

Approved Meeting Minutes: IEEE 802.3 Next Generation BASE-T Study Group
January 22-23, 2013
Phoenix, Arizona USA

Prepared by George Zimmerman

IEEE 802.3 Next Generation BASE-T Study Group Interim meeting convened at 09:05, Tuesday, January 22, 2013 by Bill Woodruff, Chair of NGBASE-T Study Group

Attendance is listed in Appendix A

Administrative Matters

Mr. Woodruff appointed George Zimmerman as recording secretary for this session.

Presentation: agenda_01d_0113.pdf

Presenter: Bill Woodruff, Chair.

The Chair called for introductions and affiliations.

Attendance, Mr. Woodruff advised the group of the IEEE meeting attendance tool and procedures, including both the attendance book and the web attendance tracking tool.

The Chair reviewed the agenda. Mr. Woodruff turned to presentation agenda_01c_0113.pdf and reviewed the schedule of presentations for the 2 day meeting. The Chair asked if there was any objection to returning from lunch at 1:00pm on Wednesday, which would allow better coordination with other groups. There was no objection. The Chair announced the schedule change on the study group reflector and updated the agenda presentation accordingly.

Motion #1: to approve the agenda as shown in agenda_01d_0113.pdf

M: Richard Mei S: Paul Vanderlaan

Approved by voice vote without opposition (Procedural > 50%)

The Chair then asked for comments or corrections to the minutes of the last meeting.

**Motion #2: to approve the minutes for the November Plenary meeting of the NGBASE-T Study Group as written and posted
(http://www.ieee802.org/3/NGBASET/public/nov12/minutes_unapproved_1112_ngbt.pdf)**

M: Paul Vanderlaan S: Ron Nordin

Approved by voice vote without opposition (Procedural > 50%)

The Chair then resumed the review of presentation agenda_01d_0113.pdf.

- Mr. Woodruff asked if anyone was attending from the press including those who would run a public blog on this meeting. None responded.
- Mr. Woodruff noted that there should be no recording or photography without permission.

Mr. Woodruff reviewed the objectives adopted so far, goals for the meeting, access to the reflector and website.

IEEE Patent Policy, Mr. Woodruff read aloud the patent policy for study groups from agenda_01d_0113.pdf, page entitled "Guidelines for IEEE-SA Meetings" (09:21am).

LIAISONS

The Chair moved to liaisons received by 802.3 which had been forwarded to the study group by Mr. Law.

A liaison was received from TIA TR-42.7:

<http://www.ieee802.org/3/minutes/mar13/incoming/TR42d7-2013-02-004-LiaisonTo802d3.pdf>

The Chair noted that a presentation related to the liaison would be heard during the meeting, and, study group would likely prepare a response during the March plenary meeting.

PRESENTATIONS

The Chair then moved to the presentations for the meeting.

Presentation #1: Larsen_01_0113_NGBT.pdf, "Category 8 Structured Cabling Channel Demonstration by Commscope".

Presenter: Wayne Larsen, Commscope

Discussion: The presenter provided measurements of channels constructed with prototype Category 8 cabling material and RJ45 connections, supporting technical feasibility, broad market potential and compatibility of such BASE-T channels.

Discussion from the group thanked the presenter for the data and asked for further data on alien crosstalk and coupling attenuation for radio susceptibility.

Presentation #2: diminico_01_0113_NGBT.pdf, "Data Center Design Considerations".

Presenter: Chris DiMinico, MC Communications

Discussion: The presenter provided survey data presented at the 10GBASE-T study group from November 2003, noting that the lengths coming in from more recent surveys are similar to those observed 10 years ago.

The Chair called the morning break at 10:15AM and the meeting reconvened at 11:03am.

Presentation #3: Schicketanz_01a_0113_NGBT.pdf, "Balanced Cabling for 40 Gb/s over less than 100 m ISO/IEC PDTR 11801-99-1".

Presenter: Hans Lackner, QoSCom

Discussion: The presenter noted that this presentation was not an official ISO/IEC presentation, but was an individual contribution. The presenter provided an overview and some summary extracts from the proposed draft technical report, as well as measurements of prototype material for the new classes of cabling.

Presentation #4: AbuGhazaleh_01_0113_ngbt.pdf, "Link Length Survey Report TR42.7".

Presenter: Shadi Abu Ghazaleh, Hubbell

Discussion: The presenter reviewed results of a link length survey conducted (and liaised) by TIA TR42.7, and discussed in the liaison from TR42.7 referenced earlier in the meeting. The survey was targeted to data center owners & operators, designers and installers, and was intended to be future-looking. Data covered 23 respondents, and explored link lengths, speeds anticipated and number of connectors in the channel.

Discussion centered around other ways to divide the data and education of the market to support low power 40GBASE-T links.

The Chair called a break for lunch at 12:00, to reconvene at 1:30PM.

Reconvened at 1:35PM. David Chalupsky records while George Zimmerman presents.

Presentation #5: zimmerman_01a_0113_NGBT.pdf, "Relative Power Estimates for 40GBASE-T over 25m and 30m on Category 8"

Presenter: George Zimmerman, CME Consulting / Commscope

Discussion: The presenter gave an analysis of likely PHY power differences between 25m and 30m while comparing different implementation margin points from 6dB to 10dB. Concludes that from an insertion loss perspective, 40GBASE-T will be more like 1000BASE-T (though at a higher frequency).

Presentation #6: dove_01_0113_ngbt.pdf, "Auto-Negotiation of Reach".

Presenter: Dan Dove, Applied Micro

Discussion: The presenter discussed some details of priority resolution if Auto-Negotiation were modified to include negotiation of reach capability. He also discussed whether a specific objective to include auto negotiation would be required.

Presentation #7: dove_02_0113_ngbt.pdf, "A Single PHY Specification Optimized for Multiple Applications".

Presenter: Dan Dove, Applied Micro

Discussion: The presenter discussed his views on power consumption for 10GBASE-T to be successful, and discussed the possibility of defining two modes (a short reach and a long reach), to fit different market needs. The presenter also suggested that having an explicit specific objective for short reach would broaden market potential. Group discussion was mixed as to whether a specific objective would be required or not.

Presentation #8: dove_03_0113_ngbt.pdf, "10GBASE-TSR – A Service to Humanity".

Presenter: Dan Dove, Applied Micro

Discussion: The presenter discussed the benefits and possibility of adding a specific objective to define a short reach mode for 10GBASE-T, without changing the modulation and coding. There was substantial discussion as to whether this would be a true "mode" or a new PHY type. There was also discussion about the understanding of power savings.

The Chair called an afternoon break at 3:10PM and reconvened at 3:34PM

Presentation #8: WuParnaby_01a_0113_NGBT.pdf, "NGBASE-T Requirements Learning from 10GBASE-T".

Presenter: Peter Wu, Marvell

Discussion: The presenter discussed learning from 10GBASE-T, including misconceptions about 10GBASE-T power, and various techniques 10GBASE-T uses to scale power with reach, without additional modes. Based on these learnings, the presenter recommended a single PHY without defining multiple shorter links.

The Chair asked Mr. Chalupsky to convene an ad hoc meeting to edit draft responses to the 5 criteria for the committee to review and work on the following day.

The Chair adjourned the meeting for the day at 4PM, to reconvene at 9AM the following morning.

The meeting reconvened at 9AM Wednesday 23 January

The Chair briefly reviewed the presentation agenda_01d_0113.pdf

- Mr. Woodruff asked if anyone was attending from the press including those who would run a public blog on this meeting. None responded.
- Mr. Woodruff noted that there should be no recording or photography without permission.

Mr. Woodruff reviewed the goals for the meeting, access to the reflector and website. IEEE Patent Policy, Mr. Woodruff showed the patent policy for study groups from agenda_01d_0113.pdf, page entitled "Guidelines for IEEE-SA Meetings" (09:02am), and asked if any needed to have the patent policy read aloud, and heard no requests.

The Chair then asked for introductions.

Following introductions, the review of presentations resumed.

Presentation #9: bates_01a_0113_ngbt.pdf, "Cat 7a Channel Analysis".

Presenter: Stephen Bates, PMC-Sierra

Discussion: The presenter discussed results for 20m, 30m, and 50m based on some measurements provided by the Siemon Company of Cat7a cabling, and analyzed these relative to capacity.

The Chair asked whether there was any objection to the presenter presenting updated technical content relative to what had been posted. No objection was heard.

Presentation #9: dabiri_01a_0113_NGBT.pdf, "Symbol Rate Selection for 40GBASE-T".

Presenter: Dariush Dabiri, Applied Micro

Discussion: The presenter provided results based on the cat8 cable channel measurements presented in larsen_01a_1112_ngbt.pdf, and investigated possible symbol rates for this cable, applying a simple scaling for length, and considering effects on nonlinear echo and ADC power.

The Chair called a break in the meeting at 10:12am to reconvened at 10:47am

Presentation #10: grimwood_01a_0113_NGBT.pdf, "Impact of Cable Specifications on NGBASE-T Margin to Capacity".

Presenter: Mike Grimwood, Broadcom

Discussion: The presenter provided analysis of the impact on capacity of echo and crosstalk cancellation requirements for Cat8 and Cat7a channels based on proposed and existing TIA and ISO specifications and the draft ISO technical report with 20m to 30m channel lengths. The group had vigorous and supportive discussion on the technical results.

Having concluded the technical presentations, the Chair then turned the focus over to preparations for moving forward to task force.

Presentation: chalupsky_01_0113.pdf, "Proposed 5C Responses"

Presenter: David Chalupsky, Intel, Vice Chair of the NGBASE-T Study Group

Discussion: The presenter reviewed the responses to the 5 Criteria which were prepared in the ad hoc meeting the previous afternoon. The group then proceeded to review criterion by criterion and made edits to address feedback from participants in the larger 802.3 working group.

The Chair then called a break for lunch at 12:15PM, reconvened at 1:10PM.

The meeting resumed with the Chair reviewing the draft objectives.

The Chair presented the objectives previously adopted by the study group from the November meeting:

http://www.ieee802.org/3/NGBASET/objectives_draft_ngbt_1112.pdf

During discussion, objectives related to the supported channels and distances were edited by the group and prepared for straw polls.

The Chair then resumed reviewing the adopted objectives.

In discussion, it was discovered that in the BER objective, a superscript had been flattened, making 10^{-12} into 10-12. The Chair asked the group if they were OK with the editorial change to make it 10^{-12} . There were no objections.

The following straw polls were then taken:
(see [strawpollsandmotionsJan'13_ngbt.pdf](#))

Straw Poll #1

I support requesting Task Force formation at the March Plenary

- Yes: 27
- No: 0
- Undecided: 3

Straw Poll #2

I support changing the EEE objective to: "Support Energy Efficient Ethernet (Clause 78)

- Yes: 21
- No: 2
- Abstain: 8

Straw Poll #3

I support the following objectives:

- Define a channel model based upon copper media specified by ISO/IEC JTC1/SC25/WG3 and TIA TR42.7 meeting the following characteristics:
 - 4-pair, balanced twisted-pair copper cabling
 - Up to 2 connectors
 - Up to at least 30m
 - Define a single 40 Gb/s PHY supporting operation on the channel model
-
- Yes 30
 - No 0
 - Abstain 1

Motion #3: Adopt the following objectives

- Define a channel model based upon copper media specified by ISO/IEC JTC1/SC25/WG3 and TIA TR42.7 meeting the following characteristics:
 - 4-pair, balanced twisted-pair copper cabling
 - Up to 2 connectors
 - Up to at least 30m
- Define a single 40 Gb/s PHY supporting operation on the channel model

M: Brad Booth S: Stephen Bates
(all in the room) Y: 31 N: 0 A: 0 (Technical >= 75%)
MOTION PASSES

Motion #4: Change the EEE Objective from:

- Support optional Energy Efficient Ethernet

To:

- Support Energy Efficient Ethernet (Clause 78)

M: Hugh Barrass S: Brad Booth
(all in the room) Y: 28 N: 1 A: 3 (Technical >= 75%)

MOTION PASSES

At 2:18PM, the Chair then called a 10 minute break for the Vice Chair to prepare the text for motions on the 5 Criteria. The meeting reconvened at 2:31 PM.

Motion #5: Adopt slide 4 of chalupsky_01a_0113_NGBT.pdf as the basis for the Broad Market Potential criterion

M: Brad Booth S: George Zimmerman

During discussion, the Chair suspended debate to allow David Law, Chair of Working Group 802.3 to review the already agreed PAR with the group. Mr. Law reviewed the PAR entries with the group, as previously agreed. During the discussion, at least one change was noted to the scope of the project, 5.2B, (“standard copper cabling” to “balanced twisted-pair copper cabling”). An additional potential modification to delete additional explanatory notes in 8.1 which are duplicated in the 5 criteria responses.

Following Mr. Law’s presentation, consideration of Motion #5 resumed with a review of the referenced “slide 4”.

During review, a minor edit was made to the text (“is” to “are”) and a friendly amendment was made:

Motion #5: Adopt slide 4 of chalupsky_01b_0113_NGBT.pdf as the basis for the Broad Market Potential criterion

M: Brad Booth S: George Zimmerman

(all in the room) Y: 26 N: 0 A: 0 (Technical >= 75%)

MOTION PASSES

At 3PM, the chair called a 15 minute break, the meeting reconvened at 3:30.

Motion #6: Adopt slide 5 of chalupsky_01b_0113_NGBT.pdf as the basis for the Compatibility criterion

M: Wayne Larsen S: Val Maguire

(all in the room) Y: 24 N: 0 A: 1 (Technical >= 75%)

MOTION PASSES

Motion #7: Adopt slide 6 of chalupsky_01b_0113_NGBT.pdf as the basis for the Distinct Identity criterion

M: Brad Booth S: George Zimmerman

(all in the room) Y: 24 N: 0 A: 1 (Technical >= 75%)

MOTION PASSES

Motion #8: Adopt slide 7 of chalupsky_01b_0113_NGBT.pdf as the basis for the Technical Feasibility criterion

M: Alan Flatman S: Richard Mei

(all in the room) Y: 24 N: 0 A: 1 (Technical >= 75%)

MOTION PASSES

Motion #9: Adopt slide 8 of chalupsky_01b_0113_NGBT.pdf as the basis for the Economic Feasibility criterion

M: Gavin Parnaby S: Shadi Abu Ghazaleh

(all in the room) Y: 24 N: 0 A: 1 (Technical >= 75%)

MOTION PASSES

This completes the adoption of the 5 criteria, and the Chair turned back to edits on the PAR.

Motion #10:

Change the PAR scope (section 5.2.b) from:

- Scope of the project: Specify a Physical Layer (PHY) for operation at 40 Gb/s on standard copper cabling, using existing Media Access Controller, and with extensions to the appropriate physical layer management parameters.

To:

- **Scope of the project: Specify a Physical Layer (PHY) for operation at 40 Gb/s on balanced twisted-pair copper cabling, using existing Media Access Control, and with extensions to the appropriate physical layer management parameters.**

M: Brad Booth S: Bob Wagner
(all in the room) Y: 25 N: 0 A: 1 (Technical >= 75%)

MOTION PASSES

Motion #11:

Change the PAR to delete the text in section 8.1.

M: Brad Booth S: George Zimmerman
(all in the room) Y: 26 N: 0 A: 1 (Technical >= 75%)

MOTION PASSES

OTHER ADMINISTRATIVE BUSINESS

Straw Poll #4:

Will you attend the **March 18-21, 2013 Interim meeting in Orlando, FL, USA?**

Yes: 22

Probably yes: 6

Probably no: 1

No: 0

Straw Poll #5:

Will you attend the interim meeting in Victoria, BC, Canada the week of May 13, 2013?

Yes: 19

Probably yes: 6

Probably no: 2

No: 0

Adjournment

Motion #11: To adjourn the meeting.

M: B. Booth S: G. Parnaby

MOTION PASSES by voice without opposition

The Meeting was adjourned at 3:53PM 23-January 2013

Appendix A: Attendees at the IEEE 802.3 Next Generation BASE-T Study Group Interim Meeting, January 22-23, 2013

Total attended:	46	Daily # attended:	37	43
IEEE 802.3 Next Generation BASE-T Study Group, Jan 2013			1/22/2013	1/23/2013
Last Name	First Name	Affiliation	Tuesday	Wednesday
Abughazaleh	Shadi	Hubbell	x	x
Barrass	Hugh	Cisco		x
Bates	Stephen	PMC Sierra	x	x
Belopolsky	Yakov	Bel Stewart	x	x
Bliss	Will	Broadcom	x	x
Booth	Brad	Dell	x	x
Buckmeier	Brian	Bel Stewart Connector		x
Carlson	Steve	HSD		x
Chadha	Mandeep	Vitesse Semiconductors	x	x
Chalupsky	David	Intel	x	x
Chou	Joseph	Realtek	x	x
Cibula	Pete	Intel	x	x
Crepin	J. Francois	Akros Silicon	x	x
Dabiri	Dariush	Applied Micro		x
Diab	Wael	Broadcom	x	x
Dinh	Thuyen	Pulse Electronics	x	x
Dove	Dan	Applied Micro	x	
Dwellely	David	Linear Tech		x
Flatman	Alan	LAN Technologies	x	x
Forbes	Harry	Nexans	x	x
Grimwood	Michael	Broadcom	x	x
Hammond	Bernard	TE Connectivity	x	x
Jones	Chad	Cisco		x
Lackner	Hans	QoSCom Gmbh	x	x
Larsen	Wayne	Commscope	x	x
Law	David	HP	x	x
Maguire	Valerie	Siemon, TIA	x	x
Mei	Richard	Commscope	x	x
Nordin	Ron	Panduit Corp.	x	x
Parnaby	Gavin	Marvell	x	x
Roszbach	Martin	Nexans	x	x
Shen	BZ	Broadcom	x	
Skepnek	Robert	Method	x	x
Sparrowhawk	Bryan	Leviton	x	x
Tazebay	Mehmet	Broadcom	x	

Thompson	Geoff	GraCaSI		x
Tremblay	David	HP	x	x
Vaden	Sterling	Optical Cable Corp.	x	x
Valle	Stefano	ST Microelectronics		x
Vanderlaan	Paul	Nexans	x	x
Wagner	Bob	Panduit Corp.	x	x
Wang	Xiaofeng	Qualcomm	x	x
Woodruff	Bill	Broadcom	x	x
Wu	Peter	Marvell	x	x
Xue	Yisheng	Qualcomm		x
Zimmerman	George	CME Consulting, Commscope	x	x