Meeting Minutes

Group: IEEE 802.3 100G-EPON Task Force

Event: Task Force Interim meeting

Date: **From**: 13 Sep, 2016 **To**: 15 Sep 2016

Location: Fort Worth TX, USA

13 Sep 2016

9:00 AM – The meeting was called to order by the Chair. Duane Remein volunteered to serve as recording secretary. The Chair held Introductions and gave the opening report.

Motion #1
Approve the agenda for Task Force meeting to be held Sep 13-15 2016, in Fort Worth TX located in file http://www.ieee802.org/3/ca/public/meeting_archive/2016/09/agenda_3ca_1a_0916.pdf
Moved: Duane Remein Seconded: Mark Laubach
Procedural > 50% Passed by voice without opposition

Motion #2
Approve the Minutes for Task Force meeting held Jul 2016, in San Diego CA located in file http://www.ieee802.org/3/ca/public/meeting_archive/2016/07/minutes_unapproved_3ca_0716.pdf
Moved: Duane Remein Seconded: Glen Kramer
Procedural > 50% Passed by voice without opposition

Motion #3
Modify text in Approved May meeting minutes in file http://www.ieee802.org/3/ca/public/meeting_archive/2016/07/minutes_approved_3ca_0516.pdf to read: Move to adopt NRZ modulation at the transmitter for each 25Gb/s channel located in the O band.
Moved: Dekun Liu Seconded: Frank Effenberger
For: 29 Against: 0 Abstain: 1
Technical (≥ 75%) Motion: Passes

The Chair reviewed meeting decorum, the Task Force reflector & WEB page, and IEEE Organization & Bylaws. The IEEE patent policy was reviewed.

9:20 AM –A call for patents was made. No response was received.

The Chair reviewed the Guidelines for IEEE-WG Meetings, IEEE process. A liaison letter from Broadband Forum was reviewed; Mark Laubach volunteered to propose a response. Goals for meeting, project documents/objectives, future meeting (San Antonio TX in Nov, Huntington Beach CA in Jan) polls were taken.

Presentations and Discussion

9:33 AM –Presentations

Title **Author/Presenter** **Affiliation**
Notes
file_name

MPCP and SDN - Make 100G EPON Going Further
Eugene Dai **Cox Communications**
This presentation suggested that ONUs report and US grants be frame boundary aware thus avoiding fragmentation. Whole frames would be sent in a single channel. It was suggested this would also allow an SDN controller to manage granting for both OLT and ONU.
dai_3ca_3b_0916.pdf

A proposal to decouple connectivity from media access
Glen Kramer **Broadcom LTD**
This presentation suggested that ONU discovery and registration be decoupled from traffic granting by dividing LLID values into two spaces. One for the ONU Physical LLID (PLID) and another for User LLID (ULID). A revised REPORT and GATE message structure were proposed. Lastly a 3rd type of LLID was proposed to group several LLIDs for reporting and granting purposes (GLID).
kramer_3ca_1b_0916.pdf

Multi-Point Reconciliation Sublayer (MPRS) [Upstream Direction]
Glen Kramer **Broadcom LTD**
This presentation proposed an RS based channel bonding solution that included fragmentation and LLID containers referred to as Envelopes. Proposed minimum fragment size is small relative to a frame and the FEC codeword.
kramer_3ca_2c_0916.pdf

12:25 PM – Recessed for lunch **1:35 PM** - reconvened.

Presentations (continued) -
Multi-Point Reconciliation Sublayer (MPRS) [Upstream Direction] was completed.

Multi-Point Reconciliation Sublayer (MPRS) [RS Input Process demystified]
Duane Remein **Huawei Technologies**
This presentation described the Input Process state diagram proposed in kramer_3ca_2c_0916.pdf
remein_3ca_1_0916.pdf

MPCP directed fragment reception **Duane Remein** **Huawei Technologies**
This presentation summarized a fragmentation scheme which could be used as an error detection and recovery enhancement.
remein_3ca_2_0916.pdf

Motion #4
Move to decouple connectivity elements (ULIDs) from media access elements (PLIDs) and adopt the format for GATE/REPORT MPCPDUs as presented in kramer_3ca_1b_0916.pdf
Moved: Glen Kramer Seconded: Duane Remein
For: 22 Against: 0 Abstain: 2
Technical ≥ 75% Passed

Motion #5
Adopt the ONU upstream channel bonding proposal as presented in kramer_3ca_2b_0916.pdf and develop a similar mechanism for the downstream. This motion supersedes Motion #4 from July 2016 meeting.
Moved: Glen Kramer Seconded: Duane Remein
For: 20 Against: 0 Abstain: 4
Technical ≥ 75% Passed

RECORDER'S NOTE: after the close of the meeting it was noticed that motion #5 refers to a non-existent file kramer_3ca_2b_0916.pdf. The correct file name should have been kramer_3ca_2c_0916.pdf.

100G EPON Laser Safety Issues **Bill Powell** **Nokia**
This presentation reviewed laser safety guidelines that may impact NG-EPON work. It was noted that we should stay within Class 1 & 1M (per IEC60825-2).
powell_3ca_1a_0916.pdf

Use of SOAs in NG-EPON **John Johnson** **Broadcom LTD**
This presentation summarized the characteristics of Silicon Optical Amplifiers (SOA) that would be important if they need to be used in NG-EPON.
johnson_3ca_3_0916.pdf

Updates for 25G NRZ using 10G APD **Yong Guo** **ZTE Corporation**
This presentation described updated APD test results on a 10G APD. The initial presentation was given in guo_3ca_1_0716.pdf. The conclusion is using a 25G APD will perform better and may be lower cost then use of a 10G APD with FFE + MLSE or 10G APD with FFE alone.
guo_3ca_1_0916.pdf

25G APD performance updates **Dong Pan** **SiFotonics Technologies**
This presentation described results of tests performed on a 25G APD ROSA. The presentation was given by Yong Gua as Dong Pan was unable to attend the meeting in person.
pan_3ca_1_0916.pdf

Impact of pre-coding and high gain FEC on 25, 50 & 100G EPON
Vincent Houtsma **Nokia Bell Labs**
This presentation reiterated the need for pre-coding and also described some higher gain FEC codes which may be needed to meet the optical budget. It was observed that an RS(992, 792) FEC would increase optical budget by ~ 1 dB at a cost of ~7% additional overhead (~20% versus ~13% for

RS(255,223) currently in use by 10G-EPON).
houtsma_3ca_1_0916.pdf

25G/50G/100G EPON architectures: 1+3 vs. 1+4
Ed Harstead **Nokia**
This presentation revisited 1+3 versus 1+4 architectures and their inherent deployment and coexistence issues.
harstead_3ca_1a_0916.pdf

The cross-generational optical level issues in 1+3 Architecture
Dekun Liu **Huawei Technologies**
This presentation revisited 1+3 versus 1+4 architectures and their inherent deployment and coexistence issues.
liu_3ca_2_0916.pdf

6:15 PM – recessed for the day.

14 Sep 2016

9:02 AM – reconvened. Continued presentations

The chair made a few opening remarks and the group resumed presentations per agenda.

Operator Consensus for NG-EPON **Phil Miguelez** **Comcast**
This presentation summarized input from several operators which were unable to attend the TF on a regular basis. In particular it confirmed that 1+3 architecture and use of O-Band were preferred by all of the 7 operators surveyed while there was no consensus to shorten the reference ODN from 20 km to 10 km.
miguelez_3ca_1a_0916.pdf

100G-EPON Wavelength Plan solution candidates
Dekun Liu **Huawei Technologies**
This presentation compared several wavelength plan solutions and concluded that Plan A (US & DS in O Band, 800 GHz 2nm width channels) and Plan D (US 20nm wide in O band, US Channel, 2 nm wide DS in high S band) were preferred by the author.
liu_3ca_1_0916.pdf

Wavelength "Plan D" — O-Band US, C-band DS
John Johnson **Broadcom LTD**
This proposal covered details of "Plan D" from the July meeting wavelength inventory (US; O band 2 nm wide 800 GHz spaced channels, US: C band, 2 nm wide 800 GHz).
johnson_3ca_2a_0916.pdf

12:00 PM – Recessed for Lunch **1:20 PM** - reconvened.

Wavelength "Plan A" — All channels in O-Band
John Johnson **Broadcom LTD**

This proposal covered details of "Plan A" from the July meeting wavelength inventory (US; O band 2 nm wide 800 GHz spaced channels, US: O+ band, 2 nm wide 800 GHz).
johnson_3ca_1a_0916.pdf

Available O-Band WDM Spectra for 100G EPON
Eugene Dai **Cox Communications**
This presentation primarily addressed four wave mixing in O band.
dai_3ca_1b_0916.pdf

Split-band Wavelength Plans for 100G EPON
Eugene Dai **Cox Communications**
This presentation revisited wavelength plan "F" (1x25G channel US/DS in O band, US/DS for other 3-4 channels in C or L band) from the July meeting wavelength inventory.
dai_3ca_2c_0916.pdf

25G/50G/100G EPON wavelength plan B **Ed Harstead** **Nokia**
This presentation provided additional details on wavelength plan "B" (DS in O+ band, 800 GHz 2nm wide, 1 US in O band 20nm wide and 3-4 channel at 800 GHz, 2 nm wide) from the July meeting wavelength inventory.
harstead_3ca_2a_0916.pdf

25G/50G/100G EPON wavelength plan C **Ed Harstead** **Nokia**
This presentation provided additional details on wavelength plan "C" (1x25G channel US/DS in O band, US/DS for other 3-4 channels in s, C or L band) from the July meeting wavelength inventory. After considering various optimizations the US (+3/+4) wavelength plan is refined to ~1535-1560nm on 800 GHz grid. The DS (+3/+4) is refined to ~1460-1485nm on 800 GHz grid. Five options were proposed for single 25G channel in O band.
harstead_3ca_3a_0916.pdf

5:42 PM – recessed for the day.

15 Sep 2016

9:00 AM – reconvened. Continued presentations

25G/50G/100G EPON wavelength plan comparisons
Ed Harstead **Nokia**
This presentation provided a brief summary of wavelength plans in the current inventory list which were presented during the Sep 2016 meeting.
harstead_3ca_4a_0916.pdf

An open discussion on wavelength plans was held.

Liaison Letters

The TF reviewed a proposed response to a liaison letter from ITU-T Study Group 15 Q1.

The TF reviewed a proposed response to a liaison letter from BBF regarding YANG activities.

Motion #6

Move that the P802.3ca Chair (or his appointed agent) request that the IEEE 802.3 Working Group approve IEEE_802d3_to_BBF_0916_draft.pdf with editorial license granted to the Chair (or his appointed agent) as liaison communication from the IEEE 802.3 Working Group to the Broadband Forum.

Moved: Mark Laubach Seconded: Frank Effenberger

For: 20 Against: 0 Abstain: 0

Technical ≥ 75% Passed

Discussion

The wavelength plan discussions were continued.

Straw Poll # 1

I support continued study of the following wavelength plans as summarized in harstead_3ca_4b_0916.pdf

Plan	Supporters
A	20
A (Option 1)	1
B	7
C	8
D	9
D (Option 3)	0
F	2

Motion #7

Task Force shall focus on wavelength plans A, B, C, & D as outlined in harstead_3ca_4b_0916.pdf

Moved: Glen Kramer Seconded: Duane Remein

For: 19 Against: 0 Abstain: 2

Technical ≥ 75% Passed

The TF discussed the work plan for the Nov. meeting. This was captured in harstead_3ca_5_0916.pdf.

Motion #8

Power budget equivalent to PR40 (33 dB) shall not be in scope for 802.3ca.

Moved: Glen Kramer Seconded: Phil Miguelez

For: 14 Against: 0 Abstain: 6

Technical ≥ 75% Passed

Closing

The Chair presented the closing report. The Task Force agreed that a 3 day meeting in San Antonio would be preferred. Decisions for next meeting include wavelength plan, system architecture (1+3 versus 1+4), TDM versus WDM coexistence, channel bonding (OLT receive at a minimum), update time line, and power classes.

Motion #9		
Move to adjourn		
Moved: Ryan Tucker		Seconded: Duane Remein
Procedural > 50%	Passed by voice without opposition	

12:37 PM The meeting was adjourned.

Attendance

Family Name	Given Name	Affiliation	13-Sep	14-Sep	15-Sep
Brown	Alan	Adtran	X	X	X
Chang	Ayla	Huawei	X	X	X
Dai	Eugene	Cox Communication	X	X	X
Effenberger	Frank	Huawei	X	X	X
Emmendorfer	Michael	Arris	X	X	X
Funada	Tomoyuki	Sumitomo	X	X	X
Guo	Yong	ZTE Corp	X	X	X
Harstead	Ed	Nokia	X	X	X
Houtsma	Vincent	Nokia, Bell Labs	X	X	X
Huang	Xingang	ZTE Corp	X	X	X
Johnson	John	Broadcom LTD.	X	X	X
Knittle	Curtis	CableLabs	X	X	X
Kramer	Glen	Broadcom LTD.	X	X	X
Laubach	Mark	Broadcom LTD.	X	X	X
LeCheminant	Grey	Keysight Tech	X		
Liu	Dekun	Huawei	X	X	
Lokhandwala	Moiz	Charter / Time Warner Cable	X	X	
Miguelez	Phil	Comcast	X	X	X
Noll	Kevin	Charter / Time Warner Cable	X	X	X
Parsons	Earl	CommScope	X	X	X
Peters	Michael	Sumitomo	X	X	X
Powell	Bill	Nokia	X		X
Remein	Duane	Huawei	X	X	X
Suzuki	Ken-Ichi	NTT	X	X	X
Suzuki	Haoki	Mitsubishi Electric	X	X	
Tajima	Akio	NEC Corporation	X	X	X
Tucker	Ryan	Charter	X	X	X
Umnov	Alexander	Corning	X	X	X
Zhang	Huanlin	Applied Opto Electronics Inc	X		
Peng	Wanquan	Huawei	X	X	
Wang	Haifei	Huawei	X		
Xu	Qing	Belden	X		
Yu	Xu	Huawei	X		