Unapproved Minutes

IEEE 802.3 400 Gb/s Ethernet Study Group

Plenary Meeting
Sept 2 - 3, 2013
York, UK
Prepared by Ghani Abbas

Chair called IEEE 802.3 400 Gb/s Study Group Interim to order at 9.00 am, Monday, Sept 2, 2013.

Chair appointed Ghani Abbas to be Recording Secretary for the meeting.

- Introductions – Everyone introduced themselves and stated their affiliation.

Agenda & General Information

By – John D'Ambrosia
See - http://www.ieee802.org/3/400GSG/public/13_09/agenda_400_01_0913.pdf

Chair reviewed the agenda.

Motion #1: Move to approve the agenda

- Moved by: Steve Trowbridge
- Second by: Peter Anslow
- Approved by voice vote without objection

Chair asked if there were any reporters in the room. No reporters in the room. John D'Ambrosia will be talking with the press regarding IEEE activities but will only disclose high level details available from the published meeting minutes.

Chair continued with the introductory presentation

- Discussion of Timelines
- Hear presentations
- Develop consensus on Objectives
- Lay the ground work for the next meeting
- Liaison - ITU-T SG15 Response

IEEE Structure, Bylaws & Rules

Chair read the Guidelines for IEEE-SA meetings.

Chair gave an overview of the 802.3 Standards Process and emphasized the need to work on project documentation – Objectives, 5 Criteria, PAR for March 2014 Plenary rather than Nov 2013.

Motion # 2: Move to approve July 2013 Minutes
Moved by: Peter Anslow
Second by: Steve Trowbridge

Results: Approved by voice vote without objection.

Liaisons

Liaison #1: ITU-T SG15 Liaison introduced by Steve Trowbridge

See http://www.ieee802.org/3/minutes/jul13/incoming/LSo-042_AnnexQ-PLEN-093-WP3-Liaison.pdf
Discussion: The liaison reported on the work in Q11 and Q6 on the evolving OTN beyond 100G. It was presented in July 2013 meeting. The chair appointed Steve Trowbridge to progress and to write a response for approval in Sept., 2013 meeting. Mr. Trowbridge requested to present the liaison response later.

Presentation #1
Title: LogicAd Hoc Update
Presented By – Mark Gustlin
See - http://www.ieee802.org/3/400GSG/public/13_09/gustlin_400_01_0913.pdf

Discussion: None

Presentation #2
Title: Summary of Proposed Optical Reach Objectives
Presented By – John D'Ambrosia
See updte- http://www.ieee802.org/3/400GSG/public/13_09/dambrosia_400_02a_0913.pdf

Discussion: slide 5 emphasizes reaches rather than applications and actual need (eg. Backplane, inter/intra rack applications, central office, data centres etc). Perhaps more discussion is needed. It was stated this is that the way was done traditionally and cannot just use loss budget as there are other factors that are technology dependent that should also be taken into consideration such as dispersion. However, adding applications to the objectives are not done in the past and quite challenging now.

It was noted that there was a graphical issue with slide 5, and presenter indicated that an update would be provided.)

The chair stated that he will be using these presentation slides as the basis for developing the optical reach objectives.

Break at: 10.15
Reconvened at: 10.40

Presentation #3
Title: 400G SMF Data Center Objectives
By – Tom Palkert
See update - http:// www.ieee802.org/3/400GSG/public/13_09/palkert_400_01a_0913.pdf

Discussion: Tom will provide updated slides of his presentation. It was noted that presentations have been made in P802.3bm meetings addressing reach applications. Dan Dove was requested to send references to these presentations to the 400G SG reflector.

Presentation #4
Title - Error performance objective for 400GbE
By – Peter Anslow
See- http://www.ieee802.org/3/400GSG/public/13_09/anslow_400_01_0913.pdf

Discussion: It was clarified the FEC/no FEC utilization described in the presentation applies to end-to-end PHY link. The need for the two objectives for BER (with and without FEC) was questioned. However, there are applications where very low BER is needed and thus FEC is used and there are applications where low latency is needed and no FEC is employed. However, there was concern to put solutions in the objectives.

Presentation #5
Title: Roadmap of 400GbE SMF PMDs for Telecom Applications
By – Xiaolu Song
See - http:// www.ieee802.org/3/400GSG/public/13_09/song_x_400_01_0913.pdf

Discussion: No justification to the use of PAM-4 and 8X50G was presented. A question was raised regarding the rise time for 50G NRZ and PAM-4 as no figures were presented. The chair stated that we should focus on technical and economic feasibility in the SG face and develop the PAR rather getting to such a level of detail of the solutions.

Break at : 12.30
Reconvened at : 13.45

Presentation #6
Title: CDAUI: Objective Proposal
By – Hugh Barrass and Gary Nicholl
See - http://www.ieee802.org/3/400GSG/public/13_09/dambrosia_400_01_0913.pdf

Discussion: It was stated that we should have a CDAUI architecture that should not lockout or lockin any specific FEC designs. So if we have an objective that includes CDAUI then we can address a potential extender sub-layer for the various PHYs. However, some concern was expressed. It may be necessary to do CDAUI different to CAUI.

Straw poll # 1
I would support an error performance objective (expressed as a FLR) for PHYs that utilize FEC that is equivalent to a BER of:

a) 1E-12 (FLR < 6.2E-10)
b) 1E-13 (FLR < 6.2E-11)
c) 1E-14 (FLR < 6.2E-12)
d) 1E-15 (FLR < 6.2E-13)
e) 1E-17 (FLR < 6.2E-15)
f) Undecided

Chicago Rules

Results (All)
a) Yes : 13 b) 19 c) 11 d) 26 e) 7 f) 24

Straw poll # 2
I would support an error performance objective for PHYs that do not utilize FEC that is equivalent to a BER of:

a) 1E-12
b) 1E-13
c) 1E-14
d) 1E-15
e) 1E-17
f) Undecided

Chicago Rules

Results (All)
a) Yes: 20 b) 23 c) 6 d) 10 e) 5 f) 30

Break at: 15.07
Recovened at : 15.40

Straw poll # 3
I would support as an objective:

“Support optional 400Gb/s Attachment Unit Interface for chip-to-chip and chip-to-module interfaces”

Results (All)
Yes: 48 No: 1 Undecided: 12

Room Count: 76

Straw poll # 4
I would support SMF “inside Building” Reach Objectives

a) 500m
b) 1km
c) 2km
d) Undecided

Chicago Rules

Results (All)
a) 30 b) 13 c) 34 d) 11

Straw poll # 5
I would support SMF “inside Building” Reach Objectives

a) 500m
b) 1km
c) 2km
d) Undecided

Choose one only.

Results (All)
a) 18 b) 1 c) 27 d) 16

Straw poll # 6
I would support SMF “outside Building” Reach Objectives

a) 2km
b) between 2km and 10 km
c) 10km
d) Between 10 and 40 km
e) 40km
f) Undecided

Chicago Rules

Results (All)
a) 10 b) 5 c) 39 d) 8 e) 31 f) 10

Straw poll # 7
I would support SMF “outside Building” Reach Objectives

a) 2km
b) between 2km and 10 km
c) 10km
d) Between 10 and 40 km
e) 40km
f) Undecided

Choose one only.

Results (All)
a) 4 b) 0 c) 34 d) 1 e) 11 f) 12

Presentation #7
Title: 400 GbE PCS Architectural Requirements
By – Mark Gustlin
See - http:// www.ieee802.org/3/400GSG/public/13_09/gustlin_400_01_0913.pdf

Discussion: No comment.

Presentation #8
Title: 400 GbE Architectural Considerations
By – Ali Ghiasi
See - http:// www.ieee802.org/3/400GSG/public/13_09/ghiasi_400_01_0913.pdf

Discussion: Questions were raised on slide 6 regarding the PCS blocks as the left side and right side should be the same. Latency should also be taken into consideration on the possible physical lanes. It was stated that was presented in July 2013 Geneva meeting.

Presentation #9
Title: The Scalable 400GbE PCS Architecture
By – Tongtong Wang
See - http:// www.ieee802.org/3/400GSG/public/13_09/wang_400_01_0913.pdf

Discussion: It was clarified that it is not 80 AM but you repeat five times the 16 PCS lanes.

Presentation #10
Title: 16 'v' 80 PCS Lanes for 400 GbE: An implementer's Perspective
By – Cedrik Begin – Presented by Gary Nicholl
See - http:// www.ieee802.org/3/400GSG/public/13_09/begin_400_01_0913.pdf

Discussion: No comment

The meeting broke at 17.36

Day 2 : Tue 3rd.,Sept.,2013

The meeting reconvened at: 09.08

The chair showed the guidelines for the IEEE-SA meetings and outlined the plan for today's agenda. The chair reviewed adding supporter to presentations. Supporters may be added up to time presentation has ended.

Presentation #11
Title: Reconsider PCS Coding for 400GbE
By – Haoyu Song

See - http:// www.ieee802.org/3/400GSG/public/13_09/song_400_01_0913.pdf

Discussion: No comment

Presentation #12
Title: Further Analysis about PCS and FEC Configurations
By – Zhongfeng Wang and presented by Ali Ghiasi
See - http:// www.ieee802.org/3/400GSG/public/13_09/wang_z_400_01_0913.pdf

Discussion: A comment on slide 3 regarding the Alignment Marker was raised.

Presentation #13
Title: Considerations on Optical 400 GbE DMT
By – Toshiki Tanaka
See - http:// www.ieee802.org/3/400GSG/public/13_09/takahara_400_01a_0913.pdf

Discussion: None

Presentation #14
Title: Technical feasibility of DMT transceiver for 400GbE SMF transmission
By –Tomoo Takahara
See – http://www.ieee802.org/3/400GSG/public/13_09/takahara_400_01a_0913.pdf

Discussion: As this is a new technology data was sought on market requirements, technical feasibility, FEC and latency.

Break at: 10.03
Recovened: 10.32

Presentation #15
Title: Simulation results for NRZ, ENRZ & PAM-4 on 16-wire full-sized 400GE backplanes
By – Brian Holden
See – http://www.ieee802.org/3/400GSG/public/13_09/holden_400_01_0913.pdf

Discussion: Data was sought on sensitivity analysis on the cancellation process. It was clarified that slide 16 shows three superimposed eyes. Data on the channel loss also was sought.

Straw Poll # 8

I would support an objective that reads “Define a 400Gb/s PHY for operation up to at least X of MMF” wherein X is:

a) a distance less than 30m
b) 30m
c) a distance between 30m and 100m
d) 100m
e) a distance between 100m and 200m
f) 200m
g) a distance greater than 200m
h) undecided

Chicago rules

Results (All)
a) 0 b) 3 c) 2 d) 25 e) 2 f) 1 g) 0 h) 42

Straw Poll # 9

I would support an objective that provides 400Gb/s operation over:

a) at least 100m over OM-Y MMF and at least 100m over OM4
b) about 200m over OM-Y MMF and at least 100m over OM4
c) about 200m over OM-Y MMF and at least 30m over OM4
d) at least 200m over OM-Y MMF
e) at least 300m over OM-Y MMF
f) none of the above
g) Undecided

Chicago rules

Results (All)
a) 8 b) 6 c) 1 d) 1 e) 1 f) 2 g) 53

Motion # 3

Move that the 400Gb/s Study Group adopt the following objective

“Support optional 400Gb/s Attachment Unit Interfaces for chip-to-chip and chip-to-module applications”.

Moved by: Gary Nicholl
Seconded by: David Ofelt
Technical >= 75%

All: Y: 57 N: 0 A: 5
Motion Passes

Room count: 66

Motion # 4
Move that IEEE 802.3 400Gb/s Ethernet Study Group approve the text in:

- trowbridge_400_01a_0913.pdf

with editorial license granted to the Chair (or his appointed agent) as an informal communication by the Chair to ITU-T SG15.

Moved by: Steve Trowbridge
Seconded by : Peter Anslow
Procedural (> 50%)
Results: passes by voice vote without objection

Future Meetings

- See: http://www.ieee802.org/3/interims/index.html
- Nov 2013 Plenary
  - Week of Nov 10
  - Hyatt Regency, Dallas, TX, USA

StrawPoll #10
I will _____ attend the 400 GbE Study Group meeting at the November Plenary

Definitely: 48
Probably: 3
May not : 4
Definitely not: 0

- January 2014 Interim (hosted by Xilinx)
  - Week of January 20
  - Hyatt Regency Indian Wells, CA
- March 2014 Plenary
  - Week of March 16, 2014
  - Beijing, China
- May 2014 Iinterim (hosted by Ethernet Alliance)
  - Week of May 12, 2014

Motion # 5
Motion to adjourn.

Moved by : John McDonough
Second by : Thananya Baldwin
Procedural (>50%)

Results - Motion passes by voice vote without objection.

Meeting adjourned at 12.00

IEEE 802.3 400GbE Study Group			9/2/2013	9/3/2013
Last Name	**First Name**	**Employer / Affiliation**	**Mon**	**Tues**
Abbas	Ghani	Ericsson, UK	x	x
Ali	Hassan	Texas Instruments	x	x
Anslow	Pete	Ciena Corporation	x	x
Baldwin	Thananya	Ixia	x	x
Barrass	Hugh	Cisco	x	
Booth	Brad	Microsoft	x	x
Brown	Matt	Applied Micro	x	
Carlson	Steve	HSD	x	
Carroll	Martin	Verizon		x
Chang	Xin	Huawei	x	x
Cole	Chris	Finisar	x	x
D'Ambrosia	John	Dell	x	x
Dawe	Piers	Mellanox	x	
Dove	Dan	Dove Networking Solutions (DNS)	x	x
Dudek	Mike	QLogic	x	
Farhoodfar	Arash	Cortina Systems	x	x
Forbes	Harry	Nexans	x	
Frazier	Howard	Broadcom	x	
Ghiasi	Ali	Broadcom	x	x
Gong	Zhigang	JDSU	x	x
Gustlin	Mark	Xilinx	x	x
Hajduczenia	Marek	ZTE	x	
Healey	Adam	LSI	x	
Holden	Brian	Kandou Bus	x	x
Huang	Xi	Huawei	x	x
Isono	Hideki	Fujitsu Ltd.	x	x
Issenhuth	Tom	Microsoft	x	x
Jewell	Jack	Independent	x	x
Kawamoto	Takashi	Hitachi	x	x
Kimmitt	Myles	Emulex		x
Kolesar	Paul	CommScope		x
Langhammer	Martin	Altera	x	x
Latchman	Ryan	Mindspeed		x
Laubach	Mark	Broadcom	x	
Law	David	HP		x
Lewis	Dave	JDSU	x	x
Li	Mike	Altera	x	x
Li	Shaohua	Brocade		x
Li	Zeng	Huawei	x	x
Lusted	Kent	Intel	x	
Maki	Jeffery	Juniper Networks	x	x
Martin	Arlon	Mellanox	x	x
McBeath	Tom	Spirent Communications	x	x

McDonough	John	NEC America	x	x
Mei	Richard	Commscope	x	x
Messenger	John	ADVA Optical Networking	x	
Mooney	Paul	Spirent Communications	x	x
Moore	Charles	Avago Technologies	x	
Moorwood	Andy	Infinera Corp	x	x
Nicholl	Gary	Cisco	x	x
Nishimura	Takeshi	Yamaichi Electronics	x	x
Nowell	Mark	Cisco	x	x
Ofelt	David	Juniper Networks	x	x
Oguna	Ichiro	Petra	x	x
Palkert	Tom	Luxtera	x	x
Patel	Pravin	IBM	x	x
Pepper	Gerald	Ixia	x	x
Petrilla	John	Avago Technologies	x	x
Raszczyk	Bartek	LINX	x	
Sambasivan	Sam	AT&T	x	x
Sasaki	Yasuo	TE Connectivity	x	x
Shanbhag	Megha	TE Connectivity	x	
Sommers	Scott	Molex	x	x
Song	Haoyu	Huawei	x	x
Song	Xiaolu	Huawei	x	x
Stassar	Peter	Huawei	x	x
Stevens	Daniel	Fujitsu Semiconductors	x	x
Szczepanek	Andre	Inphi	x	
Szeto	William	Xtera	x	x
Tajima	Akio	NEC Corporation	x	x
Takahara	Tomoo	Fujitsu Laboratories	x	x
Takahata	Kiyoto	NTT	x	x
Tanaka	Toshiki	Fujitsu Laboratories	x	x
Telxeira	Antonio	NSN (Coriant)	x	
Timmins	Ian	Optical Cable Corp.		x
Tipper	Alan	Semtech	x	x
Trowbridge	Steve	Alcatel-Lucent	x	x
Tsutsumi	Satoshi	Hitachi	x	x
Vanderlaan	Paul	Nexans	x	
Vijn	Arien	AMS-IX	x	x
Walker	Bill	Fujitsu	x	
Wang	Tongtong	Huawei	x	x
Wei	Lin	Huawei	x	
Welch	Brian	Luxtera	x	x
Wertheim	Oded	Mellanox	x	
Wirtz	Mike	Semtech	x	x
Wong	Henry	Huawei	x	x
Xiaoping	Zhou	Huawei	x	

Xu	Yu	Huawei	x	x
Zivny	Pavel	Tektronix	x	