Approved Minutes

IEEE P802.3cn 50 Gb/s, 100 Gb/s, 200 Gb/s, and 400 Gb/s over Single-Mode Fiber and DWDM Task Force

Plenary Meeting
November 12, 2018
Bangkok, Thailand

Prepared by John D'Ambrosia and John DeAndrea

All times ICT
Location: Bangkok Marriott Marquis Queen's Park

The meeting called to order at approximately 1:00pm, Nov 12, 2018.

Chaired by Adam Healey, IEEE 802.3 Vice Chair

Mr. Healey appointed John DeAndrea as Recording Secretary.

Mr. Healey explained that the IEEE 802.3 rules state that the Task Force Chair is appointed by the Working Group Chair and confirmed by the Task Force. Mr. Healey pointed out that the IEEE 802.3 Working Group chair has appointed John D'Ambrosia as the Task Force Chair and confirmation by the Task Force is required.

Motion #1: Confirm John D'Ambrosia as the IEEE P802.3cn 50 Gb/s, 100 Gb/s, 200 Gb/s, and 400 Gb/s over Single-Mode Fiber and DWDM Task Force Chair.
Moved by: David Ofelt
Second by: Thananya Baldwin
Results (y/n/a) 46 / 0 / 1

Healey turned over chairing meeting to D'Ambrosia.

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/cn/public/18_11/agenda_3cn_01b_1118.pdf

Motion #2: Move to approve the agenda
Moved by: Steve Trowbridge
Second by: Thananya Baldwin
Results: Approved by voice vote without opposition

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

Chair showed IEEE 802 Participation slide.

Chair reviewed Task Force information and reminded individuals to sign up for the reflector. Chair noted that Pete Anslow and Peter Stassar were part of the editorial team, targeting 40km objective related clauses.

Chair noted attendance tools.

Motion #3:   Approval of noted minutes
- Sept Interim
  - http://www.ieee802.org/3/B10K/public/18_05/minutes_b10k_01_0518_unapproved.pdf
- Nov 7 Task Force Ad hoc Call
  - http://www.ieee802.org/3/cn/public/adhoc/18_1107/minutes_3cn_181107_unapproved.pdf

Moved by: Thananya Baldwin
Second by: Nathan Tracy
Results: Approved by voice vote without objection

Chair presented the Patent Policy Slides for IEEE-SA meetings.

Chair advised the Task Force of the following:

- IEEE's patent policy is described in Clause 6 of the *IEEE-SA Standards Board Bylaws*;
- Early identification of patent claims which may be essential for the use of standards under development is strongly encouraged;
- There may be Essential Patent Claims of which IEEE is not aware. Additionally, neither IEEE, the WG, nor the WG Chair can ensure the accuracy or completeness of any assurance or whether any such assurance is, in fact, of a Patent Claim that is essential for the use of the standard under development.

Chair noted
- That the foregoing information was provided and that slides 1 through 4 (and this slide 0, if applicable) were shown;
- That the chair or designee provided an opportunity for participants to identify patent claim(s)/patent application claim(s) and/or the holder of patent claim(s)/patent application claim(s) of which the participant is personally aware and that may be essential for the use of that standard
- There were no responses to the Chair's request.
-
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 goals for week -
  - Presentations
  - Baseline Proposals Selection
  - Consider Splitting IEEE P802.3cn PAR
    - PAR 1 – targeting 40km related objectives
    - PAR 2 – targeting 80km related objectives
  - Consider Liaisons from COBO, ITU-T SG15, and OIF

Chair reviewed liaisons:
  - **COBO**
    - **http://www.ieee802.org/3/minutes/nov18/incoming/COBO_to_IEEE_802d3_Oct_2018.pdf**
  - **ITU-T SG15**
    - http://www.ieee802.org/3/minutes/nov18/incoming/ITU_SG15_LS-150_to_IEEE_802d3.pdf
    - Attachments (Password protected)
  - **OIF**
    - OIF to IEEE 802.3 regarding 400ZR Interop Project
    - Attachment (Password protected)

The chair asked if there was any input for the COBO liaison – there was none. It was decided to defer until the Jan 2019 interim to respond to the ITU-T SG15 and OIF liaisons, as both groups are meeting after the Jan Interim.

Chair noted that there had been a late request for presentation from Pete Anslow of Ciena and Shawn Nicholl from Xilinx, as well as John DeAndrea adding material to his presentation. There were no objections to hearing any presentation. The Chair noted that Anslow's presentation would be heard on Monday and Nicholl's presentation would be heard on Tuesday, as part of the agenda addressing the respective objectives.

Chair noted he had updated the two presentations he had submitted on potential splitting of 802.3cn PAR, based on his work with the WG Chair.

Chair reviewed Task Force Ad Hoc meetings.
- Three Task Force Ad Hoc Meetings
  - Oct 23 – 100 GbE Architecture
    - http://www.ieee802.org/3/cn/public/adhoc/18_1023/index.html
  - Oct 25 – Compliance Metrics
    - http://www.ieee802.org/3/cn/public/adhoc/18_1025/index.html
  - Nov 7 – Discussion regarding splitting PAR and project documentation
    - http://www.ieee802.org/3/cn/public/adhoc/18_1107/index.html

Presentation #2 -
PMD Naming
Presenter: Pete Anslow
URL: http://www.ieee802.org/3/cn/public/18_11/anslow_3cn_01_1118.pdf

General Discussion

Presentation #3 -
Overview of (editing) work required to create physical layer specifications for n*50G PAM4 over 40 km
Presenter: Peter Stassar
URL: http://www.ieee802.org/3/cn/public/18_11/stassar_3cn_01a_1118.pdf

General Discussion

Presentation #4 -
Baseline Proposal for 50 Gb/s Ethernet 40km SMF, 50GBASE-ER in 802.3cn
Presenter: Yu Xu
URL: http://www.ieee802.org/3/cn/public/18_11/xu_3cn_01b_1118.pdf

General Discussion

Presentation #5 -
Baseline Proposal for 200 Gb/s Ethernet 40km SMF, 200GBASE-ER4 in 802.3cn
Presenter: Yu Xu
URL: http://www.ieee802.org/3/cn/public/18_11/xu_3cn_02b_1118.pdf

General Discussion

Presentation #6 -
400GBASE-ER8 40km SMF PMD Preliminary Specification Proposal
Presenter: Frank Chang
URL: http://www.ieee802.org/3/cn/public/18_11/chang_3cn_01b_1118.pdf

General Discussion

Break @ 3:13pm

Meeting reconvened at 3:32pm

Presentation #7 -
P802.3cn optical reflection limits
Presenter: Pete Anslow
URL: http://www.ieee802.org/3/cn/public/18_11/anslow_3cn_02_1118.pdf

General Discussion

Strawpolls & Discussion (40km)

Strawpoll #1

- I would support the following nomenclature:

  A. 50GBASE-ER   (50 Gb/s operation over at least 40 km of SMF)

  B. 200GBASE-ER4   (200 Gb/s operation over four wavelengths capable of at least 40 km of SMF)

  C. 400GBASE-ER8   (400 Gb/s operation over eight wavelengths capable of at least 40 km of SMF)

- Results: Voice Vote – No opposition to this nomenclature

Strawpoll #2

- I would support adopting the baseline for 50GBASE-ER defined in xu_3cn_01b_1118 .pdf
- Results (y/n/a): 46 / 0 / 10

Strawpoll #3

- I would support adopting the baseline for 200GBASE-ER4 defined in xu_3cn_02b_1118 .pdf
- Results (y/n/a): 46 / 0 / 13

Strawpoll #4

- I would support adopting the baseline for 400GBASE-ER8 defined in chang_3cn_01b_1118 .pdf
- Results (y/n/a): 43 / 0 / 17

Presentation #8 -
Introducing the ITU-T SG15 Liaison Statement with the recently consented revised Recommendation G.698.2 clarifying the specification methodology for 100 Gb/s coherent DWDM systems

Presenter: Peter Stassar & Pete Anslow

URL: http://www.ieee802.org/3/cn/public/18_11/stassar_3cn_03a_1118.pdf

General Discussion

Presentation #9 -
Considerations on establishing physical layer specifications for 100 Gb/s and 400 Gb/s over 80 km DWDM systems

Presenter: Peter Stassar

URL: http://www.ieee802.org/3/cn/public/18_11/stassar_3cn_02a_1118.pdf

General Discussion

Presentation #10 -
OSNR Link Budget Methodology

Presenter: Ilya Lyubomirsky

URL: http://www.ieee802.org/3/cn/public/18_11/lyubomirsky_3cn_01a_1118.pdf

General Discussion

Presentation #11 -
Coherent 100 and 400G PMD Layer WDM considerations

Presenter: John DeAndrea

URL: http://www.ieee802.org/3/cn/public/18_11/deandrea_3cn_01c_1118.pdf

General Discussion

Break for the day at 5:52pm

Meeting reconvened Tuesday, Nov 13 at 8:10am

Presentation #12 - Baseline Proposal for 400G/80km
Presenter: Ilya Lyubomirsky
URL: http://www.ieee802.org/3/cn/public/18_11/lyubomirsky_3cn_02a_1118.pdf

General Discussion

Presentation #13 - Motivation for a 100GBE CGMII Extender
Presenter: Shawn Nicholl
URL: http://www.ieee802.org/3/cn/public/18_11/nicholl_3cn_01_1118.pdf

General Discussion

- o Steve Trowbridge indicated to the chair that he was aware that IPR had been filed in the OIF and ITU-T that could potentially be essentially to this project. The chair asked Mr. Trowbridge to provide him with further details.
- o Ilya Lyubomirsky indicated that a LOA had been filed by Inphi in relation to the 802.3cn project.

Strawpolls & Discussion (80km)

Strawpoll #5

- For PHYs targeting "x" Gb/s operation on a single wavelength capable of at least 80 km over a DWDM system" I would support the following nomenclature:

  A. 100GBASE-ZR / 400GBASE-ZR   36

  B. 100GBASE-AR / 400GBASE-AR   7

  C. 100GBASE-ZA / 400GBASE-ZA   3

  D. NONE OF THE ABOVE   0

Strawpoll #6

- For the 400 GbE 80km objective - I would support the black link approach, noted in lyubomirsky_3cn_02a_1118 and defined in stassar_b10k_01_0318

  A. Yes   55

  B. No   0

  C. Need more information   3

  D. Abstain   4

Strawpoll #7

- For the 400 GbE – 80km objective I would support the following channel spacing (Chicago rules)

  A. 75 GHz   0

  B. 100 GHz   51

  C. Need more information   4

  D. Abstain   9

Strawpoll #8

- For 100 GbE 80km objectives I would support the following channel spacing (Chicago rules)

  A. 50 GHz   6

  B. 75 GHz   0

  C. 100 GHz   37

  D. Need more information   11

  E. Abstain   9

Strawpoll #9

- I would support the following modulation format for the 400 GbE 80km objective

  A. DP-16QAM   50

  B. Need more information   2

  C. Abstain   9

Strawpoll #10

- I would support the FEC assumptions made in lyubomirsky_3cn_02a_1118 (CFEC) for 400GbE 80km Objective

  A. Yes   42

  B. No   0

  C. Need more information   7

  D. Abstain   12

Strawpoll #11

- I would support the frame assumptions made in lyubomirsky_3cn_02a_1118 (400ZR Frame, GMP, 20ppm, DSP Frame) for 400GbE 80km Objective

  A. Yes   38

  B. No   0

  C. Need more information   7

  D. Abstain   9

Break @ 9:56am

Meeting reconvened at 10:21am

Motion #4

Motion	**Move to adopt the following nomenclature** • **50GBASE-ER** **50 Gb/s operation over at least 40 km of SMF** • **200GBASE-ER4** **200 Gb/s operation over four wavelengths capable of at least 40 km of SMF** • **400GBASE-ER8** **400 Gb/s operation over eight wavelengths capable of at least 40 km of SMF** • **100GBASE-ZR** **100 Gb/s operation on a single wavelength capable of at least 80 km over a DWDM system** • **400GBASE-ZR** **400 Gb/s operation on a single wavelength capable of at least 80 km over a DWDM system**
Mover	Steve Sekel
Second	Frank Chang
Requirements	Technical (>= 75%)
Results (y/n/a)	48 / 0 / 3
Motion	Passes

Motion #5

Motion	**Move to adopt a baseline for the "50 Gb/s operation over at least 40 km of SMF" objective based on the proposal in xu_3cn_01b_1118.**
Mover	Yu Xu
Second	Pete Anslow
Requirements	Technical (>= 75%)
Results (y/n/a)	57 / 0 / 3
Motion	Passes

Motion #6

Motion	**Move to adopt a baseline for the "200 Gb/s operation over four wavelengths capable of at least 40 km of SMF" objective based on the proposal in xu_3cn_02b_1118.**
Mover	Yu Xu
Second	Pete Anslow
Requirements	Technical (>= 75%)
Results (y/n/a)	61 / 0 / 3
Motion	Passes

Motion #7

Motion	**Move to adopt a baseline for the "400 Gb/s operation over eight wavelengths capable of at least 40 km of SMF" objective based on the proposal in chang_3cn_01b_1118 .pdf**
Mover	Frank Chang
Second	Pete Aslow
Requirements	Technical (>= 75%)
Results (y/n/a)	63 / 0 / 7
Motion	Passes

Motion	**I support adopting DP-16QAM modulation format for the 400 GbE 80km objective**
Mover	Ilya Lyubomirsky
Second	Mark Nowell
Requirements	Technical (>= 75%)
Results (y/n/a)	65 / 0 / 7
Motion	Passes

Motion #9

Motion	**I support adopting the FEC proposal made in lyubomirsky_3cn_02a_1118 (CFEC) for 400GbE 80km Objective**
Mover	Ilya Lyubomirsky
Second	Mark Nowell
Requirements	Technical (>= 75%)
Results (y/n/a)	51 / 0 / 15
Motion	Passes

Motion #10

Motion	**Move to adopt the Framing proposal made in lyubomirsky_3cn_02a_1118 for 400GbE 80km Objective**
Mover	Ilya Lyubomirsky
Second	Mark Nowell
Requirements	Technical (>= 75%)
Results (y/n/a)	
Motion	Withdrawn, M/S requested / agreed to withdraw

At 11am the Chair announced that the Task Force would consider dividing the project into two, one project targeting 40km and the other targeting 80km. Mr. D'Ambrosia turned over chairing the meeting to Mr. Law.

D'Ambrosia showed Slide #3 from dambrosia_3cn_01b_1118.pdf to highlight the objectives for a 40km targeted project and Slide #3 from dambrosia_3cn_02b_1118.pdf to highlight the objectives for a 80km targeted project.

Motion #11

Motion	**Move that the IEEE P802.3cn Task Force develop a modification of the IEEE P802.3cn PAR to address "Objectives related to "at least 40 km of SMF" and create a new IEEE P802.3ct PAR to address "Objectives related to "at least 80 km over a DWDM system"**
Mover	Jeff Maki
Second	Pete Anslow
Requirements	Procedural (>50%)
Results (y/n/a)	51 / 5 / 19
Motion	Passes

There was discussion on the motion.

At approximately 11:30am, the Chair turned over chairing the meeting to Mr. D'Ambrosia.

Motion #12

Motion	**Move to adopt** • **the objectives stated on Slide #3 of dambrosia_3cn_01b_1118 for the modified IEEE P802.3cn Project** • **The objectives stated on Slide #3 of dambrosia_3cn_02b_1118 for the IEEE P802.3ct Project**
Mover	Steve Trowbridge
Second	Pete Anslow
Requirements	Technical (>= 75%)
Results (y/n/a)	62 / 1 / 7
Motion	Passes

D'Ambrosia showed proposed PAR / CSD changes in dambrosia_3cn_01b_1118.pdf to highlight the 40 km targeted project and proposed PAR / CSD changes in dambrosia_3cn_02b_1118.pdf to highlight the 80km targeted project.

Law showed the proposed PARs –

Presentation #14 - Proposed P802.3cn PAR Modification
Presenter: David Law
URL: http://www.ieee802.org/3/cn/public/18_11/P802_3cn_PAR_131118.pdf

Presentation #15 - Proposed P802.3ct PAR
Presenter: David Law
URL: http://www.ieee802.org/3/cn/public/18_11/P802_3ct_PAR_131118.pdf

Motion #13

Motion	**Move to adopt**
	• **For the modified IEEE P802.3cn PAR**
	  • **The PAR responses in P802_3cn_PAR_131118.pdf**
	  • **The CSD "Managed Objects", "Coexistence", "Broad Market Potential", "Compatibility", "Distinct Identity", "Technical Feasibility", and "Economic Feasibility" responses, as per slides 6 – 13 of dambrosia_3cn_01b_1118**
	• **For the new IEEE P802.3ct PAR**
	  • **The PAR responses in P802_3ct_PAR_131118.pdf**
	  • **The CSD "Managed Objects", "Coexistence", "Broad Market Potential", "Compatibility", "Distinct Identity", "Technical Feasibility", and "Economic Feasibility" responses, as per slides 6 – 13 of dambrosia_3cn_02b_1118**

Mover	Pete Anslow
Second	Frank Chang
Requirements	Technical (>= 75%)
Results (y/n/a)	43 / 0 / 1
Motion	Passes

D'Ambrosia announced the upcoming face-to-face meetings, and that ad hoc calls before the January interim would be scheduled.

Motion#14   Move to adjourn
Moved: Steve Sekel
Second   John DeAndrea
Results   Approved by voice vote without objection.

Meeting adjourned at 12:11pm.

Attendees

Last Name	First Name	Employer	Affiliations	Mon	Tues
Abbott	Justin	Lumentum	Lumentum	x	x
Anslow	Pete	Ciena Corporation	Ciena Corporation	x	x
Baldwin	Thananya	Ixia	Ixia	x	
Bo	Gao	Huawei	Huawei	x	x
Booth	Brad	Microsoft	Microsoft	x	x
Brooks	Paul	Viavi Solutions	Viavi Solutions	x	x
Brown	Matt	Macom	Macom	x	x
Burrell	Gary	Elenion Technologies	Elenion Technologies	x	x
Butter	Adrian	Global Foundries	Global Foundries	x	x
Chabot	Craig	UNH-IOL	UNH-IOL		x
Chang	Frank	Source Photonics	Source Photonics	x	x
Chang	Xin	Huawei	Huawei	x	x
Chen	David	AOI	AOI		x
Chuang	Keng Hua	HPE	HPE	x	x
D'Ambrosia	John	Futurewei, subsidiary of Huawei	Futurewei, subsidiary of Huawei	x	x
DeAndrea	John	Finisar	Finisar	x	x
Du	Liang	Google	Google	x	
Effenberger	Frank	Huawei	Huawei	x	x
Estes	Dave	Spirent Communications	Spirent Communications	x	
Farhoodfar	Arash	Inphi	Inphi	x	x
Ferretti	Vincent	Corning	Corning	x	x
Ghiasi	Ali	Ghiasi Quantum, Ghiasi Quantum / Huawei	Ghiasi Quantum, Ghiasi Quantum / Huawei	x	x
Gong	Zhigang	D-Net	D-Net	x	
Gopalakrishnan	Karthik	Inphi	Inphi	x	x
He	Xiang	Huawei	Huawei		x
Healey	Adam	Broadcom LTD	Broadcom LTD	x	x

Hiraki	Kukia	Yamaichi	Yamaichi	x	x
Ishibe	Kazuhiko	Anristu	Anristu	x	x
Isono	Hideki	Fujitsu Optical Components	Fujitsu Optical Components	x	x
Issenhuth	Tom	Issenhuth Consulting	Issenhuth Consulting, Huawei	x	x
Jackson	Kenneth	Sumitomo	Sumitomo	x	x
Jensen	Jasper	Bifrost Communications	Bifrost Communications	x	
Johnson	John	Broadcom	Broadcom	x	x
Kareti	Upen Reddy	Cisco	Cisco	x	x
Kawatsu	Yasuaki	Apresia Systems	Apresia Systems	x	x
Kimber	Mark	Semtech	Semtech	x	x
Klempa	Mike	UNH-IOL	UNH-IOL		x
Knittle	Curtis	Cablelabs	Cablelabs	x	x
Kochuparambil	Beth	Cisco Systems	Cisco Systems	x	
Law	David	HPE	HPE	x	x
Lewis	David	Lumentum	Lumentum	x	x
Li	Mike	Intel	Intel	x	x
Lu	Yuchun	Huawei	Huawei		x
Lu	Yuchun	Huawei	Huawei	x	
Lusted	Kent	Intel	Intel	x	x
Lyubomirsky	Ilya	Inphi	Inphi	x	x
Maki	Jeffery	Juniper Networks	Juniper Networks	x	x
Malicoat	David	Malicoat Networking Solutions / Senko	Malicoat Networking Solutions / Senko	x	x
Megum	Naguta	Fujitsu	Fujitsu	x	x
Mellitz	Richard	Samtec	Samtec	x	x
Miura	Hiroshi	Mitsubishi Electric	Mitsubishi Electric		x
Naeki	Suzuki	Mitsubishi Electric	Mitsubishi Electric		x
Nicholl	Gary	Cisco	Cisco	x	x
Nicholl	Shawn	Xilinx	Xilinx	x	x
Noll	Kevin	Tibit Communications	Tibit Communications	x	x
Nowell	Mark	Cisco	Cisco	x	x
Ofelt	David	Juniper Networks	Juniper Networks		x
Palkert	Tom	Molex / Macom	Molex / Macom	x	x
Parthasarathay	Vasudevan	Broadcom	Broadcom	x	

Pepper	Gerald	Ixia	Ixia	x	
Quan	Mingran	Huawei	Huawei	x	x
Radhamohan	Rageshmohan	Maxlinear	Maxlinear	x	x
Rechtman	Zvi	Mellanox	Mellanox	x	x
Sakai	Toshiaki	Socionext	Socionext	x	x
Sekel	Steve	Keysight Technologies	Keysight Technologies	x	x
Shirao	Mizuki	Mitsubishi Electric	Mitsubishi Electric	x	x
Shuai	Jialong	Huawei	Huawei	x	
Sinicrope	David	Ericsson	Ericsson	x	
Sommers	Scott	Molex	Molex	x	x
Stassar	Peter	Huawei	Huawei	x	x
Suzuki	Takahori	Oclaro	Oclaro	x	x
Szczepanek	Andre	HSZ Consulting	HSZ Consulting, Hilight Semi		x
Takahara	Tomoo	Fujitsu Laboratories	Fujitsu Laboratories	x	x
Takefahn	Michael	Inphi	Inphi		x
Tamura	Kohichi	Oclaro Japan	Oclaro Japan	x	x
Tan	Kan	Tektronix	Tektronix	x	x
Toshiyasu	Ito	Yamaichi	Yamaichi	x	
Tracy	Nathan	TE Connectivity	TE Connectivity	x	
Trowbridge	Steve	Nokia	Nokia	x	x
Umnov	Alexander	Corning	Corning	x	x
Vitali	Marco	Sicoya	Sicoya	x	x
Wang	Roy	Hewlett Packard Enterprise	Hewlett Packard Enterprise		x
Wu	Man Lin	Media Tek	Media Tek		x
Xu	Yu	Huawei	Huawei	x	x
Yamamoto	Shuto	NTT	NTT	x	x
Zhang	Kevin	IDT	IDT		x
Zhao	Wenyu	CAICT	CAICT	x	x
Zivny	Pavel	Tektronix	Tektronix	x	x