Unapproved Minutes

IEEE 50 Gb/s over a Single Lane and Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Groups Joint Meeting

Interim Meeting
January 20-22, 2016
Atlanta, GA, USA

Prepared by Kent Lusted

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{Note from the Recording Secretary: to simplify the note taking, the reader may see that the abbreviation "50GE" is used for the 50 Gb/s Ethernet over a Single Lane" Study Group and the abbreviation "NGOATH" is for the "Next Generation 100 Gb/s and 200 Gb/s Ethernet" Study Group within the context of the meeting minutes}

IEEE 50 Gb/s Ethernet over a Single Lane and Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Groups Joint Meeting – January 20, 2016:

Prepared by Kent Lusted

IEEE 50 Gb/s Ethernet over a Single Lane and Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Groups Joint meeting convened at 8:00 a.m., January 20, 2016, by David Law, IEEE 802.3 Work Group Chair.

Mr. Law welcomes attendees to the IEEE 50 Gb/s Ethernet over a Single Lane "50GE" and Next Generation 100 Gb/s and 200 Gb/s Ethernet "NGOATH" Study Groups Joint meeting.

David Law appoints Kent Lusted as the recording secretary for the IEEE 50 Gb/s Ethernet over a Single Lane and Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Groups.

As announced at the November 2015 Plenary meeting, David Law intends to appoint Mark Nowell as the Chair of the IEEE 50 Gb/s Ethernet over a Single Lane and Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Groups.

Mr. Law asked if there was objection to a joint motion for the confirmation of the Chairs for the two Study Groups as one vote. There was no objection.

Motion 1:
Move to confirm Mark Nowell as the IEEE 802.3 50 Gb/s Ethernet over a Single Lane and Next Generation 100Gb/s and 200Gb/s Ethernet Study Groups Chair.

- Moved by: John D'Ambrosia
- Second by: Chris Cole
- Y: 54 , N: 0 , A: 1
- Motion passes!

Introductions were made.

Chair reviewed agenda in
http://www.ieee802.org/3/50G/public/Jan16/agenda_50GE_NGOATH_01a_0116.pdf

Motion #2:
Move to approve the agenda:

- Moved by: Mike Dudek
- Second by: Pete Anslow
- Passed by voice without opposition

Chair reminded participants to observe meeting decorum. Called for members of the press. No one responded. Photography and recording are not permitted.

Chair reviewed the reflector and web information. Chair noted that a single reflector is used for both Study Groups. Chair reviewed the ground rules for the meeting.

Chair reviewed the attendance procedures. Chair reminded participants to sign into the IEEE Attendance Tool and to sign the book.

Chair reviewed the IEEE structure.

Chair reviewed the Bylaws and Rules slides in --
http://www.ieee802.org/3/50G/public/Jan16/agenda_50GE_NGOATH_01a_0116.pdf

IEEE Patent Policy: Chair read the Guidelines for IEEE WG meetings. No one responded.

Chair reviewed the IEEE 802.3 Standards Process. Chair summarized the documentation necessary to progress to a Task Force. Chair noted some of the challenges associated with operating the two Study Groups in parallel.

Chair noted that the November 2015 CFI motion defines the charter of the Study Groups and that there has been discussion about changing the charter to better align with the desired work expressed in the Study Groups ad hoc meetings.

Goals for the meeting:

- Develop a set of objectives for the Study Groups
- Develop responses for the CSD (Criteria for Standards Development)
- Develop PAR(s)
- Review presentations substantiating the above

Chair reviewed the meeting map for the rest of the week, courtesy of John D'Ambrosia. Chair noted that there is an IEEE 802.3 Working Group meeting on Thursday evening.

Chair reviewed the goals beyond the meeting and the proposed meeting schedule. Chair noted that he will hold presentations to 15 minutes each to ensure that each presenter has equal time.

Future Meetings:

- March 2016 Plenary
    - Week of March 13th, 2016 – Macau, China
- May 2016 interim
    - Week of May 23, 2016 – Whistler, BC, Canada
- July 2016 Plenary
    - Week of July 24, 2016 – San Diego, CA, USA

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

50 Gb/s & NGOATH Study Group Ad-hoc report:
See http://www.ieee802.org/3/50G/public/Jan16/lusted_50GE_NGOATH_02_0116.pdf

- Kent Lusted noted that the joint ad hoc meetings will likely resume on Feb 3, 2016. Details will be announced over the reflector.

Presentation #1:
"Procedural Progress", Mark Nowell
See: http://www.ieee802.org/3/50G/public/Jan16/nowell_50GE_NGOATH_01a_0116.pdf

- Reviewed the key assumptions on slide 6. Noted that if the documentation is completed at this meeting, then the first TF meeting should occur in May 2016; otherwise, the first TF meeting will be September 2016.
- Asked the Study Group if there was consensus to progress towards Task Force at March Plenary. There was some concern from the floor about moving quickly.
- Reviewed the path to Working Group approval in March.
- Reviewed a few of the complexities to moving forward.

Chair noted that this is a joint study Group meeting.

Chair asked for a show of hands for participants only participating in 50GE Study Group. No one indicated.

Chair asked for a show of hands for participants only participating in the NGOATH Study Group. No one indicated.

Chair asked if there was any opposition to the approach that in the joint 50G and NGOATH Study Groups meeting, motions can be taken for decisions within either Study group's scope while in the joint session. No one indicated any opposition.

Presentation #2:
"Switch Designs for 50GbE and 200GbE", Scott Kipp
See: http://www.ieee802.org/3/50G/public/Jan16/kipp_50GE_NGOATH_01_0116.pdf

- Questions were asked and answered.
- Discussed the switch architecture and thermal impacts.
- There was a concern about fracturing the market with the wide selection of connector choices.

Chair noted that the joint session with P802.3bs on Friday was announced as 2 hours, not 1 hour as indicated in the agenda slide.

Presentation #3:
"50G, 100G and 200G Server Connectivity", Brad Booth
See: http://www.ieee802.org/3/50G/public/Jan16/booth_50GE_NGOATH_01a_0116.pdf

- Updated presentation '01a' with additional supporters
- There was a request for more information on the FEC latency.
- Discussed the concept of "bump in the wire" network technology and impact on latency.

Presentation #4:
"Thoughts on 50Gb/s ASIC IO and backwards compatibility considerations for 50G, 100G and 200G", Gary Nicholl
See: http://www.ieee802.org/3/50G/public/Jan16/nicholl_50GE_NGOATH_01a_0116.pdf

- Discussed the transition of 40GE to 100GE and the handling of dense 40GE from 100GE optimized switch chip architecture
- There was a request for more information on dense switch architectures.
- There was a comment that the architectures shown did not represent the typical router.

Break at 10:20 a.m. Resumed at 10:35 a.m.

Presentation #5:
"Compatibility Considerations for 50 and 100G", Rob Stone
See: http://www.ieee802.org/3/50G/public/Jan16/stone_50GE_NGOATH_01b_0116.pdf

- Updated presentation '01b' with additional supporters
- Discussed the need for a backward compatibility objective, multiple PHY objectives
- Discussed FEC choices

Chair reviewed choices to extend the meeting time to enable discussion. The ECDC ad hoc topic is 40km 400G. Chair noted that there are two choices to extend the Wednesday meeting time: meet during IEEE 802 social event or the ECDC ad hoc.

Chair asked for a show of hands for interest to extending the meeting times on Wednesday evening. Chair noted that about 50% of the room responded.

Chair ask for a show of hands on which evening time slot to use: IEEE 802 social vs. ECDC adhoc. Chair noted that the results were not decisive.

Presentation #6:
"Breakout applications and impacts on objectives for 50/200G Ethernet", Tom Palkert
See: http://www.ieee802.org/3/50G/public/Jan16/palkert_50GE_NGOATH_01_0116.pdf

- Author noted that "DSFP" is used in the presentation for dual SFP with 2 lanes.
- Chris Cole objected to the use of QSFP-DD in the presentation, which is a Molex product not yet in the publically announced.

- Discussed the various breakout scenarios for copper and optical PMDs.

Presentation #7:
"Architecture Options and Technical Feasibility of 50GbE", Mark Gustlin
See: http://www.ieee802.org/3/50G/public/Jan16/gustlin_50GE_NGOATH_02_0116.pdf

- Discussed the use of 2 PCS lanes for the 50G PHY.
- Discussed the possible FEC choices and the need for more data.

Presentation #8:
"Architecture options and Technical feasibility of 200GbE", Mark Gustlin
See: http://www.ieee802.org/3/50G/public/Jan16/gustlin_50GE_NGOATH_01_0116.pdf

- Discussed the breakout case impact to the 200G PCS. Need to evaluate the logic cost based on the commonality.

Presentation #9:
"50 and 200 GbE architecture and PMD requirements", Ali Ghiasi
See: http://www.ieee802.org/3/50G/public/Jan16/ghiasi_50GE_NGOATH_01_0116.pdf

- Discussed optical PMD availability within and outside IEEE.
- Discussed the backplane loss targets and PCB material selection.

Break at 12:15 p.m. Resumed at 1:15 p.m.

Chair reminded participants to sign into the IEEE Attendance Tool and to sign the book.

Presentation #10:
"The Case for 100G Over Two Lanes", Rob Stone
See: http://www.ieee802.org/3/50G/public/Jan16/stone_50GE_NGOATH_02a_0116.pdf

- Discussed the various use cases of 100G

Chair outlined the plan for the rest of the day: finish the presentations and then straw poll various topics. Chair noted that the polls may overlap with the social event. John D'Ambrosia made a request to end the Study Groups joint meeting in time to enable the ECDC participants to eat dinner.

Presentation #11:
"Technical Feasibility of MAC and PCS layer", Xinyuan Wang
See: http://www.ieee802.org/3/50G/public/Jan16/wang_50GE_NGOATH_01_0116.pdf

- There were questions on backward compatibility of the architecture

Presentation #12:
"Technical Feasibility of SMF PMDs with RS FEC", Helen Xu
See: http://www.ieee802.org/3/50G/public/Jan16/xu_50GE_NGOATH_01_0116.pdf

- Clarifying questions were asked and answered
- The recent change to the BER rate during P802.3bs comment resolution was not considered in the analysis.

Presentation #13:
"Wideband MMF for single pair 200GE", Paul Kolesar
See: http://www.ieee802.org/3/50G/public/Jan16/kolesar_50GE_NGOATH_01a_0116.pdf

- Clarifying questions were asked and answered
- Authored noted that the presentation asks for an objective with wavelength division multiplexing as well as parallel fibers
- Discussed the customer acceptance of a multi-fiber solution.

Presentation #14:
"50G over MMF objectives", Jonathan King
See: http://www.ieee802.org/3/50G/public/Jan16/king_50GE_NGOATH_01_0116.pdf

- There was a clarification that the OMA measurement on slide 13 is the outer eye.
- Discussed the difference in reach between the NRZ and PAM4 solution.

Break at 3:00 p.m. Resumed at 3:22 p.m.

Presentation #15:
"50Gb/s and 200Gb/s SMF PMD Specifications and Objectives Proposal", Chris Cole
See: http://www.ieee802.org/3/50G/public/Jan16/cole_50GE_NGOATH_01_0116.pdf

- Clarified that the specific proposed PHY types are noted in the forthcoming presentation.
- Discussed backward compatible options for 400G and 200G-FR4

Presentation #16:
"100Gb/s SMF PMD Specifications and Objectives Proposal", Chris Cole
See: http://www.ieee802.org/3/50G/public/Jan16/cole_50GE_NGOATH_02b_0116.pdf

- Updated presentation '02b'
- Discussed the nomenclature for 50G and 200G Attachment Unit Interface
- Discussed end-to-end KP4 FEC.
- There was a request to move 200GBASE-KR4/CR4 and 200GBASE-SR4 on slide 15 to the 50G & NGOATH Task Force section

Chair noted that he intends to finish the presentations on the day's agenda then do straw polls, which may overlap with the social. Chair asked for opposition to the plan. No one indicated any opposition. Chair asked for a show of hands in support of the plan. Chair noted that more than half the room indicated.

Presentation #17:
"Electrical PMD Objectives", Matt Brown
See: http://www.ieee802.org/3/50G/public/Jan16/brown_50GE_NGOATH_01_0116.pdf

- Chair noted that the proposed forms for electrical objective would be sufficient for this interim meeting but insufficient for IEEE 802.3 Working Group approval
- Discussed potentially adding a shorter reach objective with low latency.
- Discussed the choice of the reach in dB vs. meters

Presentation #18:
"Sample Copper Cable Data for 50 Gb/s Ethernet", Chris Roth
See: http://www.ieee802.org/3/50G/public/Jan16/roth_50GE_NGOATH_01a_0116.pdf

- Chair thanked Chris Roth for the data and offered to post the raw data for the presentation on the Study Group website.
- There was a request for 3m and 5m cable data.

Presentation #19:
"No-FEC link for 50GE", Phil Sun
See: http://www.ieee802.org/3/50G/public/Jan16/sun_50GE_NGOATH_01b_0116.pdf

- Clarified that both NRZ and PAM4 show a possibility of no-FEC operation
- Discussed the latency on slide 5.
- There was a request to update slide 10 to replace "price" with "cost". Updated presentation to '01b'

Chair provided an overview of the next few straw polls. Chair opened the floor for discussion. There was much discussion.

Kent Lusted noted that approximately 95 people were in the room at the start of the straw polls.

Straw Poll #1:

	I would support some objectives being adopted for:	I would oppose any objectives being adopted for:	I am unsure about objectives being adopted for:
50 Gb/s Ethernet	90	0	1
100 Gb/s Ethernet	42	7	44
200 Gb/s Ethernet	86	0	5

Straw Poll #2:

50 Gb/s	I would support an objective being adopted for:	I would oppose an objective being adopted for:	I am unsure about an objective being adopted for:
10km SMF	63	2	19
2km SMF	58	0	21
500m SMF	17	16	49
100m MMF	75	0	8
Twinax cable	76	0	6
Backplane	72	1	11

Straw Poll #3:

200 Gb/s	I would support an objective being adopted for:	I would oppose an objective being adopted for:	I am unsure about an objective being adopted for:
10km SMF	65	0	16
2km SMF	68	0	14
500m SMF	20	1	56
100m MMF	69	0	12
Twinax cable	56	0	23
Backplane	56	1	25

Straw Poll #4:

100 Gb/s	I would support an objective being adopted for:	I would oppose an objective being adopted for:	I am unsure about an objective being adopted for:
10km SMF	17	23	32
2km SMF	17	21	39
500m SMF	8	22	44
100m MMF	35	7	39
Twinax cable	47	0	35
Backplane	32	2	45

Chair noted the start time of 8:00 a.m. on Thursday. Then discussed the path to adopting objectives.

Break for the day at 6:30 p.m.

IEEE 50 Gb/s Ethernet over a Single Lane and Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Groups Joint Meeting – January 21, 2016:

Prepared by Kent Lusted

IEEE 50 Gb/s Ethernet over a Single Lane and Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Groups Joint meeting convened at 8:03 a.m., January 21, 2016, by Mark Nowell, IEEE P802.3by Task Force Chair.

Presentation #20:
"OTN Support for 50GbE, next generation 100GbE, 200GbE", Steve Trowbridge
See: http://www.ieee802.org/3/50G/public/Jan16/trowbridge_50GE_NGOATH_01_0116.pdf

- Discussed the location of the OTN mapping point

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

Chair displayed the "Procedural Progress" slides:
http://www.ieee802.org/3/50G/public/Jan16/nowell_50GE_NGOATH_01a_0116.pdf

- Reviewed the path forward on slide 9

Chair reviewed the results of the straw polls collected on January 20, 2016. See http://www.ieee802.org/3/50G/public/Jan16/strawpolls_50GE_NGOATH_0116.pdf

Chair asked for feedback from the participants on the desire to complete the necessary documentation at the January interim meeting. Chair summarized the feedback as supporting the goal of completing the documentation. Chair asked if the summary was correct. No one responded.

Straw Poll #5:
For 50Gb/s Ethernet I support adopting SMF objectives for:

  - 2km only
  - 10km only
  - Both 2km and 10km

- 2km: 1
- 10km: 17
- Both: 51

Presentation #21:
"Foundational Objectives", Mark Nowell
See: http://www.ieee802.org/3/50G/public/Jan16/lusted_50GE_NGOATH_03_0116.pdf

- Received comments that the BER value need further study and discussion

Straw Poll #6:
Support a BER of better than or equal to 10^{-x} at the MAC/PLS service interface (or the frame loss ratio equivalent) for 50 Gb/s and 100 Gb/s operation

- x= 12: 64
- x= 13: 4

Straw Poll #7: 200 BER
Support a BER of better than or equal to 10^{-x} at the MAC/PLS service interface (or the frame loss ratio equivalent) for 200 Gb/s operation

- x= 12: 28
- x= 13: 35

Motion #3:
Move to adopt the following objectives for all rates:

  - 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

- M: Steve Trowbridge
- S: Ali Ghiasi
- Technical (>=75%)
- Yes: 86 No: 0 Abstain: 1
- Result: passes

Motion #4:
Move to adopt the following 50G objectives:

  - 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 operation

- M: Adee Ran
- S: Mike Dudek
- Technical (>=75%)
- Yes: 85 No: 0 Abstain: 0
- result passes

Motion #5:
Move to adopt the following objectives:

- Define single-lane 50 Gb/s PHYs for operation over
  - copper twinaxial cables.
  - printed circuit board backplane.
  - MMF with lengths up to at least 100m
  - SMF with lengths up to at least 2km
  - SMF with lengths up to at least 10km

- M: Ed Sayre
- S: Mike Dudek
- Technical (>=75%)
- Yes: 91 No: 1 Abstain: 0
- Results: passes!

John D'Ambrosia noted that the P802.3bj project used loss/frequency targets in their objectives to differentiate between the two different modulation schemes under consideration.

Chair asked if there were any other 50G objectives. No one responded.

Motion #6:
Move to adopt the following objectives:

- Support a MAC data rate of 200 Gb/s

- M: Adee Ran
  S: Peter Stassar
- Technical (>=75%)
- Yes: 94 No: 0 Abstain: 0
- Result: passes!

Motion #7:
Move to adopt the following objectives:

- 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

- M: Pete Anslow
  S: John D'Ambrosia
- Technical (>=75%)

Motion #8: 9:38 a.m.
Move to amend motion #7 to read:

- Support a BER of better than or equal to $2x10^{-13}$ at the MAC/PLS service interface (or the frame loss ratio equivalent) for 200 Gb/s operation

- M: Mike Dudek
- S: Piers Dawe
- Technical (>=75%)
- Motion withdrawn 9:42 a.m.

Motion #7 (unchanged):
Move to adopt the following objectives:
  - 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

- M: Pete Anslow
  S: John D'Ambrosia
- Technical (>=75%)
- Yes: 84, No: 0, Abstain: 6
- Results: passes! 9:46 a.m.

Motion #9:
Move to adopt the following objectives:
  - Provide physical layer specifications which support 200 Gb/s operation over:
    - At least 2km of SMF
    - At least 10km of SMF
  - Define 200 Gb/s PHYs for operation over
    - copper twinaxial cables.
    - printed circuit board backplane.
    - MMF with lengths up to at least 100m

- M: J D'Ambrosia
- S: Pete Anslow
- Technical (>=75%)
- Yes: 89 No: 0 Abstain: 1
- Result: passes!!!

Break at 10:03 a.m. Resumed at 10:30 am.

Straw Poll #7
I would consider adopting an objective for a 4-fiber 200 Gb/s Ethernet single mode fiber PMD for 500m after hearing more information
- Yes: 69
- No: 0
- Abstain: 13

Motion #10:
Move to adopt the following objectives:
  - Define a two-lane 100 Gb/s PHY for operation over copper twin-axial cables.

- M: Tom Palkert
- S: Rob Stone
- Technical (>=75%)
- Yes: 59 No:2 Abstain: 24
- Result: passes! 1055am

Motion #11:
Move to adopt the following objectives:
  - Define a two-lane 100 Gb/s PHY for operation over a printed circuit board backplane.
- M: Mike Li
- S: Mike Dudek
- Technical (>=75%)
- Yes: 41 No: 1 Abstain: 43
- Results: passes!

Motion #12:
Move to adopt the following objective:
  - Define a two-fiber 100 Gb/s PHY for operation over MMF with lengths up to at least 100m
- M: Chris Cole
- S: Scott Kipp
- Technical (>=75%)

Motion #13:
Move to amend motion #12 to read
  - Move to adopt the following objective:
    - Define a ~~two-fiber~~ 100 Gb/s PHY for operation over MMF with lengths up to at least 100m
- M: Brad Booth
- S: J D'Ambrosia
- Technical (>=75%)
- Yes: 5 No: 39 Abstain: 34
- Result: fails!

Motion #12: (unchanged)
Move to adopt the following objective:
  - Define a two-fiber 100 Gb/s PHY for operation over MMF with lengths up to at least 100m
- M: Chris Cole
- S: Scott Kipp
- Technical (>=75%)
- Yes: 46 No: 0 Abstain: 36
- Results: passes! 11:34 a.m.

Motion #14:
Move to adopt the following objective:

- 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 operation

- M: Pete Anslow
- S: Mike Dudek
- Technical (>=75%)
- Yes: 73 No: 0 Abstain: 6
- Results: passes! 11:39 a.m.

Straw Poll #8:
I would consider adding an objective for a 50 Gb/s copper cable link with latency lower than using KP4/KR4 FEC after hearing more information.

- Yes: 62
- No: 3
- Abstain: 17

Straw Poll #9:
I would consider adding an objective for a no-FEC 50 Gb/s chip-to-module interface after hearing more information.

- Yes: 35
- No: 16
- Abstain: 23

Chair asked if there were any other motions or straw polls. No one responded.

Chair noted that the discussion after lunch will focus on work partitioning.

Break for lunch at 12:00 p.m. Resumed at 1:05 p.m.

Chair noted the next presentations will inform the participants of the possibility of the 200 Gb/s SMF objective going to the P802.3bs Task Force.

Presentation #22:
"Bringing 200GE SMF objectives into 802.3bs", Peter Stassar
See: http://www.ieee802.org/3/50G/public/Jan16/stassar_50GE_NGOATH_01_0116.pdf

- Questions were asked about the schedule impact.

Presentation #23:
"200 GbE Architecture Development", John D'Ambrosia
See: http://www.ieee802.org/3/50G/public/Jan16/dambrosia_50GE_NGOATH_02c_0116.pdf

- Updated presentation '02b' with additional supporters
- Questions were asked about the schedule impact.
- Mike Dudek offered his support to the presentation.

Chair noted that modifications to the P802.3bs project documentation would be necessary if the Study Groups decide to take the 200 Gb/s SMF work to P802.3bs.

Presentation #24:
"Strawman: Proposed Changes to 802.3bs Project Documentation", John D'Ambrosia
See: http://www.ieee802.org/3/50G/public/Jan16/dambrosia_50GE_NGOATH_01c_0116.pdf

- Reviewed the proposed objective changes to P802.3 objectives. No one objected.
- Reviewed the proposed updates to the CSD responses and made a few changes. Updated presentation is '01c'

Motion #15: 2:12pm
Pending endorsement by the P802.3bs Task Force, move that the Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Group adopt the proposed:

  - Changes to IEEE P802.3bs objectives, per dambrosia_50GE_NGOATH_01c_0116.pdf
  - Changes to IEEE P802.3bs CSD responses, per dambrosia_50GE_NGOATH_01c_0116.pdf
  - PAR modifications, per dambrosia_50GE_NGOATH_01c_0116.pdf

- M: J. D'Ambrosia
- S: Mike Dudek
- Technical (>=75%),
- Y: 89 N: 0 A: 2
- Results: passes 2:16 p.m.

Straw poll 10: 2:19 p.m.
I would support the objectives that will not be considered by P802.3bs Task Force to be included as part of:

  - A: a single task force
  - B; more than one task force

- A: 82 B: 0 Abstain: 2

Motion #16: charter reassign
Move to request that the 802.3 Working Group considers the following reassignments to the Study Groups' charters:

- expand the charter of the current 50 Gb/s Ethernet over a single-lane Study group to include next generation 100 Gb/s and 200 Gb/s Ethernet rates
- reduce the charter of the Next Generation 100 Gb/s and 200 Gb/s Study Group to 200 Gb/s single mode fiber

- M: Pete Anslow
- S: Peter Stassar
- Technical (>=75%),
- Y: 74 N: 0 A: 4
- Results: passes! 2:45 p.m.

Chair noted that he will take the attendance straw polls for these Study Groups as well as the P802.3bs Task Force since a majority of the participants overlap. John D'Ambrosia stated that the P802.3bs Task Force will be working on comment resolution at the March Plenary meeting. Mark Nowell, as P802.3by Chair, stated that the P802.3bs Task Force will be working on comment resolution at the March Plenary meeting. There will be conflicts between the different groups.

Attendance Straw polls:

- I will attend the IEEE 50GE and NGOATH SG meetings at the March plenary in Macao, China (week of March 13, 2016)
  - Y: 43 , Maybe: 30 , N: 11
- I will attend the IEEE 50GE and NGOATH SG meetings at the May interim in Whistler, BC, Canada (week of May 23, 2016)
  - Y: 58 , Maybe: 21 , N: 3
- I will attend the IEEE P802.3bs meetings at the March plenary in Macao, China (week of March 13, 2016)
  - Y: 37, Maybe: 31 , N: 9
- I will attend the IEEE P802.3bs meetings at the May interim in Whistler, BC, Canada (week of May 23, 2016)
  - Y: 52 , Maybe: 24 , N: 3
- I will attend the IEEE P802.3bs out-of-cycle interim 2-day meeting in TBD (week of June 27, 2016)
  - Y: 19 , Maybe: 27 , N: 27
- I will attend the IEEE P802.3bs out-of-cycle interim 2-day meeting in North America (week of June 27, 2016)
  - Y: 17 , Maybe: 20 , N: 28

Break at 3:05 p.m. Resumed at 3:35 p.m.

Presentation #25:
"Proposed Responses: Criteria for Standards Development (CSD)" Kent Lusted
See: http://www.ieee802.org/3/50G/public/Jan16/lusted_50GE_NGOATH_01a_0116.pdf

- Reviewed and modified the submission as '01a'

Motion #17:
Move to:

- adopt the CSD responses for “Managed Objects”, “Coexistence”, “Broad Market Potential”, “Compatibility”, “Distinct Identity”, “Technical Feasibility” and “Economic Feasibility” as written in lusted_50GE_NGOATH_01a_0116.pdf

- M: K. Lusted
- S: J. D’Ambrosia
- Technical (>=75%),
- Y: 47 N: 0 A: 1
- Results: passes! 4:49 p.m.

Presentation #26:
“Draft PAR document”, Mark Nowell
See: http://www.ieee802.org/3/50G/public/Jan16/PAR_draft_50GE_NGOATH_01_0116.pdf

- Reviewed and modified the submission as ‘01a’

Chair reminded participants of an 8:00 a.m. on Friday with the start of the joint session with P802.3bs.

Break for the day at 5:20 p.m.

IEEE 50 Gb/s Ethernet over a Single Lane and Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Groups Joint Meeting – January 22, 2016:

Prepared by Kent Lusted

IEEE 50 Gb/s Ethernet over a Single Lane and Next Generation 100 Gb/s and 200 Gb/s Ethernet Study Groups Joint meeting convened at 8:37 a.m., January 22, 2016, by Mark Nowell, IEEE P802.3by Task Force Chair.

Chair displayed the agenda slides:
http://www.ieee802.org/3/by/public/Jan16/agenda_3by_01a_0116.pdf

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

Motion #18:
Move to:

- adopt the proposed modifications to P802.3bs CSD responses as written in dambrosia_50GE_NGOATH_01c_0116.pdf
- adopt the changes to the P802.3bs Objectives as written in dambrosia_50GE_NGOATH_01c_0116.pdf

- M: K. Lusted
- S: J D'Ambrosia
- Technical (>=75%)
- Yes 57 No 0 Abstain: 2
- Results: passes!

From the floor, David Law noted that he completed the PAR entries and expressed concern with both PARs using "200 Gb/s" in the title. David Law suggested that the Study Groups consider the response to a comment prior to the March Plenary meeting.

David Law displayed the IEEE PAR generation tool for the P802.3bs PAR modification. The PAR text was discussed.

Motion #19:
Move to adopt the PAR modification request as shown in NGOATH_802d3bs_PAR_modification_0116.pdf

- M: John D'Ambrosia
- S: Pete Anslow
- Technical (>=75%),
- Y: 65 N: 0 A: 0
- Results: passes

David Law displayed the IEEE PAR generation tool for the P802.3cd PAR. The PAR text was discussed.

Motion #20:
Move to adopt the PAR as shown in 50GE_NGOATH_PAR_0116.pdf

- M: Kent Lusted
- S: S. Trowbridge
- Technical (>=75%),
- Y: 57 N: 0 A: 1
- Results: passes!

Chair noted that some of the objectives adopted were not sufficient to pass Working Group. There may also not be CSD supporting evidence for some of the adopted objectives. Chair encouraged contributions and building consensus. Chair noted that the joint ad hoc meeting with the P802.3by Task Force will resume on February 3; details will be sent over the reflector.

Chair thanked the participants and presenters for their hard work.

Discussed the PAR approval process.

Motion #21:
Move to Adjourn:

- Moved by: Kent Lusted
- Second by: Adee Ran
- Passed by voice vote without opposition

Meeting ended at 9:54 a.m.

Attendees

Last Name	First Name	Affiliation	Wednesday	Thursday	Friday
Anslow	Pete	Ciena Corporation	x	x	x
Baden	Eric	Broadcom	x	x	x
Balasubramonian	Venugopal	Marvell	x	x	x
Ben Artsi	Liav	Marvell Semiconductor	x	x	
Bernstein	Gary	Leviton	x	x	
Bhatt	Vipul	Inphi	x	x	x
Bliss	Will	Broadcom	x	x	x
Booth	Brad	Microsoft	x	x	x
Bouda	Martin	Fujitsu	x	x	x
Braun	Ralf-Peter	Deutsche Telekom		x	
Brooks	Paul	Viavi Solutions	x	x	x
Brown	Matt	Applied Micro	x	x	x
Buckmeier	Brian	BelFuse			x
Butter	Adrian	Global Foundries	x	x	x
Chacon	Geoffrey	HP	x	x	x
Chen	David	AOI	x	x	
Chen	David	Applied Optoelectronics	x		
Choi	Hyun	Nvidia	x		x
Cole	Chris	Finisar	x	x	x
Conroy	Keith	Acacia	x	x	
D'Ambrosia	John	Dell	x	x	x
Dawe	Piers	Mellanox	x	x	x
DeBarnardinis	Fernando	Marvell Semiconductor	x	x	x
Dillard	John	MicroSemi	x	x	x
Dillow	Daniel	FCI	x	x	
Dudek	Mike	QLogic	x	x	x
Ewen	John	Global Foundries	x	x	x
Fife	James	eTopus Technology	x	x	
Ghiasi	Ali	Ghiasi Quantum	x	x	x
Goell	James	Nano Precision Prod	x	x	
Grow	Bob	RMG Consulting	x	x	x
Gupta	Atul	MACOM	x	x	
Gustlin	Mark	Xilinx	x	x	x
Healey	Adam	Avago Technologies	x	x	x
Hegde	Raj	Broadcom	x		
Hidaka	Yasuo	Fujitsu Laboratories of America	x	x	x
Horner	Rita	Synopsys	x		
Huang	Xi	Huawei	x	x	x
Ingham	Jonathan	Foxconn	x	x	x
Irwin	Scott	MoSys Inc.	x	x	x

Last Name	First Name	Affiliation	Wednesday	Thursday	Friday
Isono	Hideki	Fujitsu Ltd.	x	x	x
Issenhuth	Tom	Microsoft	x	x	x
Jackson	Ken	Sumitomo	x	x	x
Kareti	Upen Reddy	Cisco	x	x	x
Kimber	Mark	Semtech	x	x	x
Kipp	Scott	Brocade	x	x	
Kojima	Keisuke	Mitsubishi Electric Res. Lab	x		
Kolesar	Paul	CommScope	x		
Langhammer	Martin	Altera	x		
Laubach	Mark	Broadcom			x
Law	David	HPE	x		
Leizerovich	Hanan	Multiphy	x	x	x
Lewis	Dave	Lumentum	x		
Lewis	Jon	Dell			x
Li	Mike	Altera	x	x	
Li	Shaohua	Brocade	x	x	
Lim	Jane	Cisco	x	x	x
Liu	Hai-Feng	Intel	x	x	x
Lusted	Kent	Intel	x	x	x
Maki	Jeffery	Juniper Networks	x	x	x
Malicoat	David	HP	x		
Marris	Arthur	Cadence	x	x	
Mayer	Michael	Huawei			x
McCurdy	Alan	OFS-Fitel	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	x	
Muir	Ron	JAE	x	x	x
Murata	Koichi	Gigoptix	x	x	
Murray	Dale	Lightcounting	x	x	
Nakamoto	Edward	Spirent Communications	x	x	
Nowell	Mark	Cisco	x	x	x
Ofelt	David	Juniper Networks	x	x	x
Ogura	Ichiro	Petra	x	x	x
Palkert	Tom	Luxtera - Molex - MoSys	x	x	
Park	Moon	OE Solutions	x		
Parthasarathay	Vasudevan	Broadcom	x		
Pepper	Gerald	Ixia	x		
Perez Aranda	Ruben	RDPOF			x
Pham	Phong	US Conec	x	x	x
Pimpinella	Rick	Panduit Corp.	x		

Last Name	First Name	Affiliation	Wednesday	Thursday	Friday
Rabinovich	Rick	IXIA	x	x	
Ram	Aaron	Samtec	x	x	
Ran	Adee	Intel	x	x	x
Roth	Christopher	Molex	x	x	
Sakai	Toshiaki	Socionext	x	x	
Sayre	Edward	Samtech LTD	x	x	x
Slavick	Jeff	Avago Technologies	x	x	x
Sommers	Scott	Molex	x		
Sone	Yoshiaki	NTT	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	
Szczepanek	Andre	Inphi	x	x	x
Szeto	William	Xtera		x	
Tabutabaee	Vahid	Broadcom	x		
Tailor	Bharat	Semtech Corp	x	x	
Takahata	Kiyoto	NTT	x		
Tamura	Kohichi	Oclaro	x	x	x
Tlalka	Marek	Maco	x	x	
Tooyserkani	Pirooz	Cisco	x	x	x
Trowbridge	Steve	Alcatel-Lucent	x	x	x
Ulrichs	Ed	Source Photonics	x	x	x
Vanderlaan	Paul	Berk-Tek LLC		x	
Walker	Clint	Intel	x		
Wang	Roy	HPE	x	x	x
Wang	Tongtong	Huawei	x	x	x
Wang	Weyl	Accelink	x		
Wang	Xinyuan	Huawei	x	x	x
Way	Winston	NeoPhotonics	x	x	
Welch	Brian	Luxtera	x	x	
White	Martin	Cavium	x		x
Xu	Qing	Belden	x	x	x
Xu	Yu	Huawei	x	x	
Zambell	Andrew	FCI	x		
Zhang	Huanlin	Applied Optoelectronics	x	x	
Zhuang	Yan	Huawei	x		x
Zimmerman	George	CME Consulting			x