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Partners from RF to Light

IEEE 802.3 Liaison report (Aug 9 2017)

- T11/17-00256v0
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- Acknowledge: Stephen J. Trowbridge, Nokia

IEEE 802.3 Base Standards in Force

- The current version in force is IEEE Std 802.3-2015.
- Subsequent approved amendments include:
  - IEEE Std 802.3by-2016 - Media Access Control Parameters, Physical Layers and Management Parameters for 25 Gb/s Operation – Approved 30 June 2016, Published 29 July 216
  - IEEE Std 802.3bz-2016 - Physical Layer and Management Parameters for 2.5 Gb/s and 5 Gb/s Operation, Types 2.5GBASE-T and 5GBASE-T, Approved 22 September 2016, Published 18 October 2016
- Details in: http://ieee802.org/3/minutes/jul17/0717_state_of_std.pdf

IEEE 802.3 Projects, Study Groups, CFIs

- 802.3 Revision Project (P802.3)

- P802.3bs 200 Gb/s and 400 Gb/s Ethernet Task Force
- P802.3cb 2.5 Gb/s and 5 Gb/s Backplane and Copper Cables Task Force
- P802.3cc Serial 25 Gb/s Ethernet Operation Over Single-Mode Fiber Task Force
- P802.3cd 50 Gb/s, 100 Gb/s, and 200 Gb/s Ethernet Task Force
- P802.3cg 10 Mb/s Single Twisted Pair Ethernet Task Force
  - Discussions about using this as a replacement for I2C in optical modules
- Next Generation Enterprise/Campus/Data Centre Ethernet Ad Hoc
  - Looking at 100G serial electrical

- Call for Interest – Beyond 10km Optical PHYs

802.3 Revision Project

- Anticipate start of sponsor ballot November 2017, approval of IEEE Std 802.3-2018 in May 2018
- Expect to incorporate the 9 approved amendments, including P802.3bs and ready-for-ballot maintenance requests
- P8023cd would become amendments to IEEE Std 802.3-2018
- Handled by the Maintenance Task Force rather than as a separate, standalone Task Force

P802.3bs 400 Gb/s Ethernet Task Force

- 20th Task Force meeting 24-26 May 2017, New Orleans, LA
  - Meeting Materials: http://ieee802.org/3/bs/public/17_05/index.shtml
  - Meeting Minutes: http://ieee802.org/3/bs/public/17_05/minutes_3bs_0517_unapproved.pdf
- 21st Task Force meeting 10-11 July 2017, Berlin, Germany
  - Meeting Materials: http://ieee802.org/3/bs/public/17_07/index.shtml
  - Meeting Minutes: http://ieee802.org/3/bs/public/17_07/minutes_3bs_0717_unapproved.pdf
- Resolved 67 comments against Draft 3.1 in May interim and agreed to produce Draft 3.2 for sponsor ballot recirculation
- Change the reference equalizer for TDECQ measurements from T/2 spaced to T spaced
- Resolved 65 comments against Draft 3.2 in July plenary and agreed to produce Draft 3.3 for sponsor ballot recirculation
- Expect to request conditional approval to go to RevCom at September interim. On track for December 2017 approval (original schedule)

P802.3bs 200 Gb/s and 400 Gb/s Ethernet Task Force Adopted objectives

- Support a MAC data rate of 200 Gb/s
- 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)
- 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
- Provide physical layer specifications which support 200 Gb/s operation over:
  - At least 500 m of 4-lane parallel SMF
  - At least 2km of SMF
  - At least 10km of SMF
- Provide physical layer specifications which support 400 Gb/s operation over:
  - At least 100 m of MMF
  - At least 500 m of SMF
  - At least 2 km of SMF
  - At least 10 km of SMF
- Specify optional Energy Efficient Ethernet (EEE) capability
- Support optional Attachment Unit Interfaces for chip-to-chip and chip-to-module applications

P802.3cd 50 Gb/s, 100 Gb/s, and 200 Gb/s Ethernet Task Force

- 7th Task Force meeting 22 May 2017, New Orleans, LA
  - Meeting Materials: http://www.ieee802.org/3/cd/public/May17/
  - Meeting Minutes: http://www.ieee802.org/3/cd/public/May17/minutes_3cd_0517_unconfirmed-v2.pdf
- 8th Task Force meeting 11-13 July 2017, Berlin, Germany
  - Meeting Materials: http://www.ieee802.org/3/cd/public/July17/
  - Meeting Minutes: http://www.ieee802.org/3/cd/public/July17/minutes_3cd_0717_unapproved.pdf
- Resolved 60 comments against Draft 1.2 in May interim and agreed to produce Draft 2.0 for the initiation of Working Group ballot.
- Resolved 203 comments against Draft 2.0 in July plenary and agreed to produce Draft 2.1 for Working Group ballot recirculation

P802.3cd Objectives – 1/3

- 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 optional Energy-Efficient Ethernet operation
- Provide appropriate support for OTN
- Support a MAC data rate of 50 Gb/s and 100 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 and 100 Gb/s operation
- 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 operation

P802.3cd Objectives – 2/3

50 Gb/s Ethernet PHYs

- Define single-lane 50 Gb/s PHYs for operation over
  - copper twin-axial cables with lengths up to at least 3m.
  - printed circuit board backplane with a total channel insertion loss of <=
  - 30dB at 13.28125 GHz.
  - MMF with lengths up to at least 100m
  - SMF with lengths up to at least 2km
  - SMF with lengths up to at least 10km

100 Gb/s Ethernet PHYs

- Define a two-lane 100 Gb/s PHY for operation over
  - Copper twin-axial cables with lengths up to at least 3m
  - Printed circuit board backplane with a total channel insertion loss of <=30dB at 13.28125 GHz
  - MMF with lengths up to at least 100m
- Define a single-lane 100 Gb/s PHY for operation over duplex SMF with lengths up to at least 500m, consistent with IEEE P802.3bs clause 124

P802.3cd Objectives – 3/3

200 Gb/s Ethernet PHYs

- Define four-lane 200 Gb/s PHYs for operation over
  - copper twin-axial cables with lengths up to at least 3m.
  - printed circuit board backplane with a total channel insertion loss of <=30dB at 13.28125 GHz.
- Define a 200 Gb/s PHY for operation over MMF with lengths up to at least 100m

Next Generation Enterprise/Campus/Data Centre Ethernet Ad Hoc/New Ethernet Applications (NEA) Ad Hoc

- Three sessions held during May Interim
  - Meeting Materials: http://ieee802.org/3/ad_hoc/ngrates/public/17_05/index.html
  - Meeting Minutes: http://ieee802.org/3/ad_hoc/ngrates/public/17_05/minutes_nea_0517_unapproved.pdf
  - Topics Covered:
    - Beyond 10km SMF optics
    - Next generation MMF PMDs
    - 100Gb/s Electrical Signaling
- Three sessions held during July plenary
  - Meeting Materials: http://ieee802.org/3/ad_hoc/ngrates/public/17_07/index.html
  - Meeting Minutes: http://ieee802.org/3/ad_hoc/ngrates/public/17_07/unapproved_minutes_nea_0717.pdf
  - Topics Covered:
    - Single-pair Ethernet
    - Next generation MMF PMDs
    - 100 Gb/s Electrical Signaling

Future IEEE 802.3 Meetings

Meeting	Location	Dates
IEEE 802.3 interim	Charlotte, NC	11-15 September 2017
IEEE 802 plenary	Orlando, FL	6-9 November 2017
IEEE 802.3 interim	Geneva, Switzerland	22-26 January 2018
IEEE 802 plenary	Rosemont, IL	4-9 March 2018
IEEE 802.3 interim	TBD	21-25 May 2018
IEEE 802 plenary	San Diego, CA	9-12 July 2018
IEEE 802 interim	TBD	10-14 September 2018
IEEE 802 plenary	Bangkok, Thailand	12-15 November 2018

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