Approved Minutes
IEEE P802.3bs 400 GbE Task Force
Interim Meeting
September 14-16, 2015
Bonita Springs, FL, USA

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IEEE P802.3bs Task Force Meeting – September 14, 2015:
Prepared by Kent Lusted

IEEE P802.3bs 400 Gb/s Task Force interim meeting convened at 9:00 a.m., Monday, September 14, 2015, by John D'Ambrosia, IEEE P802.3bs Task Force Chair.
Introductions were made.
Chaired thanked NEC for hosting the meeting.

Chair thanked the editorial team for preparing draft 0.9.

Agenda & General Information
By – John D'Ambrosia
See -- http://www.ieee802.org/3/bs/public/15_09/agenda_3bs_01c_0915.pdf
Chair reviewed the agenda.

Motion #1:
Move to approve the agenda
- Moved by: Mark Gustin
- Second by: Adee Ran
- Pass by voice without opposition

July 2015 plenary meeting minutes were posted after the meeting. No comments were received against the posted minutes.

Motion #2:
Move to approve the IEEE P802.3bs July 2015 plenary meeting minutes
- Moved by: Pete Anslow
- Second by: Paul Kolesar
- Pass by voice without opposition

Chair noted that photography and recording not allowed without permission.

Chair called for members of the press. John D'Ambrosia noted that as Chairman of the Ethernet Alliance that he talks with press but will only disclose high level details available from published meeting material.   No one else responded.

Chair continued with the introductory presentation.

Chair reminded attendees to observe decorum rules.

Chair reminded attendees to sign the book and sign into the IEEE Attendance tool.

Goals:
- Resolve architectural issue (FEC lane formation in relation to PCS)
- Hear technical presentations
- Review Draft 0.9 and approve Draft 1.0
- Adopt new timeline

Chair displayed the reflector and web page information.

Chair noted that the draft, and any other content, is posted for Task Force review only, and neither the content nor access information should be copied or redistributed to others in violation of document copyrights.

Chair displays the Bylaws and Rules slides in
http://www.ieee802.org/3/bs/public/15_09/agenda_3bs_01c_0915.pdf

IEEE Patent Policy: Chair reviewed the Patent related slides on the 5 slides contained in the agenda. Chair calls for potentially essential patents. No one responded. Chair read the Guidelines for IEEE-SA meetings.   No one responded.

Chair advised the WG attendees that:
- The 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 the IEEE is not aware. Additionally, neither the 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.

No one responded.

Chair reviewed the ground rules.

Chair reviewed the IEEE 802.3 Standards process.

Chair noted that the focus of this meeting is to ensure that the editorial team correctly interpreted and implemented the proposals adopted at the July meeting.

Chair displayed links to the adopted objectives, PAR, CSD and timeline.

Chair reviewed the liaisons and communications. The Task Force received an OIF communication that provided two drafts of specifications in development related to 50G chip-to-chip and chip-to-module. Chair asked Steve Trowbridge to prepare a response to OIF for WG consideration on Wednesday.

Chair reviewed the plans for the week. The agenda was updated with presentation order.

Presentation #1:
Title: Chief Editor's Report
By: Pete Anslow
See   http://www.ieee802.org/3/bs/public/15_09/anslow_3bs_01_0915.pdf

Presentation #2:
Title: SMF Ad Hoc Updates
By: Pete Anslow
See   http://www.ieee802.org/3/bs/public/15_09/anslow_3bs_02_0915.pdf

Chair asked if there was objection to moving Mark Gustlin's "400GbE PCS 2-Way FEC Interleave" presentation to be after Pete Anslow's "FEC codeword interleaving schemes" presentation. No one responded.

Presentation #3:
Title: Logic Ad hoc Updates
By: Mark Gustlin
See   http://www.ieee802.org/3/bs/public/15_09/gustlin_3bs_01_0915.pdf

Presentation #4:
Title: Electrical Interface Ad Hoc
By: Andre Szczepanek
See http://www.ieee802.org/3/bs/public/15_09/szczepanek_3bs_01_0915.pdf

Presentation #5:
Title: Project Timeline Assessment
By: John D'Ambrosia
See   http://www.ieee802.org/3/bs/public/15_09/dambrosia_3bs_01_0915.pdf
- Three schedule options were presented for consideration by the Task Force.
- There was a request to include the OIF 56G schedule information in the timeline assessment. Chair noted that there is no formal way to do this and welcomed contributions with this information.
- Nathan Tracy noted that the OIF does not publish a technical schedule. The OIF is not producing an optical specification.

Break at 10:00 a.m. Resume at 10:20 a.m.

Presentation #6:
Title: Thoughts for 400GbE FEC Architecture with Pre-interleave
By: Xinyuan Wang
See   http://www.ieee802.org/3/bs/public/15_09/wang_x_3bs_01_0915.pdf
- Clarifying questions were asked and answered.

Presentation #7:
Title: 2x200 FEC Muxing Options
By: Will Bliss
See http://www.ieee802.org/3/bs/public/15_09/bliss_3bs_01_0915.pdf
- Clarifying questions were asked and answered.

Presentation #8:
Title: Toward convergence of FEC Interleaving Schemes for 400GE
By: Phil Sun
See   http://www.ieee802.org/3/bs/public/15_09/wang_z_3bs_01_0915.pdf
- Clarifying questions were asked and answered.

Presentation #9:
Title: FEC Latency for Interleaved schemes
By: Phil Sun
See   http://www.ieee802.org/3/bs/public/15_09/sun_3bs_01_0915.pdf

Presentation #10:
Title: FEC codeword interleaving schemes
By: Pete Anslow
See   http://www.ieee802.org/3/bs/public/15_09/anslow_3bs_03_0915.pdf
- Discussed the inclusion of option "8" and "8a" in the selection of FEC.

Break at 12:06 p.m. Resume at 1:33 p.m.

Presentation #11:
Title: 400GbE PCS 2-Way FEC Interleave
By: Mark Gustlin
See   http://www.ieee802.org/3/bs/public/15_09/gustlin_3bs_02_0915.pdf

Presentation #12:
Title: CDAUI-8 PAM4 Chip-to-Module (C2M) System Analysis
By: Ben Smith
See   http://www.ieee802.org/3/bs/public/15_09/smith_3bs_01a_0915.pdf
- Chair noted that the presentation was updated to '01a' with additional information. Also, Marco Mazzini provided new C2M channel data, which may be found on the channels webpage. http://www.ieee802.org/3/bs/public/channel/index.shtml

Presentation #13:
Title: CDAUI-8 chip-to-chip transmitter output jitter requirements
By: Adam Healey
See http://www.ieee802.org/3/bs/public/15_09/healey_3bs_01_0915.pdf
- Much discussion on the usefulness of the additional detail to the user performing the testing.

Presentation #14:
Title: TX Differential Precoder Benefits for CDAUI-8
By: Raj Hegde
See http://www.ieee802.org/3/bs/public/15_09/hegde_3bs_01a_0915.pdf
- Updated presentation '01a' with additional supporters.
- Much discussion on pre-coder impact to RS-FEC symbols

Break at 3:11 p.m. Resume at 3:32 p.m.

Presentation #15:
Title: Options for CRU BW for 400 GbE PAM4 PMDs
By: Ali Ghiasi
See http://www.ieee802.org/3/bs/public/15_09/ghiasi_3bs_01b_0915.pdf
- Mike Dudek noted that his support of the presentation did not include the editor's notes, specifically the 4MHz bandwidth that he does not agree with.
- Author to update presentation to '01b' to indicate that editor's notes are solely the opinion of Ali Ghiasi and a case to cover SR16 on slide 7.

Presentation #16:
Title: Baseline informative annex for mechanical interface(s) that may be used at the compliance points.
By: Chris Diminico
See http://www.ieee802.org/3/bs/public/15_09/diminico_3bs_01a_0915.pdf
- Discussion on MDI references and supported mechanical interfaces.

Chair reviewed the plans for Tuesday and Wednesday. Discussions, straw polls and motions are scheduled for Wednesday.

Break at 5:00 p.m.

IEEE P802.3bs Task Force Meeting – September 15, 2015:

Prepared by Kent Lusted

Resumed at 9:00 a.m. on September 15, 2015 by John D'Ambrosia, IEEE P802.3bs Task Force Chair.

Chair thanked NEC for hosting the meeting. John McDonough gave details on the social event Tuesday night.

Chair displayed agenda slides:
http://www.ieee802.org/3/bs/public/15_09/agenda_3bs_01c_0915.pdf

Patent policy: Chair displayed the patent policy related slides in the agenda (http://www.ieee802.org/3/bs/public/15_09/agenda_3bs_01c_0915.pdf) . Chair asked if anyone is unfamiliar with the IEEE patent policy. No one responded. Chair called for potentially essential patents. No one responded. Chair displayed the other guidelines for IEEE WG meetings.

Chair outlined the plans for the day.
Chair reminded participants to sign the book and sign into the IEEE Attendance tool.

Chair noted that the focus of this meeting is to ensure that the editorial team correctly interpreted and implemented the proposals adopted at the July meeting.

Presentation #17:
Title: Transmitter and SRS test source metrics
By: Jonathan King
See   http://www.ieee802.org/3/bs/public/15_09/king_3bs_01_0915.pdf
- Clarifying questions were asked and answered.
- Much discussion on the testing methodology and measurement techniques.

Presentation #18:
Title: PRQS Test Patterns for PAM4
By: Ilya Lyubomirsky
See http://www.ieee802.org/3/bs/public/15_09/lyubomirsky_3bs_01_0915.pdf
- Clarifying questions were asked and answered.

Break at 10:06 a.m. Resume at 10:35 a.m.

Presentation #19:
Title: 400 GbE: Discussion on skew variation and tolerance
By: Paul Brooks
See http://www.ieee802.org/3/bs/public/15_09/brooks_3bs_01_0915.pdf
- Author to send updated version '01a' which removes the restrictive notice.
- Clarifying questions were asked and answered.

Presentation #20:
Title: MPI Penalties for 400GBASE-FR8/LR8 Links
By: Winston Way
See http://www.ieee802.org/3/bs/public/15_09/way_3bs_01a_0915.pdf
- Clarifying questions were asked and answered

Chair noted that he received two late presentation requests. The first presentation is from Pavel Zivny and discusses scope functionality. The second presentation is an update from Joel Goergen and Marco Mazzini. Both presentations will be subject to time availability. No one objected.

Presentation #21:
Title: 400GBASE-DR4 TP2 Observations
By: Brian Welch
See http://www.ieee802.org/3/bs/public/15_09/welch_3bs_01a_0915.pdf
- Author to update presentation '01a' to change a label on slide 13
- Clarifying questions were asked and answered

Chair noted that Joel Goergen and Marco Mazzini would like to defer their presentation to a later date.

Break at 11:54 a.m. Resume at 1:19 p.m.

John D'Ambrosia passed the Chair responsibility to Pete Anslow, Chief Editor.

Chief Editor reviewed draft 0.9 that was posted in the private area.

John D'Ambrosia resumed chair responsibilities.

Presentation #22:
Title: Comment Tool Tutorial
By: Adam Healey
See http://www.ieee802.org/3/ballots/p802d3_comment_entry_tutorial_v1p0.pdf

Adam Healey, IEEE 802.3 Vice-Chair, noted that the Working Group voter rights are contingent upon returning ballots.

David Law, IEEE 802.3 Chair, noted that he will start to enforce the ballot return policy in the Working Group rules.

Chair thanked NEC for hosting the meeting.

Break for the day at 3:09 p.m.

IEEE P802.3bs Task Force Meeting – September 16, 2015:

Prepared by Kent Lusted

Resumed at 9:07 a.m. on September 16, 2015 by John D'Ambrosia, IEEE P802.3bs Task Force Chair.

Chair gave a reminder to sign the attendance book.

Chair displayed agenda slides:
http://www.ieee802.org/3/bs/public/15_09/agenda_3bs_01c_0915.pdf

Patent policy: Chair displayed the patent policy related slides in the agenda (http://www.ieee802.org/3/bs/public/15_09/agenda_3bs_01c_0915.pdf) . Chair asked if anyone is unfamiliar with the IEEE patent policy. No one responded. Chair called for potentially essential patents. No one responded.

Goals for the day include one presentation and motions and strawpolls.

Chair wished "Happy Birthday" to Pete Anslow.

Chair noted that Draft 1.0 was posted to the private area last night. The only changes from Draft 0.9 to Draft 1.0 were to change "0.9" to "1.0" and change the page numbering.

Motion #3:
Move to adopt P802.3bs draft 1.0 and circulate for Task Force review
- M: Pete Anslow
- S: Peter Stassar
- Technical (>75%)
- Y: 81   N: 0   A: 0
- Motion passes 9:15 a.m.

Chair thanked the Task Force for the hard work on consensus building.

Discussion on motion #4:
- Mark Gustlin summarized the work on FEC codewords and the options presented.
- Mark Gustlin noted, and the Chair reiterated, that this motion will not impact draft 1.0 but will be used to drive comments towards draft 1.0.

Motion #4:
Move to adopt symbol interleaving from two FEC codewords as the basis for forming the 16 PCS lanes.
- M: Mark Gustlin
- S: Tongtong Wang
- Technical (>= 75%)
- Y: 70   N: 0   A: 14
- Result: Passes 9:21 a.m.

Discussion of motion #5:
- Pete Anslow, Chief Editor, spoke to the timeline options. He noted that, by adopting the "5:4:4" schedule, he intends to improve the quality of the draft prior to Working Group ballot. If the draft is sufficient quality, the Task Force review could be 4 cycles.
- Chair noted that he routinely receives queries regarding the schedule of the task force.

Motion 5:
Move to adopt the timeline (option 5:4:4 on slide 5) in dambrosia_3bs_01_0915
- M: Pete Anslow
- S: Steve Trowbridge
- Technical (>=75%)
- Y: 88 N: 0 A: 1
- Passes 9:33 a.m.

Steve Trowbridge displayed the contribution "trowbridge_3bs_01_0915". See http://www.ieee802.org/3/bs/public/15_09/trowbridge_3bs_01_0915.pdf

Motion 6:
Move that the IEEE P802.3bs 400 GbE Task Force approve the text in trowbridge_3bs_01_0915.pdf with editorial license granted to the Chair (or his appointed agent) as an informal communication by the Chair to OIF.
- M: Steve Trowbridge
- S: Pete Anslow
- Procedural (>50%)
- Result: passes by voice without objection 9:37 a.m.

Presentation #22:
Title: Considerations for oscilloscope measurements of electrical and optical PAM4 signals
By: Pavel Zivny
See http://www.ieee802.org/3/bs/public/15_09/zivny_3bs_01_0915.pdf
- Clarifying questions were asked and answered.

Break at 9:50 a.m. Resume at 10:42 a.m.

Presentation #23:
Title: Chip-to-Module Mechanical Interfaces
By: Chris Diminico
See http://www.ieee802.org/3/bs/public/15_09/diminico_3bs_01b_0915.pdf
- Chris Diminico showed an update '01b' to his presentation that outlines the proposed changes. He summarized the changes from yesterday.
- Clarifying questions were asked and answered.
- Discussed using the proposed change as a bibliographical reference to indicate the basis used to develop the electrical interface specifications.

Straw Poll #1:
- Support inclusion of informative annex to P802.3bs providing references for example mechanical interface(s) at the compliance points for CDAUI-16 and CDAUI-8.
- Y: 38   N: 10   A: 30 11:09 a.m.

Attendance straw polls:
- I will attend the IEEE 400 Gb/s meetings at the November plenary in Dallas, TX, USA (week of November 9, 2015)
  - Y: 68   , Maybe: 17   , N: 1
- I will attend the IEEE 400 Gb/s meetings at the January interim in Atlanta, GA, USA (week of January 18, 2016)
  - Y: 55   , Maybe: 25   , N: 3

Future Meetings
- Nov 2015 Plenary
  - Hyatt Regency Dallas, Dallas, TX, USA
- Jan 2015 Interim
  - Week of Jan 18
  - Atlanta, GA, USA
- Mar 2016 Interim
  - Week of Mar 18
  - Macau, China
- May 2016 Interim
  - Week of May 23
  - Location TBA

Anyone interested in hosting a meeting should contact the Chair or Steve Carlson.

Chair noted that ad hocs will start soon. David Law reminded the ad hoc chairs that 10 days advance notice is required for ad hoc meetings.

David Law noted that the number of conflicts between Task Forces and limited resources could be increasing with future projects. He summarized the options to increase efficiency.

Pete Anslow encouraged the use of ad hocs to discuss technical comments on the draft prior to Task Force interim and plenary meetings.

Motion #7:
Motion to Adjourn:
- M: Steve Trowbridge
- S: Thananya Baldwin
- Pass by voice without opposition.

Meeting ended at 11:28 a.m.

Attendees

IEEE P802.3bs 400GbE Task Force			9/14/2015	9/15/2015	9/16/2015
Last Name	**First Name**	**Employer / Affiliation**	**Monday**	**Tuesday**	**Wednesday**
Andrewartha	Mike	Microsoft			x
Anslow	Pete	Ciena Corporation	x	x	x
Araj	Tomoyuki	Socionext	x	x	
Baden	Eric	Broadcom	x	x	x
Baldwin	Thananya	Ixia	x	x	x
Bernstein	Gary	Leviton	x	x	x
Bhatt	Vipul	Inphi	x	x	
Bietti	Ivan	Marvell Semiconductor	x	x	x
Bliss	Will	Broadcom	x	x	x
Booth	Brad	Microsoft	x	x	x
Bouda	Martin	Fujitsu	x	x	x
Brooks	Paul	Viavi Solutions	x	x	x
Brown	Matt	Applied Micro	x	x	x
Butter	Adrian	Global Foundries	x	x	x
Caggioni	Francesco	APM	x	x	x
Calbone	Anthony	Seagate			x
Carroll	Martin	Verizon		x	x
Chacon	Geoffrey	HP	x	x	x
Chang	Jacky	HP		x	
Chang	Xin	Huawei			x
Chen	David	AOI	x	x	x
Chuang	Keng Hua	HP Networking		x	
Cole	Chris	Finisar	x	x	x
Conroy	Keith	MultiPhy	x	x	x
Dai	Yuxin	Cox			x
D'Ambrosia	John	Dell	x	x	x
Dawe	Piers	Mellanox	x	x	x
Deborde	William	Intel	x	x	x
Dillow	Daniel	FCI			x
Dudek	Mike	QLogic	x	x	x
Ewen	John	Global Foundries	x	x	x
Fife	James	eTopus Tech	x	x	
Filip	Jan	Maxim Integrated Products Inc.	x	x	x
Ghiasi	Ali	Ghiasi Quantum	x	x	
Goergen	Joel	Cisco			x
Gorshe	Steve	PMC_Sierra	x	x	x
Gustlin	Mark	Xilinx	x		x
Hall	Eric	Aurrion	x		
Healey	Adam	Avago Technologies	x		x
Hegde	Raj	Broadcom	x	x	x
Horner	Rita	Synopsys	x	x	x
Ingham	Jonathan	Avago Technologies		x	x
Isono	Hideki	Fujitsu Ltd.	x	x	x
Issenhuth	Tom	Microsoft	x	x	x
Jackson	Kenneth	Sumitomo	x	x	x
Kareti	Upen Reddy	Cisco	x	x	x
Kelsen	Michael	Time Warner Cable		x	x
Kim	Yong	Broadcom	x	x	x

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IEEE P802.3bs 400GbE Task Force			9/14/2015	9/15/2015	9/16/2015
Last Name	First Name	Employer / Affiliation	Monday	Tuesday	Wednesday
King	Jonathan	Finisar Corp.	x		
Kipp	Scott	Brocade			x
Koehler	Daniel	More than IP	x	x	x
Kolesar	Paul	CommScope	x	x	
Lane	Brett	Panduit Corp.	x		x
Law	David	HP			x
LeCheminant	Greg	Keysight Technologies	x	x	x
Lewis	Dave	Lumentum		x	x
Li	Mike	Altera	x	x	x
Lusted	Kent	Intel	x	x	x
Lyubomirsky	Ilya	Finisar		x	x
Maki	Jeffery	Juniper Networks	x		x
Malicoat	David	HP	x	x	x
Marris	Arthur	Cadence	x	x	x
McDermott	Tom	Fujitsu	x	x	x
McDonough	John	NEC America	x	x	x
Mellitz	Richard	Intel	x	x	x
Mooney	Paul	Spirent Communications			x
Moritake	Toshiyuki	JAE			x
Muir	Ron	JAE			x
Murray	Dale	Light Counting		x	x
Nadolny	Jim	Samtec	x	x	x
Nguyen	TheLinh	Finisar	x	x	x
Nishimura	Takeshi	Yamaichi Electronics	x	x	x
Nowell	Mark	Cisco			x
Ofelt	David	Juniper Networks	x	x	x
Ogura	Ichiro	Petra	x	x	x
Palkert	Tom	Luxtera		x	x
Parthasarathay	Vasudevan	Broadcom	x		
Pepper	Gerald	Ixia	x		x
Pimpinella	Rick	Panduit Corp.	x	x	x
Ran	Adee	Intel	x	x	x
Roth	Chris	Molex	x	x	x
Rotolo	Salvatore	STM Microelectronics	x	x	x
Schube	Scott	Intel		x	x
Skaar	Tom	Seagate	x	x	x
Slavick	Jeff	Avago Technologies	x	x	x
Smith	Ben	Inphi	x	x	x
Sommers	Scott	Molex	x	x	x
Sone	Yoshiaki	NTT	x	x	x
Stassar	Peter	Huawei	x	x	x
Stone	Rob	Broadcom		x	x
Sun	Phil	Marvell Semiconductor	x	x	x
Swanson	Steve	Corning		x	x
Sysale	Matthew	Intel	x	x	x
Szczepanek	Andre	Inphi	x	x	x
Szeto	William	Xtera	x	x	x
Tajima	Akio	NEC Corporation			x
Takahara	Tomoo	Fujitsu Laboratories	x	x	x

IEEE P802.3bs 400GbE Task Force			9/14/2015	9/15/2015	9/16/2015
Last Name	First Name	Employer / Affiliation	Monday	Tuesday	Wednesday
Takahata	Kiyoto	NTT	x	x	x
Tamura	Kohichi	Oclaro Japan	x	x	x
Tracy	Nathan	TE Connectivity	x	x	x
Trowbridge	Steve	Alcatel-Lucent	x	x	x
Ulrichs	Ed	Source Photonics	x	x	x
Valle	Stefano	ST Microelectronics	x	x	x
Wang	Robert	Intel		x	x
Wang	Roy	HP Networking		x	
Wang	Tongtong	Huawei	x	x	x
Wang	Xinyuan	Huawei	x	x	x
Way	Winston	NeoPhotonics	x	x	x
Welch	Brian	Luxtera	x	x	x
Wertheim	Oded	Mellanox	x	x	x
Xu	Qing	Belden	x	x	x
Xu	Yu	Huawei	x		x
Zambell	Andrew	FCI		x	x
Zivny	Pavel	Tektronix	x	x	x