may look more like Fibre Channel installations

In-progress CFI for Lower cost, shorter reach optical PHYs using 100 Gb/s wavelengths Page 2/3

- 30m distance objective is discussed in pre-CFI presentation
- Dual server connections (redundant) are noted.
  - This seems more like Fibre Channel
  - Could be SMF of MMF but I think the focus will be MMF
- Dell identified single lane (SR1) and 4 lane (SR4) applications
- Dell indicated a market need in 2021

In-progress CFI for Lower cost, shorter reach optical PHYs using 100 Gb/s wavelengths Page 3/3

- Alibaba wants:
  - 100 meters
  - < 50m for transceivers
  - <30m will be AOCs
  - Needs breakout
  - Power: 50% of DR (500m SMF)

P802.3cu 100 Gb/s per lane Optical PHYs (future) Task Force

Adopted objectives – Page 1/2

- Define a single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 2 km
- Define a single-wavelength 100 Gb/s PHY for operation over SMF with lengths up to at least 10 km
- Define a four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 2 km
- Define a four-wavelength 400 Gb/s PHY for operation over SMF with lengths up to at least 10 km

Future Meetings

Meeting	Location	Dates
IEEE 802.3 interim	Indianapolis, IN	9-13 September 2019
IEEE 802 plenary	Waikoloa, HI	11-14 November 2019
IEEE 802.3 interim	Geneva, Switzerland	20-24 January 2020
IEEE 802 plenary	Atlanta, GA	15-20 March 2020
IEEE 802.3 interim	TBD (North America)	18-22 May 2020
IEEE 802 plenary	Montreal, QC, Canada	13-16 July 2020
IEEE 802.3 interim	TBD (North America)	21-25 September 2020
IEEE 802 plenary	Bangkok, Thailand	9-12 November 2020

Upcoming meeting details at: http://ieee802.org/3/interims/index.html