Approved Minutes

IEEE P802.3bs 400 GbE Task Force

Interim Meeting

September 8-10, 2014

Kanata, Ontario, Canada

Prepared by Kent Lusted

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IEEE P802.3bs 400GbE – 8 September 2014:

Prepared by Kent Lusted

IEEE P802.3bs 400 Gb/s Task Force interim meeting convened at 9:00 am, Monday, 8 September 2014, by John D'Ambrosia, IEEE P802.3bs Task Force Chair.

Chair appoints Kent Lusted as Task Force recording secretary for the meeting.

Introductions were made.

Agenda & General Information
By – John D'Ambrosia
See -- http://www.ieee802.org/3/bs/public/14_09/agenda_3bs_01_0914.pdf
Chair reviewed the agenda.

Motion #1:
Move to approve the agenda

- Moved by: Steve Trowbridge
- Second by: Thananya Baldwin
- Pass by voice without opposition

No comments were received on the P802.3bs July Plenary meeting minutes after they were posted.

Motion #2:
Move to approve the IEEE P802.3bs July 2014 Plenary meeting minutes.

- Moved by: Pete Anslow
- Second by: Thananya Baldwin
- Pass by voice without opposition

Chair reminds attendees to sign into the IEEE-SA Meeting Attendance Tool and to sign book. Update affiliation, if necessary.

Motion #3:
Move to confirm Pete Anslow as IEEE P802.3bs Editor in Chief.

- Moved by: David Law
- Second by: Alan Flatman
- Pass by voice without opposition

David Law and Alan Flatman recognize Pete Anslow as a recipient of IEEE-SA Standards Medallion award for outstanding contributions to IEEE.

Photography and recording not permitted without permission.

Call for members of the press. John D'Ambrosia noted 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.

Goals:

- Hear Technical Presentations / Proposals
- Identify Steps Moving Forward
- Address Multiple Technical Key Issues
    - Architecture
    - FEC
    - Electrical Interfaces: 16x25 vs 8x50 vs both
    - MMF PMDs
    - SMF PMDs
        - # of wavelengths and effective rate per lambda
        - Modulation schemes
        - Commonality between PMDs

Chair reminds attendees to sign into the IEEE-SA Meeting Attendance Tool and to sign book. Update affiliation, if necessary.

Pete Anslow noted a correction to the July minutes that was missed during approval of the minutes (Motion #2). No objection from the task force to incorporate the correction.

Chair displays the Bylaws and Rules slides in
http://www.ieee802.org/3/bs/public/14_09/agenda_3bs_01_0914.pdf

IEEE Patent Policy: Chair reviewed the Patent related slides on the 4 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. The November Plenary is the last task force meeting to adopt new proposals to meet the adopted timeline.

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

Chair received a liaison letter from OIF regarding the CEI-56G project. (posted at http://www.ieee802.org/3/minutes/nov14/incoming/OIF_to_IEEE_P802.3bs_Aug_2014.pdf) Nathan Tracy provided an update to the IEEE P802.3 Task Force on the project status. Chair appoints Joel Goergen to draft a proposed response to the OIF liaison letter and circulate it on the reflector. The OIF document is posted in the Task Force private area

Chair reviewed the interrelations between the Technical Decisions.

Chair received late presentations from Gary Nicholl and Joel Goergen. Chair asked if anyone objected to including these presentations. No one responded.

Chair reviewed the plans for the week.

Presentation #1:
Title: Logic Ad Hoc Report
By: Mark Gustlin
See: http://www.ieee802.org/3/bs/public/14_09/gustlin_3bs_01_0914.pdf
Clarifying questions were asked and answered.

The use case ad hoc did not meet. There is no report.

Presentation #2:
Title: SMF Ad Hoc Report
By: Pete Anslow
See: http://www.ieee802.org/3/bs/public/14_09/anslow_3bs_01_0914.pdf
Need consensus presentations with all of the detail required to enable them to be adopted as a baseline for one of the project objectives.

Presentation #3:
Title: MMF Ad Hoc Report
By: Pete Anslow on behalf of Jonathan King
See: http://www.ieee802.org/3/bs/public/14_09/king_3bs_01_0914.pdf

Break at 10:04 a.m. Resume at 10:32 a.m.

John D'Ambrosia passes Task Force chair responsibilities to Kent Lusted while he presents.

Presentation #4:
Title: Addressing 2km SMF Objective
By: John D'Ambrosia
See: http://www.ieee802.org/3/bs/public/14_09/dambrosia_3bs_01_0914.pdf
Clarifying questions were asked about the distinct identity.

John D'Ambrosia resumes Task Force chair.

Presentation #5:
Title: 25Gb/s and 50Gb/s Electrical Interface Consensus Building
By: Joel Goergen
See: http://www.ieee802.org/3/bs/public/14_09/goergen_3bs_01_0914.pdf
Clarifying questions were asked and answered regarding the technology comparison table. Chair will upload the tool prepared by Joel Goergen and Beth Kochuparambil as a task force contribution. It will not be an official tool until the Task Force approves.

Action Item: Joel Goergen to modify slide title "Length, Loss & Application: Technologies for 50 Gb/s" (slide 16?) to improve table clarity for the reader.

Chair appoints Joel Goergen and Vasudevan Parthasarathy to run the electrical interface ad hoc. The charter of the ad hoc will be to work on consensus for proposals for the electrical interfaces. Joel / Vasu indicated they would be holding an ad hoc meeting that night (7:30pm to 9pm) pending confirmation by the chair of the room. Chair will announce via the reflector the room.

Chair reminds attendees to sign into the IEEE-SA Meeting Attendance Tool and to sign book. Update affiliation, if necessary.

Presentation #6:
Title: OTN Support Update
By: Steve Trowbridge
See: http://www.ieee802.org/3/bs/public/14_09/trowbridge_3bs_01_0914.pdf
Clarifying questions were asked and answered.

Break at 12:04 pm. Resume at 1:19 pm.

Presentation #7:
Title: FEC Performance on multi-part links
By: Pete Anslow
See: http://www.ieee802.org/3/bs/public/14_09/anslow_3bs_02_0914.pdf
Clarifying questions regarding FEC burst errors were asked and answered.

Presentation #8:
Title: FEC Configuration Analyses For 400Gb Ethernet
By: Zhongfeng Wang
See: http://www.ieee802.org/3/bs/public/14_09/wang_z_3bs_01_0914.pdf
Clarifying questions and comments regarding FEC encoder/decoder cycle times and parallelism were discussed.

Chair reminds attendees to sign into the IEEE-SA Meeting Attendance Tool and to sign book. Update affiliation, if necessary.

Chair noted that Tongtong Wang has an updated presentation with 1 additional slide and would like to present it. No one responded.

Presentation #9:
Title: FEC Performance Analysis for 400GbE with FOM Bitmux
By: Tongtong Wang
See: http://www.ieee802.org/3/bs/public/14_09/wang_t_3bs_01a_0914.pdf

Chair noted that he is working to post updated presentations to the Task Force website.

Presentation #10:
Title: 400GBASE-SR16 Cabling
By: Paul Kolesar
See: http://www.ieee802.org/3/bs/public/14_09/kolesar_3bs_01a_0914.pdf
Clarifying questions regarding the cable cord and array distinguishing characteristics were asked and answered.

Break at 3:02pm. Resume at 3:26 pm.

Presentation #11:
Title: Path to Consensus on 400 GbE PMDs
By: Ali Ghiasi
See: http://www.ieee802.org/3/bs/public/14_09/ghiasi_3bs_01_0914.pdf
Clarifying questions were asked and answered.

Action Item: Ali Ghiasi to update slide 12 to improve readability.

Presentation #12:
Title: Technology comparison matrix for duplex SMF PMDs
By: Yoshiaki Sone
See: http://www.ieee802.org/3/bs/public/14_09/sone_3bs_01_0914.pdf

Action Item: Yoshiaski Sone to provide update to the reflector on tap spacing on slide 6 – Is it Baud or Baud/2 spacing?

Presentation #13:
Title: Ideal SNR Penalties
By: Chris Cole
See: http://www.ieee802.org/3/bs/public/14_09/cole_3bs_01_0914.pdf
Clarifying questions were asked and answered.

Presentation #14:
Title: Optical Specifications of SMF PMDs Study
By: Chris Cole
See: http://www.ieee802.org/3/bs/public/14_09/cole_3bs_02_0914.pdf
Clarifying questions regarding the TDP comparison chart were asked and answered.

Chair plans for discussions and conduct strawpolls on Tuesday evening.

Break for the day at 5:25 pm.

IEEE P802.3bs 400GbE – 9 September 2014:

Prepared by Kent Lusted

Resume at 9:02 am on 9 September 2014 by John D'Ambrosia, IEEE P802.3bs Task Force Chair.

Patent policy: Chair displayed the patent policy related slides in the agenda (http://www.ieee802.org/3/bs/public/14_09/agenda_3bs_01_0914.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 noted that all presentations received yesterday were posted to the website last night and announced on the reflector.

Chair plans to break the meeting at 5:45 pm today to accommodate the social event in the evening.

Chair thanks Ericsson for hosting the September interim meeting.

Chair reminds attendees to sign into the IEEE-SA Meeting Attendance Tool and to sign book. Update affiliation, if necessary.

Chris Cole provided an updated bandwidth analysis over the reflector. He requested permission to append the presentation with the updated data – the added slide will be specifically marked. There was no objection from the task force. Updated file will be posted as http://www.ieee802.org/3/bs/public/14_09/cole_3bs_02b_0914.pdf

Presentation #15:
Title: SMF PMD Decision Tree Status
By: Peter Stassar
See: http://www.ieee802.org/3/bs/public/14_09/stassar_3bs_01b_0914.pdf
Clarifying questions were asked and answered. Discussion regarding 50G & 100G per lane application support and the mapping to the project objectives.

Presentation #16:
Title: Experimental Verification of 56Gbps NRZ Performance for 400GbE 2km and 10km PMD
By: Yangjing Wen
See: http://www.ieee802.org/3/bs/public/14_09/wen_3bs_01_0914.pdf

Break at 10:25 am. Resume at 10:48 am.

Presentation #17:
Title: Consideration of 50G NRZ optical components for 400GbE PMD
By: Mizuki Shirao
See: http://www.ieee802.org/3/bs/public/14_09/shirao_3bs_01_0914.pdf

Chair reminds attendees to sign into the IEEE-SA Meeting Attendance Tool and to sign book. Update affiliation, if necessary.

Presentation #18:
Title: The case for a 4 Lane 400Gb/s SMF PMD
By: Gary Nicholl
See: http://www.ieee802.org/3/bs/public/14_09/nicholl_3bs_01a_0914.pdf
Chair noted that the presentation was submitted late but the Task Force agreed on Monday to accept it. Many clarifying questions were asked and answered, including lane count and technical feasibility.

Break at 12:00 pm. Resume at 1:15 pm.

Chair reminds participants to be succinct with their questions.

Presentation #19:
Title: DMT measurement considerations part 2: Receivers
By: Greg LeCheminant
See: http://www.ieee802.org/3/bs/public/14_09/lecheminant_3bs_01a_0914.pdf
Clarifying questions regarding eye measurement were asked and answered.

Action Item: Greg LeCheminant to send updated presentation with updated affiliation.

Presentation #20:
Title: Discussion of 400GbE DMT level diagram for realistic implementation
By: Tomoo Takahara
See: http://www.ieee802.org/3/bs/public/14_09/takahara_3bs_01a_0914.pdf
Clarifying questions were asked and answered regarding loss budget and the experiment setup.

Presentation #21:
Title: 400GbE DMT Tolerance to MPI
By: Toshika Tanaka
See: http://www.ieee802.org/3/bs/public/14_09/tanaka_3bs_01_0914.pdf
Clarifying questions were asked and answered.

Presentation #21:
Title: Practical Demonstration of live-traffic Optical DMT Link using DMT Test Chip
By: David Lewis
See: http://www.ieee802.org/3/bs/public/14_09/lewis_3bs_01a_0914.pdf

Action Item: David Lewis to send updated presentation with supporters.

Chair reminds attendees to sign into the IEEE-SA Meeting Attendance Tool and to sign book. Update affiliation, if necessary.

Presentation #22:
Title: 400G-PSM4: Design and Specification Exercises
By: Brian Welch
See: http://www.ieee802.org/3/bs/public/14_09/welch_3bs_01a_0914.pdf

In celebration of the chief editor's birthday, the Chair requested permission to take a photo. No one objected.

Break at 3:00 pm. Resume at 3:20 pm.

Presentation #23:
Title: 400GbE using Nyquist PAM4 for 2km and 10km PMD
By: Ram Rao
See: http://www.ieee802.org/3/bs/public/14_09/rao_3bs_01a_0914.pdf

Chair notes that Ram Rao will provide an updated presentation after the meeting with some technical updates. The changes will be marked in the posted version.

Action Item: Ram Rao to send updated presentation.

Chair reminded the Task Force that a presentation with changes other than supports needs approval.

Presentation #24:
Title: PAM-4 Four Wavelength 400G solution on Duplex SMF
By: Keith Conroy
See: http://www.ieee802.org/3/bs/public/14_09/conroy_3bs_01a_0914.pdf

Action Item: Keith Conroy to send updated presentation.

Presentation #25:
Title: 100Gb/s/lambda PAM4: Component Perspective
By: Alan Tipper
See: http://www.ieee802.org/3/bs/public/14_09/tipper_3bs_01a_0914.pdf
Clarifying questions were asked and answered.

Presentation #26:
Title: Single wavelength 112Gb/s PAM4 over 10km experiment using a 1.3um EML
By: Winston Way
See: http://www.ieee802.org/3/bs/public/14_09/way_3bs_01a_0914.pdf
Clarifying questions were asked and answered. Chris Cole offers his support to the presentation. Arash Farhoodfar offers his support to the presentation.

Presentation #27:
Title: Feasibility study of 100G/lambda Nyquist-PAM4 with commercially available 1.3um/1.5um EML
By: Riu Hirai
See: http://www.ieee802.org/3/bs/public/14_09/hirai_3bs_01_0914.pdf

Chair reminds participants that the requested presentation time should allocate time for Q&A.

Presentation #28:
Title: Experimental measurements showing technical feasibility for a 56Gbaud PAM4 optical link budget
By: Gary Nicholl
See: http://www.ieee802.org/3/bs/public/14_09/mazzini_3bs_01_0914.pdf
Chris Cole offers his support to the presentation.

Announced start time is 9:00 a.m. Chair anticipates a few motions during closing business.

Break for the day at 5:45 pm.

IEEE P802.3bs 400GbE – 10 September 2014:

Prepared by Kent Lusted

Resume at 9:00 a.m. on 10 September 2014 by John D'Ambrosia, IEEE P802.3bs Task Force Chair.

Chair reminds participants to observe decorum rules during the day's discussion.

Patent policy: Chair displayed the patent policy related slides in the agenda (http://www.ieee802.org/3/bs/public/14_09/agenda_3bs_01_0914.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 reminds attendees to sign into the IEEE-SA Meeting Attendance Tool and sign the book. Update affiliation, if necessary. IMAT server is currently down and the attendance record for today will come from the book.

Motion #4: 9:05 am.
Move to adopt 16 x 25Gb/s and 8 x 50Gb/s as baseline proposal for the lane rates for any optional C2C and C2M electrical interfaces

- M: J. Goergen
- S: V. Parthasarathy
- Technical (>= 75%)

Motion #5: 9:11 am.
Move to modify motion #4 to read:

  - Move to adopt 16 x 25Gb/s and 8 x 50Gb/s as the basis for the lane rates for any optional C2C and C2M electrical interfaces

- M: B. Booth
- S: A. Ghiasi
- Technical (>= 75%),
- Result: pass by voice without opposition

Motion 4 (as modified by motion #5): 9:15 am.
Move to adopt 16 x 25Gb/s and 8 x 50Gb/s as the basis for the lane rates for any optional C2C and C2M electrical interfaces

- M: J. Goergen
- S: V. Parthasarathy
- Technical (>= 75%),
- Y: 102 , N: 0 , A: 4
- Result: passes!

Motion #6: 9:21am:
Move to adopt the P802.3bm C2C and C2M specifications with current values (except that the BER requirement is TBD) as a baseline draft for the 16 x 25Gb/s electrical interfaces

- M: J. Goergen
- S: V. Parthasarathy
- Technical (>= 75%),

Discussion on Motion #6.

Motion #7: 9:41 am.
Move to modify motion #6 to read:

- Move to adopt the P802.3bm C2C and C2M specifications ~~with current values (except that the BER requirement is TBD)~~ as a baseline draft for the 16 x 25Gb/s electrical interfaces
- M: Gary Nicholl
- S: Mike Li
- Technical (>= 75%)

Motion #7 was withdrawn at 9:51 a.m. by mover and seconder.

Chair reports that IMAT is back up. Sign into the IEEE-SA Meeting Attendance Tool and sign book.

Motion #8: 10:01 a.m.
Move to change motion #6 to read

- Move to adopt the P802.3bm C2C and C2M specifications with current values (except for accommodation of 16 lane channels and that the BER requirement is TBD) as a baseline draft for the 16 x 25Gb/s electrical interfaces
- M: J Petrilla
- S:

Break at 10:02 a.m. Resume at 10:25 a.m.

Motion #8 withdrawn by mover at 10:26 a.m. There was no second.

Motion #6:
Move to adopt the P802.3bm C2C and C2M specifications with current values (except that the BER requirement is TBD) as a baseline draft for the 16 x 25Gb/s electrical interfaces

- M: J. Goergen
- S: V. Parthasarathy
- Technical (>= 75%),
- Y: 78 , N: 0 , A: 18
- Result: passes 10:31am

Straw poll #1: 10:32 am.
For all SMF reach objectives, I would support:

(A) 50G based optical solutions for all reach objectives
(B) 100G based optical solutions for all reach objectives
(C) either 50G or 100G based optical solutions for different reach objectives

Task force participants discuss straw poll #1.

Chair summarized some key themes from Task Force discussion of straw poll #1. These include:

- Concern of economic feasibility
- Concern of interoperability
- Concern of technical feasibility on 100G
- Ethernet is a commodity with high volume and the implication of 100G.
- Must not have the standard behind the market
- 100G can be a path to high density modules
- Anyone can do a CFI for a 100G project later

Straw poll #1: 11:13 a.m.
For all SMF reach objectives, I would support:

(A) 50G based optical solutions for all reach objectives
(B) 100G based optical solutions for all reach objectives
(C) either 50G or 100G based optical solutions for different reach objectives

Results at 11:13 a.m.:

A: 38 , B: 21 , C: 42

Strawpoll #2: 11:16 am.
I would support a 8x50G SMF optical solution for 10km

- Yes
- No
- Abstain

Results:

Y: 44 N: 22 A: 39

The Task Force reviewed the OIF informal communication letter goergen_3bs_02_0914.pdf.

Motion #9: 11:34 am.
Move that the IEEE 802.3bs 400 GbE Task Force approve the text in goergen_3bs_02_0914.pdf with editorial license granted to the Chair (or his appointed agent) as an informal communication by the Chair to OIF.

- M: J. Goergen
- S: S. Trowbridge
- Procedural (>50%)
- Result: passes by voice without objection

Attendance strawpolls:

- I will attend the IEEE P802.3bs November plenary in San Antonio, TX, USA (week of November 3, 2014)
  - Y: 79 , Maybe Y: 7 , Maybe N: 1 , N: 8
- I will attend the IEEE P802.3bs January interim in Atlanta, GA, USA (week of January 12, 2015)
  - Y: 59 , Maybe Y: 29 , Maybe N: 1 , N: 6

Future Meetings

- Nov 2014 Plenary - Week of November 2
  - Grand Hyatt San Antonio, San Antonio, TX, USA
- Jan 2015 Interim - Week of Jan 12
  - Hyatt Regency, Atlanta, GA, USA
- Mar 2015 Plenary - Week of Mar 8
  - Estrel Hotel and Convention Center, Berlin, Germany
- May 2015 Interim - Week of May 18, 2015
  - Omni William Penn Hotel, Pittsburgh, PA, USA
- July 2015 Plenary - Week of July 12
  - Hilton Waikoloa Village

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

Mark Nowell noted that the 25G study group will meet at 8:30 am on Thursday. Dan Dove noted that the P802.3bm Task Force will meet at 1:15pm today.

Chair reminds attendees to sign into the IEEE-SA Meeting Attendance Tool and sign the book.

Motion #10:
Motion to Adjourn:

- M: S. Trowbridge
- S: A. Ran
- Pass by voice without opposition.

Meeting ended at 11:45 am.

Open Ad Hocs:

Volunteer	Action	Date Assigned	Status
Joel Goergen	Run the electrical interface ad hoc	8 September 2014	Open

Attendees

IEEE P802.3bs 400GbE Task Force			9/8/2014	9/9/2014	9/10/2014
Abbott	John	Corning	x	x	
Abbott	Justin	Semtech	x	x	
Ali	Hassan	Texas Instruments	x	x	x
Anslow	Pete	Ciena Corporation	x	x	x
Baldwin	Thananya	Ixia	x	x	x
Begin	Cedrik	Cisco	x	x	x
Belhadj	Med	Feneck/Precise IC	x	x	
Bhatt	Vipul	Inphi	x	x	x
Bhoja	Sudeep	Inphi	x		
Bhullar	Gurpreet	Samtech LTD	x	x	
Bliss	Will	Broadcom	x	x	x
Booth	Brad	Microsoft		x	x
Bouda	Martin	Fujitsu	x	x	x
Bower	Patricia	Fujitsu	x	x	x
Brooks	Paul	JDSU	x	x	x
Brown	David	Semtech	x	x	x
Brown	Matt	Applied Micro	x	x	x
Butter	Adrian	IBM	x	x	x
Calderon	Juan-Carlos	Cortina Systems		x	x
Chalupsky	David	Intel	x		
Chen	David	Nokia	x		x
Cheng	Xiaoguang	Lenovo	x		
Choudhury	Mabud	CommScope	x	x	
Cole	Chris	Finisar	x	x	x
Conroy	Keith	MultiPhy	x	x	x
D'Ambrosia	John	Dell	x	x	x
Dawe	Piers	Mellanox	x	x	x
Dove	Dan	Dove Networking Solutions (DNS)	x	x	
Dudek	Mike	QLogic	x	x	x
Erven	Chad	Semtech LTD	x	x	x
Estes	Dave	Spirent Communications			x
Farhoodfar	Arash	Cortina Systems	x	x	x
Flatman	Alan	LAN Technologies	x		
Fortin	Eric	Alcatel-Lucent	x	x	x
Frlan	Edward	Semtech	x	x	x
Gareau	Sebatien	Ciena	x	x	x
Ghiasi	Ali	Ghiasi Quantum	x	x	x
Goergen	Joel	Cisco	x		x
Gong	Zhigang	D-Net	x	x	x
Gorshe	Steve	PMC_Sierra	x	x	x
Green	Malcolm	Bin Optics	x	x	x
Grow	Bob	RMG Consulting			x
Gustlin	Mark	Xilinx	x	x	x
Hage	Ousama	Xilinx	x	x	
Healey	Adam	Avago Technologies	x	x	x
Hirai	Riu	Hitachi	x	x	x
Holden	Brian	Kandou Bus		x	x

IEEE P802.3bs 400GbE Task Force			9/8/2014	9/9/2014	9/10/2014
Horner	Rita	Synopsys	x	x	x
Irwin	Scott	Mosys	x	x	x
Isono	Hideki	Fujitsu Optical Components	x	x	x
Issenhuth	Tom	Microsoft	x	x	x
Jackson	Kenneth	Sumitomo	x	x	x
Kawamoto	Takashi	Hitachi	x	x	x
King	Jonathan	Finisar Corp.		x	
Kipp	Scott	Brocade			x
Kish	Paul	Belden	x		
Koehler	Daniel	More than IP	x	x	x
Kolesar	Paul	CommScope	x	x	x
Krishnasamy	Kumaran	Broadcom	x	x	x
Labib	Rami	Alcatel-Lucent	x	x	x
Landon	Peter	BTI	x		
Lane	Brett	Panduit Corp.	x	x	
Langhammer	Martin	Altera	x	x	
Latchman	Ryan	MACOM	x		
Law	David	HP	x	x	x
LeCheminant	Greg	Agilent Technologies	x	x	x
Lewis	Dave	JDSU	x	x	x
Li	Lei	Fujitsu	x	x	x
Li	Mike	Altera	x	x	x
Li	Silas	Precise ITC	x		x
Lingle, Jr.	Robert	OFS		x	x
Little	Paul	Fujitsu Semiconductors	x	x	x
Liu	Zhenyu	Marvell Semiconductor		x	x
Lossard	Stephanie	Ericsson	x	x	x
Lusted	Kent	Intel	x	x	x
Maki	Jeffery	Juniper Networks	x	x	x
Malkman	Yonaton	Mellanox	x	x	x
Matoglu	Erdem	Amphenol		x	x
McClennon	Scott	Semtech LTD	x	x	
McDonough	John	NEC America	x	x	
Mei	Richard	Commscope	x		
Mellitz	Richard	Intel	x	x	x
Mooney	Paul	Spirent Communications	x	x	x
Moorwood	Andy	Infinera Corp	x	x	x
Muir	Ron	JAE			x
Murray	Dale	Light Counting	x	x	x
Neslusan	Neal	Multiphy	x	x	x
Nicholl	Gary	Cisco	x	x	x
Nicholl	Shawn	Xilinx	x	x	x
Nikolich	Paul	Self	x		
Nowell	Mark	Cisco	x	x	x
Ofelt	David	Juniper Networks	x	x	x
Ogura	Ichiro	Petra	x	x	x
Palkert	Tom	Luxtera	x	x	x
Paquet	Carl	Teraxion		x	
Park	Moon	OE Solutions	x	x	x
Parthasarathay	Vasudevan	Broadcom	x	x	x

IEEE P802.3bs 400GbE Task Force			9/8/2014	9/9/2014	9/10/2014
Patel	Pravin	IBM	x	x	x
Pepper	Gerald	Ixia	x	x	x
Petrilla	John	Avago Technologies	x	x	x
Pigeon	Michel	Simplified Optics	x	x	x
Pimpinella	Rick	Panduit Corp.	x	x	x
Plant	David	McGill	x		
Ran	Adee	Intel	x	x	x
Rao	Ram	Oclaro	x	x	x
Rotolo	Salvatore	STM Microelectronics	x	x	x
Sakamoto	Hisaya	Fujitsu Optical Components	x	x	x
Sambasivan	Sam	AT&T	x		x
Shanbhag	Megha	TE Connectivity		x	x
Shirao	Mizuki	Mitsubishi Electric	x	x	x
Slavick	Jeff	Avago Technologies	x	x	x
Sommers	Scott	Molex	x	x	x
Sone	Yoshiaki	NTT	x	x	x
Song	Xiaolu	Huawei	x	x	x
Sparacin	Daniel	Aurrion	x	x	
Sprague	Ted	Infinera	x	x	x
Stassar	Peter	Huawei	x	x	x
Stone	Rob	Broadcom	x	x	
Swanson	Steve	Corning	x	x	x
Tailor	Bharat	Semtech Corp	x	x	x
Tajima	Akio	NEC Corporation	x	x	x
Takahara	Tomoo	Fujitsu Optical Components	x	x	x
Takahata	Kiyoto	NTT	x	x	x
Tanaka	Toshiki	Fujitsu Laboratories	x	x	x
Tipper	Alan	Semtech	x	x	x
Tooyserkani	Pirooz	Cisco	x	x	x
Toyoda	Hidehiro	Hitachi	x	x	x
Tracy	Nathan	TE Connectivity	x	x	x
Tremblay	Francois	Semtech	x	x	x
Trowbridge	Steve	Alcatel-Lucent	x	x	x
Twombly	Jeff	Credo Semiconductor	x	x	x
Ulrichs	Ed	Source Photonics	x	x	x
Valle	Stefano	ST Microelectronics	x	x	x
Vanderlaan	Paul	Nexans	x		
Wang	Tongtong	Huawei	x	x	x
Wang	Xinyuan	Huawei	x	x	x
Wang	Zhongfeng	Broadcom	x	x	x
Way	Winston	NeoPhotonics	x	x	x
Welch	Brian	Luxtera	x	x	x
Wen	Yangjing	Huawei	x	x	x
Wertheim	Oded	Mellanox	x	x	
Wong	Henry	Huawei	x	x	
Xu	Yu	Huawei	x	x	x
Zambell	Andrew	FCI	x	x	x
Zortea	Tony	PMC Sierra	x		x