Cl ***99*** *SC* **5.10.1** *P* **52** *L* **15** # 370

Fernando, Villarruel Cisco

Comment Type **E** *Comment Status* **A**

The description of the cable architecture infrastructure I think needs to include a note about the existance of HFC nodes as a logical end point for fiber and a possible start point of FTTH build out.

SuggestedRemedy

The HFC architecture includes the existance of HFC nodes as a physical end point for fiber and a possible start point of FTTH build out. These HFC nodes range in distance from the headend, some of which would typically be within previously defined PON distances and some would be out of that range.

Response *Response Status* **C**

ACCEPT.

The referenced text is not relevant to HFC architecture.

Cl **00** *SC* **0** *P* **0** *L* **0** # 366

Harstead, Ed Alcatel-Lucent

Comment Type **T** *Comment Status* **A**

RF overlay and RFoG: refer to approved comment #17 in Louisville-- it does not seem to have been implemented:

Cl 05 SC 7.3.3 P 44 L 28 # 17
Comment Type E
References to "RF overlay" in section title and following text remain. As discussed in Atlanta, there is no definition for "RF overlay" in the document, and the term seems to be used interchangeably with RFoG. I believe we agreed to use RFoG, which is defined.
SuggestedRemedy
Replace "RF overlay" with "RFoG" everywhere.
ACCEPT.
Comment Status A
Response Status C

SuggestedRemedy

Implement per comment #17 in Louisville

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* **0** *L* **0** # 341

Hajduczenia, Marek Bright House Network

Comment Type **E** *Comment Status* **A**

Outline of the document (when opened in a PDF reader) contains subclauses (as it should do) but also Tables and Figures (which shoudl not be included)

SuggestedRemedy

Remove entries for Figures and Tables from document outline / bookmarks when generating next version of the draft.

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* **1** *L* **2** # 332

Booth, Brad Microsoft

Comment Type **ER** *Comment Status* **A**

The IEEE 802.3 Working Group shouldn"t have views, only a position.

SuggestedRemedy

Change footnote to read:
The views expressed in this document solely represents the position of the IEEE 802.3 Working Group, and do not necessarily represent a position of the IEEE, the IEEE Standards Association, or IEEE 802.

Response *Response Status* **C**

ACCEPT.

Cl **00** *SC* **0** *P* **2** *L* **12** # 331

Booth, Brad Microsoft

Comment Type **ER** *Comment Status* **A**

Participants is an incorrect indication of those involved in the approval of the draft. If the 802.3 voter"s list is used, clarification should be provided as to their level of involvement.

SuggestedRemedy

Add the following information after the Participants heading:
The following individuals were officers and members of the IEEE 802.3 working group when this report was approved. Individuals may have not voted, voted for approval, disapproval or abstained on this report.

Response *Response Status* **W**

ACCEPT.

Cl **00** *SC* **0** *P* **31** *L* **13** # 346

Remein, Duane Huawei Technologies

Comment Type **E** *Comment Status* **A**

Phrases for data capacities:
offered load (11x)
offered bandwidth (5x)
bandwidth consumption (9x)
permitted bandwidth (3x all in quoted material)
bandwidth demand (5x, 3x in Ref)

SuggestedRemedy

Change
"offered bandwidth" to "offered load"
"bandwidth consumption" to "bandwidth demand" (rationalize with ref.)
Pg 31 ln 14 change "bandwidth consumption" to "bandwidth demand (sometimes called permitted bandwidth)"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

offered load - data received at the UNI for US or NNI for DS (change 4.5 "bw demand" to this)
advertised bandwidth - data rate specified in service level agreement (change offered bandwidth to this) (change title in fig 17 to "Advertised (Maximum permitted) bandwidth"
throughput - data actually carried across access network
bandwidth consumption - volume of data transported (4.3, 4.4, 4.6 dont change)

page 12, line 22 remove "bandwidth"

Cl **03** *SC* *P* **16** *L* **6** # 333

Liu, Qian RITT, CATR

Comment Type **E** *Comment Status* **A**

FTTLA is missed in the abbreviations.

SuggestedRemedy

Add "FTTLA" in Clause 2.

Response *Response Status* **C**

ACCEPT.

Cl **03** *SC* *P* **19** *L* **1** # 336

Liu, Qian RITT, CATR

Comment Type **T** *Comment Status* **R**

What does the figure mean? Normally the ONU has only one fiber in the PON system except that during the protection mode the ONU may have two fibers.

SuggestedRemedy

Remove the figure 2.

Response *Response Status* **C**

REJECT.

see comment 356

Cl **03** *SC* **3** *P* **16** *L* **1** # 356

Glen Kramer Broadcom

Comment Type **T** *Comment Status* **A**

No reference to Figure 2 in text. Unclear explanation for Figure 1.

SuggestedRemedy

Replace section 3 (up to 3.1) with the text given in ngepon_0315_kramer_01.pdf.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

use proposed text ngepon_0315-kramer_01.pdf and integrate per comment 335 and 334

Cl **03** *SC* **3.3** *P* **20** *L* **9** # 358

Harstead, Ed Alcatel-Lucent

Comment Type **E** *Comment Status* **A**

re: "shared among ONUs in a TDM or WDM fashion." Perhaps I misunderstand, but sharing implies TDM, not WDM. WDM is not used for sharing wavelength channels (WDM is used to keep them separate).

SuggestedRemedy

delete "or WDM fashion"

Response *Response Status* **C**

ACCEPT.

Cl **03** *SC* **3.3.1** *P* **20** *L* **21** # 337
Liu, Qian RITT, CATR

Comment Type **T** *Comment Status* **R**

MSD-WDM-PON is the subtype of the Hybrid-PON. But the name seems it is the subtype of the WDM-PON.

SuggestedRemedy

Change "MSD-WDM-PON" to "MSD-Hybrid-PON" throughout the draft.

Response *Response Status* **C**

REJECT.

MSD-WDM-PON is defined and was the term agreed by the group to be used

Cl **03** *SC* **3.3.2** *P* **21** *L* **7** # 338
Liu, Qian RITT, CATR

Comment Type **T** *Comment Status* **R**

SSD-WDM-PON is the subtype of the Hybrid-PON. But the name seems it is the subtype of the WDM-PON.

SuggestedRemedy

Change "SSD-WDM-PON" to "SSD-Hybrid-PON" throughout the draft.

Response *Response Status* **C**

REJECT.

SSD-WDM-PON is defined and was the term agreed by the group to be used

Cl **03** *SC* **3.3.3** *P* **22** *L* **1** # 339
Liu, Qian RITT, CATR

Comment Type **T** *Comment Status* **R**

WA-PON is the subtype of the Hybrid-PON. But the name seems it is the subtype of the WDM-PON.

SuggestedRemedy

Change "WA-PON" to "WA-Hybrid-PON" throughout the draft.

Response *Response Status* **C**

REJECT.

WA-PON is defined and was the term agreed by the group to be used

Cl **03** *SC* **3.4** *P* **24** *L* **17** # 351
Remein, Duane Huawei Technologies

Comment Type **T** *Comment Status* **A**

stranded text:
"can be further categorized as wavelength-selected or wavelength-routed"

SuggestedRemedy

Start a new paragraph before the stranded text so it reads:
The WDM-PON ODN can be further categorized as wavelength-selected or wavelength-routed.

Response *Response Status* **C**

ACCEPT.

Cl **03** *SC* **3.4** *P* **25** *L* **12** # 359
Harstead, Ed Alcatel-Lucent

Comment Type **E** *Comment Status* **A**

Only one advantage of wavelength routed ODN is cited.

SuggestedRemedy

replace "advantages" with "an advantage".

Response *Response Status* **C**

ACCEPT.

Cl **03** *SC* **3.4** *P* **25** *L* **16** # 364
Harstead, Ed Alcatel-Lucent

Comment Type **T** *Comment Status* **A**

Another disadvantage of WR ODN is that cascaded splitter architectures are difficult if not impractical.

SuggestedRemedy

Propose to insert this text before sentence "The passband...":

"There are at least two disadvantages to wavelength routed ODNs. The first is the difficulty, if not impracticality, of deploying cascaded splitter architectures, already widely deployed by operators. The second is that..."

Response *Response Status* **C**

ACCEPT.

Cl **03** *SC* **table 1** *P* **17** *L* **1** # 334
Liu, Qian RITT, CATR

Comment Type **T** *Comment Status* **A**

In the SSD-WDM-PON the ONU has many wavelengths according to figure 4. In table 1 SSD-WDM-PON appears in the type the ONU has only one wavelength. It is conflict.

SuggestedRemedy

Remove SSD-WDM-PON from the type the ONU has only one wavelength.

Response *Response Status* **C**

ACCEPT.

Cl **03** *SC* **table 1** *P* **17** *L* **1** # 335
Liu, Qian RITT, CATR

Comment Type **T** *Comment Status* **A**

In the MSD-WDM-PON the ONU has only one wavelength according to figure 3. In table 1 MSD-WDM-PON appears in the type the ONU has many wavelengths. It is conflict.

SuggestedRemedy

Remove MSD-WDM-PON from the type the ONU has many wavelengths.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Add note to figure 3
"Figure is exemplary and does not show all possible arrangements of ONU transmissions"

remove MSD-WDM-PON from MANY-MANY-P2MP row

add WA-PON to MANY-MANY-P2MP row

remove "mix" row/column because this is not described in the document

Cl **04** *SC* **4.3** *P* **31** *L* **13** # 342
Hajduczenia, Marek Bright House Network

Comment Type **T** *Comment Status* **A**

Data presented in section 4.3 was valid as of October 2014.

SuggestedRemedy

Please use updated information per ngepon_0315_hajduczenia_01.pdf - data is now valid as of January 2015. Additional statement on CAGR reaching close to 100% as of January 2015 was also added.

Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.3** *P* **31** *L* **13** # 354
Hajduczenia, Marek Bright House Network

Comment Type **T** *Comment Status* **A**

This subclause speaks of residential data only

SuggestedRemedy

Change title of 4.3 to read: "Bandwidth Consumption in Residential Access - Operator Data"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The heading is unnecessarily long.
How about
"Residential Bandwidth Consumption"

Cl **04** *SC* **4.4** *P* **35** *L* **26** # 360
Harstead, Ed Alcatel-Lucent

Comment Type **E** *Comment Status* **A**

re: "It is worth noting that with the rapid adoption of FTTx services, the distinction between residential and business services is quickly disappearing as far as bandwidth symmetry and quality requirements are concerned", based on discussions I have heard in our meetings, there is still a large distinction between residential and business services(and they may even drive different solutions), so "is quickly disappearing" seems to be an overstatement.

SuggestedRemedy

Replace "is quickly disappearing" with "is beginning to blur".

Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.4** *P* **35** *L* **32** # 355
Hajduczenia, Marek Bright House Network

Comment Type **T** *Comment Status* **A**

In section 4.4, we speak of bit rate trends for residential and business applications alike. Any discussion on business applications is currently missing.

SuggestedRemedy

Suggest to add new text per ngepon_0315_hajduczenia_02.pdf on page 35 after line 32

Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.5** *P* **35** *L* **33** # 361

Harstead, Ed Alcatel-Lucent

Comment Type **E** *Comment Status* **A**

In Louisville I recall Glen pointing out that the term "offered bandwidth" (which refers to the service level bandwidth offered to subscribers by the operator) was ambiguous, that it could be confused with the term "offered load", which refers to bandwidth demand. I recall that we agreed that I would come up with a new name for offered bandwidth. In the new 2.0 version, "offered bandwidth" remains, but "bandwidth demand" has been replaced (everywhere) with "offered load". I think "offered load" is an unnecessarily technical term and not as widely understood as "bandwidth demand". And the ambiguity with "offered bandwidth" remains.

SuggestedRemedy

Propose to revert from "offered load" back to "bandwidth demand", and replace "offered bandwidth" with "offered service level bandwidth" (everywhere).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.
see comment 346

Cl **04** *SC* **4.6** *P* **38** *L* **16** # 365

Harstead, Ed Alcatel-Lucent

Comment Type **T** *Comment Status* **A**

Re: the highlighted "[TBD]". Actually the updates contributed to this section in Louisville were not incorporated.

Refer to contribution "Edits to 4.3"
http://www.ieee802.org/3/ad_hoc/ngepon/public/15feb/ngepon_0215_harstead_02.pdf

SuggestedRemedy

Incorporate ngepon_0215_harstead_02 and retain the footnote.

(The text that belongs in the footnote is "If a worst-case view is preferred, then assume a 10G-EPON with 32 subscribers each consuming 4 simultaneous streams of UHD-2 "8K" video at 50 Mb/s each. The operator would still have enough headroom to support bursts, and therefore a service offering, of more than 2 Gb/s." Alternatively, this text could be left in the body if it makes formatting easier.)

Response *Response Status* **C**

ACCEPT.

Cl **04** *SC* **4.6** *P* **38** *L* **7** # 349

Remein, Duane Huawei Technologies

Comment Type **ER** *Comment Status* **A**

I question the assumptions of the following statement: "Accommodation must be made for at least one subscriber running a successful speed test at the maximum offered rate even during the peak hour and when simultaneously consuming other digital content." This implies that I should "pass" a speed test even when utilizing my entire subscription.

SuggestedRemedy

Strike "and when simultaneously consuming other digital content"

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Strike "The assessment of demanded bandwidth is incomplete without an including the bandwidth used by subscribers executing Internet speed tests. Accommodation must be made for at least one subscriber running a successful speed test at the maximum offered rate even during the peak hour and when simultaneously consuming other digital content. It is assumed that the probability of multiple subscribers executing simultaneous speed tests is negligible."

change "speed-tested" in this same section to "verified"

Change first sentence to "The aggregated downstream offered load shown in Figure 19 includes peak-hour sustained downstream offered load and peak-hour average burst downstream offered load."

fix figure to say "Aggregated offered load" and "Forecasted Downstream Offered Load"

Cl **05** *SC* **5.3** *P* **42** *L* **2** # 352

Remein, Duane Huawei Technologies

Comment Type **E** *Comment Status* **D**

Wording "require the support for the split ratio of"

SuggestedRemedy

require support for a split ratio of

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Cl **05** *SC* **5.7.1** *P* **45** *L* **13** # 347
Remein, Duane Huawei Technologies

Comment Type **ER** *Comment Status* **A**
Ref to IEEE 802.3bk Annex 75A is incorrect. Annex 75A was added in 802.3av

SuggestedRemedy
Change ref. to IEEE Std 802.3-2012 [4].

Response *Response Status* **C**
ACCEPT.

Cl **06** *SC* **6.2.1.1** *P* **59** *L* **16** # 343
Remein, Duane Huawei Technologies

Comment Type **E** *Comment Status* **A**
I don"t believe this higher power was proved/disproved. "This lead to a higher power ...".

SuggestedRemedy
Change to "This may lead to a higher power ..."

Response *Response Status* **C**
ACCEPT.

Cl **06** *SC* **6.2.1.1** *P* **60** *L* **11** # 362
Harstead, Ed Alcatel-Lucent

Comment Type **E** *Comment Status* **A**
Simpler needs context.

SuggestedRemedy
Before the sentence "A simpler static bit interleaving ...", add this sentence:

"These benefits come with the cost of the added complexity of the dynamic bit-interleaving protocol."

Response *Response Status* **C**
ACCEPT.

Cl **06** *SC* **6.2.1.1** *P* **60** *L* **15** # 353
Remein, Duane Huawei Technologies

Comment Type **E** *Comment Status* **A**
Tense agreement: "... ONUs currently process ... traffic was actually ... "

SuggestedRemedy
change to
"ONUs currently process ... traffic is actually ... "
^^

Response *Response Status* **C**
ACCEPT.

Cl **06** *SC* **6.2.1.1** *P* **60** *L* **18** # 363
Harstead, Ed Alcatel-Lucent

Comment Type **E** *Comment Status* **A**
Should be stated that bit interleaving needs to fit within Ethernet.

SuggestedRemedy
Add new 1-sentence paragraph to the end of this subclause:
"Any changes to the MAC required to implement bit interleaving need to fit within/conform to the Ethernet protocol stack".

Response *Response Status* **C**
ACCEPT.

Cl **06** *SC* **6.2.3** *P* **62** *L* **9** # 340
Liu, Qian RITT, CATR

Comment Type **T** *Comment Status* **A**
The figure 38 shows the WA-PON. But the title is "MSD-WDM-PON with dynamic TDM domains".

SuggestedRemedy
Change the title of the figure 38 from "MSD-WDM-PON with dynamic TDM domains" to "WA-PON".

Response *Response Status* **C**
ACCEPT.

Cl **06** *SC* **6.3.2** *P* **0** *L* **1** # 344

Remein, Duane Huawei Technologies

Comment Type **E** *Comment Status* **A**

Figure 40: "Partitioning Duobinary Functions in TDM-PON" seems to have lost something in translation as much of the text overlays lines in the drawing.
(NRZ{0,1} (4x), Duobinary{0,1,2} (lower occurence).

SuggestedRemedy

correct drawing so text isn"t overlapping lines.

Response *Response Status* **C**

ACCEPT.

Cl **06** *SC* **6.3.2** *P* **66** *L* **24** # 367

Harstead, Ed Alcatel-Lucent

Comment Type **T** *Comment Status* **A**

Since this section was originally contributed, we did dispersion tolerance simulations (reported in the later contribution that is now 6.3.4.2), and now our original estimates need to be updated (and made consistant with 6.3.4.2).

The upshot is that 25 and 40 Gb/s DML are slightly improved, while 25 Gb/s EML is significantly worse (as can be seen in the updated Figure 41). Some new text to deal with the latter is added.

SuggestedRemedy

Refer to contribution ngepon_0315_harstead_01.

Response *Response Status* **C**

ACCEPT.

Cl **06** *SC* **6.5** *P* **80** *L* **2** # 368

Powell, Bill Alcatel-Lucent

Comment Type **E** *Comment Status* **A**

Fig. 55 incorrectly shows the RFoG1 upstream wavelength range as 1300-1320 nm.

SuggestedRemedy

Change the figure to extend the RFoG1 upstream wavelength range to 1260-1360 nm (per the SCTE 174 2010 spec [53]).

Response *Response Status* **C**

ACCEPT.

Cl **06** *SC* **6.5** *P* **81** *L* **2** # 369

Powell, Bill Alcatel-Lucent

Comment Type **E** *Comment Status* **A**

Current RFoG Upstream range is listed as "1300-1320/1600-1620"
Figure 55 refers to RFoG-1 and RFoG-2, the ranges of which should be explicitly defined in Table 7.

- The SCTE US range for "RFoG1" is 1260-1360 nm
- With both of the US ranges combined, it is not clear how this relates to the "RFoG1" and "RFoG2" usage in Fig. 55.

SuggestedRemedy

1) Change the RFoG Upstream range in Table 7 from:
"1300-1320/1600-1620"
to
RFoG1: 1260-1360
RFoG2: 1600-1620

2) Leave the single 1540-1565 range for RFoG Downstream, but center this value vertically in the table cell (so it will be apparent that it applies to both RFoG1 and RFoG2)

Response *Response Status* **C**

ACCEPT.

Cl **06** *SC* **6.6.5** *P* **83** *L* **24** # 345

Remein, Duane Huawei Technologies

Comment Type **E** *Comment Status* **A**

Reasons for merging some cells and not others is not clear (mostly in last 5 rows)

SuggestedRemedy

Merge all adjacent cells in a row with the same values.
Row Merge Col
Upstream Band A, B & C
Mat. of Optics A, B & C
Ovrlap w/ 1G-EPON C & D
Ovrlap w/ 10G-EPON A, B, C & D
Ovrlap w/ RFOG2 C & D
Ovrlap w/ 1OTDR A, B, C & D

Response *Response Status* **C**

ACCEPT.

Cl **08** *SC* **8** *P* **97** *L* **23** # 350

Remein, Duane Huawei Technologies

Comment Type **T** *Comment Status* **A**

We should make some conclusions and not beat around the bush.

SuggestedRemedy

Replace conclusion text with that found in file conclusions_combined_v6_call.docx

Response *Response Status* **C**

ACCEPT.

see contribution ngepon_0315_remein_01.pdf

ensure "bandwidth" terms are consistent with the rest of the document.

Cl **08** *SC* **8** *P* **97** *L* **8** # 348

Remein, Duane Huawei Technologies

Comment Type **ER** *Comment Status* **D**

This para beginning "This report examines ..." reads more like a summary and includes no conclusions.

SuggestedRemedy

Strike para, most if not all of its content is included in the Introduction.

Proposed Response *Response Status* **Z**

REJECT.

This comment was WITHDRAWN by the commenter.

Refer to contribution for conclusion

Cl **09** *SC* **9** *P* **98** *L* **38** # 357

Harstead, Ed Alcatel-Lucent

Comment Type **E** *Comment Status* **A**

Citation [16] will be published in the March 2015 issue.

SuggestedRemedy

replace "Forthcoming, IEEE Communications Magazine" with "IEEE Communications Magazine, March 2015".

Response *Response Status* **C**

ACCEPT.