

Approved Minutes
IEEE 802.3 100 Gb/s Backplane and Copper Cable Study Group
Plenary Meeting
March 15 - 16, 2011
Singapore

Prepared by: David Chalupsky

Meeting convened at 9:05 am, Tuesday, March 15, 2011.
David Chalupsky appointed secretary for meeting

Agenda & General Information

By – John D'Ambrosia

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/agenda_01_0311.pdf

- Introductions – Everyone introduced themselves and stated their affiliation.
- Chair outlined the agenda for the week.

Motion #1: Motion to approve the agenda

- Moved by Mark Nowell
- Second by Mike Li
- Meeting agenda was approved by voice vote without objection.

Motion #2: Motion to approve the January 2011 minutes

- Moved by Mark Bugg
- Second by Nathan Tracy
- January minutes approved by voice vote without objection.

- Chair asked if there were any reporters in the room. No one responded. Chair reminded everyone that photographs or recordings are not allowed without permission.
- Chair went through his introduction presentation “agenda_01_0311.pdf”
- Goals for the week
 - Hear presentations related to objectives and 5 Criteria
 - Start developing consensus on objectives
 - Lay groundwork for next meeting
- Ground Rules
- IEEE Structure, Bylaws & Rules
 - Chair displays & reads the Guidelines for IEEE-SA meetings

Presentation #1

Title – Actions Items and Attendance

By – David Chalupsky

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/chalupsky_01_0311.pdf

Discussion - none

Presentation #2

Title – An Overview of Energy Efficient Ethernet

By – Mike Bennett

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/bennett_01_0311.pdf

Discussion – Questions regarding potential future EEE projects and that people have expressed interest in 40G backplane for that. Clarifying questions and discussion on EEE operation.

Break called at 9:55am

Reconvene at 10:28am after a delay to fix AV issues.

Presentation #3

Title – Signaling Terminology: PAM-M and Partial Response Precoders

By – William Bliss

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/bliss_01_0311.pdf

Discussion – Clarifying questions were asked & answered regarding the material.

Presentation #4

Title – Recommendations for common VNA Configurations for channel characterization

By – Greg LeCheminant

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/lecheminant_01a_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material

The Chair reminds speakers with updated presentations to send them in for posting.

Presentation #5

Title – Recommendations for TDR configuration for channel characterization

By – Pavel Zivny

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/zivny_01a_0311.pdf

Discussion – Clarifying questions were asked & answered regarding the material. Note from equipment users the desire for dynamic range of up to 60dB

Presentation #6

Title – Suggested Practices for Reporting Simulation Results (reprise)

By – Adam Healey

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/healey_01_0311.pdf

Discussion – Clarifying questions were asked & answered regarding the material. Suggestion to compare single bit response. Question on preferred format for declaring de-emphasis. **ACTION**

ITEM #1: Adam - create spreadsheet related to simulation details.

Presentation #7

Title – System Vendors View on 100 Gb/s Backplane and Copper Study Group Issues

By – Mark Gustlin

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/gustlin_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material

Break for lunch at 11:50am

Resume at 1:05pm

Presentation #8

Title – FEC Triple Tradeoffs & 100GCU SG Objectives

By – Mark Gustlin

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/gustlin_02_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material

Presentation #9

Title – Consider SG Objective from IC Vendor Perspective

By – Frank Chang

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/chang_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material

Presentation #10

Title – Broad Market Potential and Economic Feasibility of the 100Gb Backplane and Cu Cable Solutions for the Volume Blade & Rack Server Markets

By – Dave Chalupsky

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/chalupsky_02_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material

Presentation #11

Title – Objectives Discussion

By – Howard Frazier

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/dambrosia_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material

Break at 3:00pm

Resume at 3:25pm.

Presentation #12

Title – Comparing newer versus older backplanes

By – Vasu Parthasarathy

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/parthasarathy_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material

Presentation #13

Title – Channel Analysis for Defining Reach and BER Objectives

By – Mandeep Chadha for Ziad Hatab

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/hatab_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material. Noted that some of the channels used here that were taken from the 802.3ap website are not actually KR-compliant, nor were they claimed to be during the 802.3ap project.

Presentation #14

Title – 25Gb/s Signaling for 100G Backplanes: Channel Loss vs Equalization

By – John Ewen

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/ewen_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material. Presenter is supportive of a four-lane interface.

Presentation #15

Title – 25Gb/s Signaling for 100G Backplanes: Time Domain SI Analysis

By – Mounir Meghelli

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/meghelli_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material. Supportive of a four-lane interface. Chair notes that discussion needs to focus on objectives.

Presentation #16

Title – 100G Backplane Link Feasibility Study: Time Domain Simulations Using Frequency Domain Measurement Data

By – Peerouz Amieshi

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/amleshi_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material

Presentation #17

Title – A Study of 10G-KR Channel Evolution and Its Signaling Implications at 25 Gbps

By – Mike Li

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/li_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material. Noted that “Gen 1” KR channels mentioned may not be KR-compliant. Supports a four-lane interface.

Presentation #18

Title – 100Gb/s Measured Backplane Channels

By – Megha Shanbhag

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/shanbhag_01a_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material. **ACTION ITEM #2:** Speaker will provide channel data to be posted to the study group.

Presentation #19

Title – Alternative Backplane Architectures for 100Gb/s Applications

By – Nathan Tracy & Megha Shanbhag

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/tracy_01a_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material. **ACTION ITEM#3:** Speaker will provide channel data to be posted to the study group.

Adjourn for the day at 5:30pm

Meeting reconvened at 8:58 am, Wednesday, March 16, 2011.

- The Chair reviews the agenda for the day “agenda_01_0311.pdf” and attendance procedures.
- IEEE Structure, Bylaws & Rules
 - Chair displays & reads the Guidelines for IEEE-SA meetings

Continuing with scheduled presentations.

Presentation #20

Title – A Method for Evaluating Channels

By – Charles Moore

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/moore_01_0311.pdf
Discussion - Clarifying questions were asked & answered regarding the material.

Presentation #21

Title – Evaluation of Channels Submitted to Study Group

By – Charles Moore

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/moore_02_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material.

Break at 10:05am, resume at 10:27am.

Presentation #22

Title – Viability of 3 Meter Cable Reach Based on 10Gb/s Market Snapshot

By – Nathan Tracy

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/tracy_02a_0311.pdf

Discussion – none

Presentation #23

Title – IEEE 802.3 Electrical Backplane/Twinax Cu Cable - Considerations for determining objectives

By – Adam Healy for Chris DiMinico

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/diminico_01_0311.pdf

Discussion – None. (Adam presenting for Chris who could not make it.)

Presentation #24

Title – Server Link Lengths for ToR/Cabinet-to-Cabinet & EoR/Centralised Switching

By – Alan Flatman

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/flatman_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material

Presentation #25

Title – Twin-Ax Capability for 4x25Gbps

By – Mark Bugg

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/bugg_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material

Presentation #26

Title – Connector Considerations

By – Scott Sommers

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/sommers_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material; discussing relative merits of stacked vs. belly-to-belly connectors.

Presentation #27

Title – Bit Error Ratio Objective

By – Brad Booth

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/booth_01_0311.pdf

Discussion - Clarifying questions were asked & answered regarding the material. Discussion on the cost implication vs. the system / application needs. Suggestion to bring in more application requirement information.

Break for lunch at 11:55am
Resume at 1:08pm

Presentation #28

Title – IEEE 802.3bf Data delay

By – Steve Carlson

See – http://grouper.ieee.org/groups/802/3/100GCU/public/mar11/carlson_01_0311.pdf

Discussion – none

At 1:30pm the scheduled presentations for the day are concluded.

Motion #3: The Study Group requests that IEEE 802.3 extends the 100 Gb/s Backplane and Copper Cable Study Group. (procedural, >50%)

- Moved by Howard Frazier
- Second: Hugh Barrass
- Passed by voice without opposition.

Motion #4: Adopt the objectives from page 3 of dambrosia_01_0311.pdf.

- (technical; 75%)
- Move Howard Frazier; 2nd Adam Healey
- Results: Yes: 74 No: 0 Abstain: 0

Motion #5: Adopt the following objective forms:

- Define a 4-lane 100 Gb/s PHY for operation over links consistent with copper traces on “improved FR-4” with lengths up to at least “X” m.
- Define a 4-lane 100 Gb/s PHY for operation over links consistent with copper twin-axial cables with lengths up to at least “Y” m.
- Moved by Howard Frazier; 2nd Adam Healey
- (technical; 75%)
- Results: Yes: 70 No: 0 Abstain: 9

NOTES ON MOTION #5:

- Improved FR-4 requires definition; X and Y require definition.
- Note that when creating the actual objective there will be the opportunity to change the form as well. 75% required in either case.

Motion #6: Call the question on Motion #5

- Moved by Howard Frazier, 2nd by Charles Moore
- Result Y-60, N-0, A-10

Motion #7: Adopt the following objective form:

- Support a BER of better than or equal to 10^{-N} at the MAC/PLS service interface
- Moved by Howard Frazier; 2nd Adam Healey
- (Not voted at this time)

Motion #8: Table Motion #7

- Moved by Brad Booth, 2nd Piers Dawe
- Procedural (>50%)

- Results: Y: 18 N: 14 A: (abstains not counted)

Motion #9: Adopt the following objective:

- Support a BER of better than or equal to 10^{-12} at the MAC/PLS service interface
- Moved by Brad Booth ; 2nd Oren Sela
- (technical; 75%)
- Results: Yes: 40 No: 15 Abstain: 16 (73%, motion fails)

Motion #10: Remove from the table Motion #7

- Moved by Howard Frazier; 2nd Brad Booth
- (procedural, 50%)
- Results: Yes: 55 No: 0 Abstain: 16

Motion #7: Adopt the following objective form:

- Support a BER of better than or equal to 10^{-N} at the MAC/PLS service interface
- Moved by Howard Frazier; 2nd Adam Healey
- (technical; 75%)
- Results: Yes: 61 No: 0 Abstain: 9

Motion #11: Adopt the following objective form:

- Support a (Tx + Rx) data delay of less than or equal to "t" ns between the CGMII and MDI.
- Moved by Howard Frazier; 2nd Adam Healey
- Technical (>=75%)
- Y: N: A:
- Motion was withdrawn

While discussing Motion #11:

Break at 3:00pm

Resume at 3:20pm

Chair reviews list of action items taken at this meeting. .

Summary of Actions items:

Volunteer	Action	Date Assigned	Status
Adam Healey	Create spreadsheet related to simulation details	Mar-15-11	
Megha Shanbhag	Provide channel data related to presentation shanbhag_01_0311.pdf	Mar-15-11	
Megha Shanbhag	Provide channel data related to presentation tracy_01_0311.pdf	Mar-15-11	
Will Bliss	Action item from January on latency has been withdrawn	Mar-16-11	closed

Straw Poll #1: Per Motion #5 I would support a backplane reach (X) of:

1. 0.5m
2. 0.75m

3. 1.0m

Results: 1) 4; 2) 20; 3) 24

Results Chicago: 1) 11; 2) 31; 3) 36

Straw Poll #2: Per Motion #5 I would support a Cu cable reach (Y) of:

1. 3.0m

2. 5.0m

3. 7.0m

Results: 1) 10; 2) 23; 3) 20

Straw Poll #3: Per Motion #7 I would support BER (N) Exponent of:

1. 12 (1E-12)

2. 15 (1E-15)

3. 18 (1E-18)

Results: 1) 34 2) 13 3) 3

Straw Poll #4: Per Motion #5 I would support a Cu cable reach (Y) based upon 24AWG cable of:

4. 3.0m

5. 5.0m

6. 7.0m

Results: 1) 2; 2) 20; 3) 17

Straw Poll #5: For the May 2011 802.3 Interim Study Group meeting

a) Will attend

b) May attend

c) Will not attend

Results: a) 42 b) 17 c) 5

Straw Poll #6: For the July 2011 802 Plenary Study Group meeting

d) Will attend

e) May attend

f) Will not attend

Results: a) 50 b) 11 c) 0

Straw Poll #6: I support the goal of requesting PAR at the July 2011 Plenary.

- Discussion that meeting this goal will require significant work from the SG participants
- Approved by voice without opposition.

Motion to adjourn:

By Hugh Barrass, 2nd: Steve Trowbridge.

Passed by voice without opposition.

Meeting adjourned at 4:30pm.

Attendee List

IEEE 802.3 BACU SG Attendees Sheet - March 15 - 16			3/15/2011	3/16/2011
Last Name	First Name	Affiliation	Tues	Weds
Abbas	Ghani	Ericsson, UK	X	X
Amleshi	Peerouz	Molex	X	X
Anderson	Jon	Opnext	X	X
Anslow	Pete	Ciena Corporation	X	X
Balasubramanian	Kuossalya	Cisco	X	X
Baldwin	Thananya	Ixia	X	X
Barnett	Barry	IBM	X	X
Barrass	Hugh	Cisco	X	X
Belopolsky	Yakov	Bel Stewart	X	X
Bennett	Mike	LBNL	X	X
Bliss	Will	Broadcom	X	X
Booth	Brad	Applied Micro	X	X
Braun	Ralf-Peter	Deutsche Telekom, T-Systems	X	X
Brown	Matt	Applied Micro	X	X
Bugg	Mark	Molex	X	X
Carroll	Martin	Verizon	X	X
Chadha	Mandeep	Vitesse Semiconductors	X	X
Chalupsky	David	Intel	X	X
Chang	Frank	Vitesse	X	X
Chng	Jonathan	Amphenol	X	X
Chuang	Kenghua	Hewlett Packard	X	X
Cole	Chris	Finisar	X	X
Cui	Kai	Huawei	X	X
D'Ambrosia	John	Force 10 Networks	X	X
Dawe	Piers	IPTronics	X	X
De Geest	Jan	FCI	X	X
Diab	Wael	Broadcom		X
Diamond	Pat	Semtech		X
Dove	Dan	HP	X	
Dudek	Mike	QLogic	X	X
Dwellely	David	Linear Tech		X
Ewen	John	IBM	X	X
Flatman	Alan	LAN Technologies	X	X
Frazier	Howard	Broadcom	X	
Fu	Hong Yan	Huawei	X	X
Ganga	Ilango	Intel	X	X
Gundubogula	Sudhakar	Marvell	X	X
Gustlin	Mark	Cisco	X	X
Hamano	Hiroshi	Fujitsu Labs	X	X

Healey	Adam	LSI	X	X
Huang	Xi	Huawei	X	X
Ishida	Osamu	NTT	X	X
Jones	Doug	Comcast		X
Kawatsu	Yasuaki	Hitachi-Cable	X	X
Kipp	Scott	Brocade	X	X
Kirk	Brian	Amphenol	X	X
Kodama	Satoshi	NTT	X	X
Kvist	Bengt	Ericsson	X	X
Lackner	Hans	QoSCom	X	X
Law	David	HP	X	X
LeCheminant	Greg	Agilent Technologies	X	X
Leung	Raymond	Huawei	X	X
Lewis	Dave	JDSU	X	X
Li	Mike	Altera	X	X
Loi	Chang-Feng	Avago Technologies	X	X
Lusted	Kent	Intel	X	X
Maguire	Valerie	Seimon, TIA	X	X
Marris	Arthur	Cadence	X	X
Meghelli	Mounir	IBM	X	X
Meier	Wolfgang	Emerson Network Power EC	X	X
Moore	Charles	Avago Technologies	X	X
Mu	Linna	Avago Technologies	X	X
Nowell	Mark	Cisco	X	
Ofelt	David	Juniper Networks	X	X
Parthasarathay	Vasudevan	Broadcom	X	X
Patel	Pravin	IBM	X	X
Pepper	Gerald	Ixia	X	X
Rabinovich	Rick	Alcatel-Lucent	X	X
Ran	Adee	Intel	X	X
Robertson	Iain	Texas Instruments	X	X
Sela	Oren	Mellanox	X	X
Shanbhag	Megha	Tyco Electronics	X	X
Shariff	Masood	Commscope	X	X
Sharma	Atul	Voilex	X	X
Shin	Hyungsoo	LS Cable	X	X
Shrikhande	Kapil	Force 10 Networks	X	X
Sommers	Scott	Molex	X	X
Sparrowhawk	Bryan	Leviton	X	X
Szczepanek	Andre	Texas Instruments	X	X
Telxeira	Antonio	NSN	X	X
Tracy	Nathan	Tyco Electronics	X	X
Tremblay	Francois	Genum	X	X

Trowbridge	Steve	Alcatel-Lucent	X	X
Vaden	Sterling	Optical Cable Corp.	X	X
Vanderlaan	Paul	Nexans	X	X
Warland	Tim	Applied Micro	X	X
Zhang	James	Atheros	X	
Zivny	Pavel	Tektronix	X	X