Unapproved Minutes

IEEE 802.3 Beyond 10 km Optical PHYs Study Group Plenary Meeting
May 21, 2018
Pittsburgh, PA, USA

Prepared by John D'Ambrosia and Kent Lusted

All times EDT
Location: William Penn Hotel, Pittsburgh, PA, USA.

The meeting called to order at 8:30 am, May 21, 2018.

Chaired by John D'Ambrosia, Futurewei, Subsidiary of Huawei

General Introductions were made by participants.

Presentation #1 –   Agenda and General Information
Presenter: John D'Ambrosia, Futurewei, Subsidiary of Huawei
URL: http://www.ieee802.org/3/B10K/public/18_03/agenda_b10k_01_0518.pdf

Chair noted that he had submitted a late presentation regarding bandwidth forecast for mobile networks and requested that the Study Group hear the presentation (dambrosia_b10k_09_0518). There was no opposition.

Motion #1: Move to approve the agenda
Moved by: Trowbridge
Second by: Anslow
Results: The motion passed by voice vote without opposition.

Chair asked if there were any reporters in the room. Nobody identified themselves as representing the press.

Chair reviewed Study Group information and reminded individuals to sign up for the reflector.

Chair showed IEEE802 Meetings Participation slide.

Motion #2: Approval of noted minutes
* Mar Plenary - http://www.ieee802.org/3/B10K/public/18_03/minutes_b10k_01a_0318_unapproved.pdf
* May 15 Study Group Ad Hoc Meeting - http://www.ieee802.org/3/B10K/public/adhoc/18_0515/minutes_b10k_180515_unapproved.pdf

Moved by: Nowell
Second by: Jackson
Results: The motion passed by voice vote without opposition

Chair read the Pre-PAR Patent Policy for IEEE-SA meetings.

Chair reviewed Ground rules and the role of the chair.

The Chair reviewed important bylaws, rules, & references, and gave an overview of the IEEE 802.3 Standards Process.

Chair reviewed Study Group Chartering Motion –

> Move that the IEEE 802.3 Ethernet Working Group authorizes the formation of a study group to develop a Project Authorization Request (PAR) and Criteria for Standards Development (CSD) responses for "Beyond 10km Optical PHYs for 50 Gb/s, 100 Gb/s, 200 Gb/s, and 400 Gb/s Ethernet"

Chair reviewed goals for week -
- ➢ 7 presentations
- ➢ Finalize PAR / Objectives / CSD
  - ➢ 1 versus 2 Projects
- ➢ Consider request to submit PAR(s) for consideration at July 2018 Plenary
- ➢ Consider liaisons
  - ➢ ITU-T SG15 coherent 100 Gbit/s DWDM interfaces

Chair reviewed liaisons and the following was agreed to:
- • ITU-T SG15 Liaison - Coherent 100 Gbit/s DWDM interfaces
  - • http://www.ieee802.org/3/minutes/mar18/incoming/ITU_SG15-LS-99_to_IEEE_802d3.pdf

It was noted that the Study Group needed to complete its business to modify the proposed response as necessary, and the Study Group would address this during closing business.

Chair reviewed summary of ad hoc meetings.

Presentation # 2 -	Technical Feasibility to Support 400GE 40km Objective
Presenter:	Xinyuan Wang, Huawei
URL:	http://www.ieee802.org/3/B10K/public/18_05/wang_b10k_01a_0518.pdf

General Discussion

Presentation was updated to reflect updated supporters list. Updated version noted above.

Presentation # 3 -	Cable Operator Inputs for 100G+ Beyond 10k
Presenter:	Matt Schmitt, CableLabs
URL:	http://www.ieee802.org/3/B10K/public/18_05/schmitt_b10k_01a_0518.pdf

General Discussion

Presentation was updated to reflect updated supporters list. Updated version noted above.

Break @ 10:00 am

Reconvened at 10:38 am

Presentation # 4 -	Microsoft 100G/400G Coherent use case
Presenter:	Rich Baca, Microsoft
URL:	http://www.ieee802.org/3/B10K/public/18_05/baca_b10k_01a_0518.pdf

General Discussion

Presentation was updated to reflect updated supporters list. Updated version noted above.

Presentation # 5 -	Towards an objective for 400 Gb/s for DCI applications
Presenter:	Gary Nicholl, Cisco
URL:	http://www.ieee802.org/3/B10K/public/18_05/nicholl_b10k_01a_0518.pdf

General Discussion

Presentation was updated to reflect updated supporters list. Updated version noted above.

Presentation # 6 -   Mobile Network Traffic Forecasts
Presenter: John D'Ambrosia, Futurewei, Subsidiary of Huawei
URL: http://www.ieee802.org/3/B10K/public/18_05/dambrosia_b10k_09_0518.pdf

General Discussion

Break for lunch at 12:00pm

Reconvened at 1:15pm

Presentation # 7 -   PAR Project Dates and Possible Timelines
Presenter: John D'Ambrosia, Futurewei, Subsidiary of Huawei
URL: http://www.ieee802.org/3/B10K/public/18_05/dambrosia_b10k_01_0518.pdf

General Discussion

Presentation #8   Summary: Proposed Project Documentation Packages
Presenter: John D'Ambrosia, Futurewei, Subsidiary of Huawei
URL: http://www.ieee802.org/3/B10K/public/18_05/dambrosia_b10k_01_0518.pdf

General Discussion

Motion #3
- Move that the Beyond 10km Optical PHYs Study Group adopt the following objectives:
    - 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 400 Gb/s operation over eight wavelengths capable of at least 40 km of SMF
- M: Xinyuan Wang
- S: Shuto Yamamoto
- Technical (>=75%)
- Results Y: 24   N: 1   A: 24
- Motion Passes

Discussion – it was noted that the text for this objective needed to be consistent with the language for the 200GbE 40km objective. The chair noted ongoing concern regarding the use of the term "lane" and recommended that the group should adjust the language of the 200GbE 40km objective. There was no objections, as long as both objectives were consistent with each other.

Motion #4s
- Move that the Beyond 10km Optical PHYs Study Group adopt the following objective:
    - Provide a physical layer specification supporting 400 Gb/s operation on a single wavelength capable of at least 80 km over a DWDM system.
- Technical (>=75%)
- M: Gary Nicholl
- S: Rich Baca
- Results Y: 32   N: 0   A: 18
- Motion Passes

Motion #5
- Move that the Beyond 10km Optical PHYs Study Group develop documentation for two projects:
  - Project #1 - Objectives related to "at least 40 km of SMF"
  - Project #2 – Objectives related to "at least 80 km over a DWDM system"
- Technical (>=75%)
- M: Peter Stassar
- S: Pete Anslow
- Results all   Y: 16   N: 15   A: 18
- Motion Fails

Based on the results of this motion, a single project encompassing all objectives would be defined. The proposed PAR text in dambrosia_b10k_03a_0518 and the proposed CSD text in dambrosia_b10k_04_0518 would be used as basis for discussion.

Motion #6
- Move to replace objective
  - Provide a physical layer specification which supports four-lane 200 Gb/s operation over at least 40km of SMF.
With
  - Provide a physical layer specification supporting 200 Gb/s operation over four wavelengths capable of at least 40 km of SMF
- M: Pete Anslow
- S: David Lewis
- Tech (=> 75%)
- Approved by voice vote without opposition

Chair noted that the complete list of adopted objectives was as follows –

- **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 40 km of SMF***
100 Gb/s Ethernet
- **Support a MAC data rate of 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 100 Gb/s ****
- **Provide a physical layer specification supporting 100 Gb/s operation on a single wavelength capable of at least 80 km over a DWDM system. ****
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 40 km of SMF****
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 400 Gb/s operation over eight wavelengths capable of at least 40 km of SMF*****
- **Provide a physical layer specification supporting 400 Gb/s operation on a single wavelength capable of at least 80 km over a DWDM system.*****

* - Adopted by SG Jan 2018 Interim. Not approved by IEEE 802.3 WG.
** - Adopted by SG Mar 2018 Plenary. Not approved by IEEE 802.3 WG.
*** - Adopted by SG May 2018 Interim. Not approved by IEEE 802.3WG.

These objectives were documented in Objectives_180521.pdf

PAR text from dambrosia_b10k_03a_0518.pdf reviewed by Study Group.

Break 3:07pm
Reconvened at 3:41pm

Adam Healey requested time to speak to the room. Adam requested that the Study Group add the following text to its scope –

Make TDECQ (Transmitter and dispersion eye closure for PAM4) related changes to existing 200 Gb/s and 400 Gb/s physical medium dependent sublayers over single-mode fiber.

Chair asked if there were any objections. There were none. Chair noted approval of text would be addressed with adoption of PAR by Study Group.

David Law entered agreed upon text into online IEEE-SA PAR entry tool. Output captured in PAR_P8023cn_180521_draft.pdf.

During the discussion of PAR Item 7.1, the following text was discussed – "Where appropriate, existing standards will be referenced, rather than duplicated." It was noted that this text meant that if a future task force selected an existing standard as part of its baseline, it would be referenced, and not duplicated, but this did not force the future task force to select an existing standard as the baseline.

CSD text from dambrosia_b10k_04_0518.pdf reviewed by Study Group. Agreed upon text captured in CSD_P8023cn_180521_draft.pdf.

Motion #7
- Move to adopt:
    - The PAR responses in PAR_P8023cn_180521_draft.pdf
    - The CSD "Managed Objects", "Coexistence", "Broad Market Potential", "Compatibility", "Distinct Identity", "Technical Feasibility", and "Economic Feasibility" responses, as per CSD_P8023cn_180521_draft.pdf
- M: David Ofelt
- S: David Malicoat
- Tech (=>75%)
- Results Y 20   N 0   A 0
- Motion Passes

It was noted that with the approval of the PAR and CSD, the Chair would pre-submit for consideration the documents for consideration at the July 2018 Plenary.

Study Group considered proposed liaison response in http://www.ieee802.org/3/B10K/public/18_05/trowbridge_b10k_01_0518.pdf.

Study Group review and modifications captured in http://www.ieee802.org/3/B10K/public/18_05/IEEE_802d3_to_SG15_B10k_0518_draft.pdf.

There was discussion of the 2nd to last paragraph of the proposed response, which noted the response in Section 7. There was debate over whether this text was necessary, given that it was already captured in the PAR. The Study Group Chair noted he did not support its inclusion in the proposed response. Due to time constraints, it was agreed to leave the text in for now, but to discuss it further when considered by the Working Group.

Motion #8
Move that the IEEE 802.3 Beyond 10km Study Group approve:
- IEEE_802d3_to_SG15_B10k_0518_draft

with editorial license granted to the Chair (or his appointed agent) as liaison communications from the IEEE 802.3 Working Group to ITU-T Study Group 15.
- Technical (>=75%)
- M: Trowbridge
- S: Anslow
- Approved by voice vote without opposition.

Due to the few remaining participants, the Chair decided to not do the Participation Polls.

The Chair reviewed future meetings.

- July 2018
  - Week of July 9, 2018
  - Manchester Grand Hyatt
  - San Diego, CA, USA
- Sept 2018
  - Week of Sept 10, 2018
  - Davenport Historic Hotel
  - Spokane, WA, USA
- Nov 2018
  - Week of Nov 12
  - Marriott Marquis Queen's Park
  - Bangkok, Thailand
- Jan 2019
  - Week of Jan 14
  - Location and Venue TBD

The Chair noted that additional meetings were defined, and directed individuals to review the information at http://www.ieee802.org/3/interims/index.html for additional meeting details and additional meetings.

Motion #9
Motion to adjourn
M: Maki
S: Schmitt

Motion approved by voice vote without opposition.

Meeting adjourned at 5:57pm.

Attendees

IEEE 802.3 Beyond 10km Optical PHYs Study Group IEEE 802.3 May 2018 Interim				5/21
Last Name	First Name	Employer	Affiliation	
Anslow	Pete	Ciena Corporation	Ciena Corporation	x
Baca	Rich	Microsoft	Microsoft	x
Bhatt	Vipul	Finisar	Finisar	x
Braun	Ralf-Peter	Deutsche Telekom	Deutsche Telekom	x
Brooks	Paul	Viavi Solutions	Viavi Solutions	x
Brown	Matt	Macom	Macom	x
Calvin	John	VTM	VTM	x
Chang	Xin	Huawei	Huawei	x
Dai	Eugene	Cox	Cox	x
D'Ambrosia	John	Futurewei, subsidiary of Huawei	Futurewei, subsidiary of Huawei	x
DeAndrea	John	DeAndrea	DeAndrea	x
Ferretti	Vince	Corning	Corning	x
Ghiasi	Ali	Ghiasi Quantum, Ghiasi Quantum / Huawei	Ghiasi Quantum, Ghiasi Quantum / Huawei	x
Healey	Adam	Broadcom Inc	Broadcom Inc	x
Isono	Hideki	Fujitsu Optical Components	Fujitsu Optical Components	x
Issenhuth	Tom	Issenhuth Consulting	Issenhuth Consulting, Huawei	x
Jackson	Kenneth	Sumitomo	Sumitomo	x
Johnson	John	Broadcom	Broadcom	x
Kareti	Upen Reddy	Cisco	Cisco	x
Kimber	Mark	Semtech	Semtech	x
Klempa	Mike	UNH-IOL	UNH-IOL	x
Knittle	Curtis	Cablelabs	Cablelabs	x
Law	David	HP	HP	x
Lewis	David	Lumentum	Lumentum	x
Li	Weishi	Huawei	Huawei	x
Lim	Jane	Cisco	Cisco	x
Liu	Hai-Feng	Intel	Intel	x
Lusted	Kent	Intel	Intel	x

Lyubomirsky	Ilya	Inphi	Inphi	x
Maki	Jeffery	Juniper Networks	Juniper Networks	x
Malicoat	David	Malicoat Networking Solutions / Senko	Malicoat Networking Solutions / Senko	x
Mazzini	Marco	Cisco	Cisco	x
Murray	Dale	Light Counting	Light Counting	x
Nicholl	Gary	Cisco	Cisco	x
Nolan	John	QLogic	QLogic	x
Ofelt	David	Juniper Networks	Juniper Networks	x
Parthasarathay	Vasudevan	Broadcom	Broadcom	x
Rabinovich	Rick	Keysight Technologies	Keysight Technologies	x
Rotolo	Salvatore	STM Microelectronics	STM Microelectronics	x
Sakai	Toshiaki	Socionext	Socionext	x
Sarlet	Gert	Finisar	Finisar	x
Schmitt	Matt	Cablelabs	Cablelabs	x
Sekel	Steve	Keysight Technologies	Keysight Technologies	x
Sommers	Scott	Molex	Molex	x
Stassar	Peter	Huawei	Huawei	x
Sun	Phil	Credo Semiconductor	Credo Semiconductor	x
Takahara	Tomoo	Fujitsu Laboratories	Fujitsu Laboratories	x
Terada	Masaru	OFS	OFS	x
Thompson	Geoff	GraCaSi SA	GraCaSi SA	x
Tooyserkani	Pirooz	Cisco	Cisco	x
Tracy	Nathan	TE Connectivity	TE Connectivity	x
Trowbridge	Steve	Nokia	Nokia	x
Ulrichs	Ed	Source Photonics	Source Photonics	x
Umnov	Alexander	Corning	Corning	x
Vitali	Marco	Sicoya	Sicoya	x
Williams	Tom	Acacia Acommunications	Acacia Acommunications	x
Willis	Paul	UNH-IOL	UNH-IOL	x
Xu	Yu	Huawei	Huawei	x
Yamamoto	Shuto	NTT	NTT	x
Zhou	Richard	Charter Communications	Charter Communications	x