

Meeting Minutes

NG-EPON Industry Connections Activity ad hoc

11-Jan 2015

9:00 AM Meeting called to order; Marek Hajduczenia acting chair. Held introductions, reviewed meeting decorum, ground rules, project goals, current status, etc.

Presentations:

The story of the NG-PON2 TWDM PON wavelength plan

Ed Harstead Alcatel Lucent

This presentation provided a short history of how ITU-T selected the wavelength plan for NGPON2.

Proposed NG-EPON wavelength planning decision flow

Ed Harstead Alcatel Lucent

This presentation suggested a methodology for selecting a wavelength plan for NG-EPON

Contribution on Bandwidth Consumption – Operator Data

Marek Hajduczenia Bright House Networks

This presentation provided data on peak data consumption for a four year period. It was noted that there is less and less use of classic broadcast TV and more use of unicast IP TV. The presentation is to be added to the report. It was suggested that the draft clearly state that the data is for one MSO and only reflects DOCSIS data and does not include linear TV. It was agreed that this material should be added to the report.

Proposed text for TR 4.3: Forecasting offered bandwidth in residential access

Ed Harstead Alcatel Lucent

This contribution was text to be added to the report on data usage in the in-home network. Additional details were requested on the forecast for WiFi which realistically can reach a data capacity of ~300 Mbps but not the "advertised" 1 Gbps. It was agreed that this material should be added to the report.

Contribution to subclause 5.15 System Cost and 5.16 Expected Availability Timeframe

Marek Hajduczenia Bright House Networks

This contribution was text to be added to the report addressing relative system cost and desired availability. There was significant discussion on the adoption timeframe and the drivers for next generation systems. Cellular backhaul was mentioned as the major driver for capacity increases. There was a question if the reported figure for 10G-EPON was for 10/10 or 10/1 configuration; the author agreed to look into this. It was agreed that this material should be added to the report.

Orthogonal Frequency Division Multiplexing

Minghui Tao

Huawei

This contribution was text to be added to the report addressing OFDM PON. The text was related to a presentation given in Beijing. Need to add the source for the derivation of the -21 dB power budget. It was agreed that this material should be added to the report with some minor changes.

PAM-4 vs. duobinary modulation @25 Gb/s

Vincent Houtsma, et al

Alcatel Lucent

This presentation provided results of an experimental comparison between a PAM-4 and a duobinary (see presentation from San Antonio for details) advanced modulation system providing 25 Gbps data capacity. PAM-4 required mitigation of distortion due to non-linearity of the system. However the PAM-4 system would be more dispersion tolerant. Overall the PAM-4 system displayed a 3.2 to 1.6 dB penalty compared to the duobinary system.

Proposed text for TR 6.3.4: duobinary, PAM-4 comparison

Ed Harstead

Alcatel Lucent

This contribution provided text to be added to the report reflecting the PAM-4 to duobinary comparison given in previous presentation. It was agreed that this material should be added to the report.

12:10 PM recessed for lunch

1:30 PM reconvened

Contribution to Conclusions

Marek Hajduczenia

Bright House Networks

This contribution provided text to be added to the report in the conclusions section. It was generally agreed that we should not recommend a specific architecture or technology but may want to make a clear statement on the need for a study group on NG-EPON. It was agreed that this material should be added to the report.

Impacts of Chromatic Dispersion and PMD on 40Gbit/s EPON with PAM Modulation

Eugene Dai

Cox Communications

This presentation covered discussed impacts of dispersion and PMD on a PMA-4 signal at 40 Gbps derived via simulation. Note that on slide 4 dispersion was varied with wavelength. Pre-emphasis was selected to produce a minimum symbol error rate. The modulation simulated was for electrical absorption.

2:15 PM Started comment resolution (Kevin Noll presenting).

5:15 PM Recessed for the day.

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9:00 AM Reconvened, continued comment resolution.

11:15 AM Concluded comment resolution

The Chair reviewed plans for future meetings and submitting the draft as a Report to 802.3 for comments.

The following gaps were identified and need to be resolved before WG submittal (see ngepon_0115_agenda_A.pdf for details):

- PAM-4 modulation (action: Ed Harstead)
- FEXT/NEXT for close wavelength plans, blocking filter/isolation assumptions (action: Frank Effenberger)
- Requirements for business data capacity (action: Curtis Knittle, Kevin Noll, & Ed Mallette)
- Close all editorial comments
- In conclusion section summarize the case for formation of a study group (action: Duane Remein & Kevin Noll)
- Terminology alignment
 - Bit/s vs. Baud
 - TDM-PON and NRZ encoding

It was agreed that the Report will be opened to the 802.3 Working Group for review during the next review cycle.

Future meetings:

- Louisville Feb 2nd & 3rd
- Berlin Mar 9th – 12th
- Pittsburgh week of May 18th
- Waikoloa Jul 13th -16th

12:05 PM Meeting was adjourned.

Meeting attendance 1/11/2015

NGEPON IC 1/11/2015		
NAME	AFFILIATION	EMPLOYER
MATEK HAYDUCENIA	BRIGHTHOUSE NETWORKS	"
DOANE REBEIN	HUAWEI	"
Atsushi SUGITATSU	MITSUBISHI ELECTRIC	"
AKIO Tajima	NEC CORPORATION	"
CHRIS KNUTTUE	CABLELABS	"
Fernando Villarruel	CISCO	"
Ed Harrstad	Alcatel-Lucent	"
Frank Eschenberger	Futurewei Tech. Inc	"
BILL Powell	Alcatel-Lucent	"
MICHAEL PERAZZ	SUMITOMO	"
Saifur Rahman	Comcast Cable	"
PAUL NIKOLICH	SELF/CHAIR BOZ	SELF
ED MALETTE	Bright House Networks	"
Eugene Dai	COX COMMUNICATIONS	COX
KEVIN A NOLL	TIME WARNER CABLE	TWC

Meeting attendance 1/12/2015

NGEPON IC 1/12/2015

<u>NAME</u>	<u>AFFILIATION</u>	<u>EMPLOYER</u>
Kevin A. Noll	TIMEWARNER CABLE	"
Jim Goell	PRECISION	"
Ed Harstad	Alcatel-Lucent	"
Bill Powell	Alcatel-Lucent	"
CURTIS KNITTLE	CABLE LABS	"
Akio Tajima	NEC CORPORATION	"
Edwin Mallett	Bright House Networks	"
Frank Esfenberger	Huawei Technologies	"
MAREK MATYJONIA	BRIGHT HOUSE NETWORKS	"
MARK LAUBACH	BROADCOM	"
DUANE REHEIN	HUAWEI	"
MICHAEL PETER	SUNSTONE	"
Saifur Rahman	Comcast Cable	"
Fernando Villarruel	CISCO	"