

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI **FM** SC **FM** P1 L1 # 87  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type **ER** Comment Status **X**  
As the Ethernet Bandwidth Assessment is a "liaison to the world" a cover letter should be the front cover. This was done for the first Ethernet Bandwidth Assessment.  
SuggestedRemedy  
Cover letter should be included. Proposed draft text will be created and provided.  
Proposed Response Response Status **W**  
ACCEPT IN PRINCIPLE  
Commenter needs to provide contribution

CI **FM** SC **FM** P1 L16 # 88  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type **ER** Comment Status **X** Bucket  
This document is draft - not approved. The URL for the report should not be listed. Furthermore - the URL is for the private area, which is not accessible without login information.  
SuggestedRemedy  
Remove URL and replace with editor's note = "Editor's note (to be removed prior to publication): Appropriate URL to be inserted during publication process."  
Proposed Response Response Status **W**  
ACCEPT

CI **FM** SC **FM** P1 L17 # 1  
Hajduczenia, Marek Charter Communications  
Comment Type **E** Comment Status **X** Bucket  
What is the point of providing link to a private area where the password protection keeps the document private?  
SuggestedRemedy  
Either share the access credentials or just indicate that link to this document will be added a the publication time  
Proposed Response Response Status **W**  
ACCEPT IN PRINCIPLE  
Refer to response to Comment #88

CI **FM** SC **FM** P5 L9 # 76  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type **ER** Comment Status **X** Bucket  
Entries for Table 10 and Table 9 are out of order  
SuggestedRemedy  
reverse order of Table 9 and 10.  
Proposed Response Response Status **W**  
ACCEPT IN PRINCIPLE  
Correct the order of the tables

CI **FM** SC **FM** P7 L3 # 2  
Hajduczenia, Marek Charter Communications  
Comment Type **E** Comment Status **X** Bucket  
One too many Es in IEEE  
SuggestedRemedy  
Change IEEE to IEEE  
Proposed Response Response Status **W**  
ACCEPT

CI **FM** SC **FM** P18 L18 # 77  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type **TR** Comment Status **X** Bucket  
This statement is incorrect - "Relative to observed traffic in 2017, the submitted data". Not all of the numbers provided for the analysis going out to 2025 were provided - in some instances the data was extrapolated, assuming a constant CAGR. In addition this sentence references specific data (2.3x and 55.4x) that would be impossible to get from Figure 52.  
SuggestedRemedy  
1. Change "Relative to observed traffic in 2017, the submitted data" to Relative to observed traffic in 2017, analysis and extrapolation of submitted data..."  
2. Add table summarizing relative data for 2017, 2022, and 2025  
Proposed Response Response Status **W**  
ACCEPT

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI **FM** SC **FM** P18 L24 # 78  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type **TR** Comment Status **X** Bucket  
This sentence is incorrect - However, the 4x growth curve generated by a 1.6 TbE solution would also lag the observed growth curves. It would not lag the Peering Traffic forecast.  
SuggestedRemedy  
Change sentence - "However, the 4x growth curve generated by a 1.6 TbE solution would also lag the observed growth curves."  
to  
However, the 4x growth curve generated by a 1.6 TbE solution would also lag all observed growth curves, except "Peering Traffic."  
Proposed Response Response Status **W**  
ACCEPT

CI **00** SC **0** P14 L12 # 83  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type **ER** Comment Status **X** Bucket  
Figures from Nowell contribution are used throughout report. While they appear legible on screen, when printed out - they are difficult to read  
SuggestedRemedy  
Recreate figures if possible.  
Proposed Response Response Status **W**  
ACCEPT

CI **00** SC **0** P25 L40 # 97  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type **ER** Comment Status **X** Bucket  
"Figure" breaks across lines. This should be reviewed throughout the document.  
SuggestedRemedy  
Keep "Figure xx" or "Table xx" text together on one line  
Proposed Response Response Status **W**  
ACCEPT

CI **2** SC **2.1** P3 L15 # 111  
Wang, Xinyuan Huawei Technologies  
Comment Type **E** Comment Status **X**  
Suggest to add reference to contribution presented at Ad Hoc on Dec 17th  
SuggestedRemedy  
Xinyuan Wang, Yu Xu, "Observation on the Rate of Beyond 400GbE" [23]  
Proposed Response Response Status **W**  
REJECT  
The meeting on Dec 17th was not announced as a meeting of the Ethernet Bandwidth Assessment activity, but a meeting of the New Ethernet Applications Ad hoc to discuss industry consensus beyond 400 GbE. Furthermore, as noted in schedule regarding development of the Ethernet Bandwidth Assessment  
([http://www.ieee802.org/3/ad\\_hoc/ngrates/public/19\\_09/dambrosia\\_bwa\\_01a\\_0919.pdf](http://www.ieee802.org/3/ad_hoc/ngrates/public/19_09/dambrosia_bwa_01a_0919.pdf)) on Slide 5 1st October 2019 was the last date for presentations.

CI **2** SC **2.1** P9 L22 # 3  
Hajduczenia, Marek Charter Communications  
Comment Type **E** Comment Status **X** Bucket  
Incorrect way to reference the standard  
SuggestedRemedy  
Change "IEEE 802.3ba-2010" to "IEEE Std 802.3ba-2010" and may also need © or ® statements added  
Similar issue on page 9, line 30 for .3bs  
Proposed Response Response Status **W**  
ACCEPT IN PRINCIPLE  
Modify the amendment names to include "Std"

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 2 SC 2.1 P9 L23 # 4  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
"Industry Connections Ethernet Bandwidth Assessment Ad Hoc" or "Industry Connections Ethernet Bandwidth Assessment Ad hoc" - capitalization is inconsistent in the document.  
SuggestedRemedy  
Use "Industry Connections Ethernet Bandwidth Assessment Ad Hoc" consistently in the document  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Standardize on NEA (New Ethernet Applications) Ad Hoc and BWA (Ethernet Bandwidth Assessment) Ad Hoc.

CI 2 SC 2.1 P9 L24 # 5  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
Reference should go before the "."  
SuggestedRemedy  
Change to "Ethernet Bandwidth Assessment [1]. This"  
There are multiple locations in the draft where placement of references will need to be fixed as well  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Correct the placement of the cross references throughout the document

CI 2 SC 2.1 P9 L32 # 81  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type ER Comment Status X Bucket  
This is the first instance of the use of the name of the "IEEE 802.3 Industry Connections New Ethernet Applications Ad Hoc" which is later referred to as "NEA". This should be defined here.  
SuggestedRemedy  
Change text - "IEEE 802.3 Industry Connections New Ethernet Applications Ad Hoc" to "IEEE 802.3 Industry Connections New Ethernet Applications Ad Hoc ("IEEE 802.3 NEA")"  
Proposed Response Response Status W  
ACCEPT

CI 2 SC 2.1 P9 L36 # 8  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
The list of contributions would flow better if it listed the title of the contribution and reference back, where full name, date, and author is listed. It adds little value to have this list with authors up front.  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
As noted in the text, this section lists all of the individuals who presented information to the ad hoc. However the formatting of the bullets is such that it makes it difficult to follow the individuals and their contributions.

Correct bullet formatting listing individuals and their contributions.

CI 2 SC 2.1 P9 L37 # 6  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
Wrong format applied to NOTE  
SuggestedRemedy  
Apply correct format to the text intended to be an informative NOTE  
Proposed Response Response Status W  
ACCEPT

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

**Cl 2 SC 2.1 P9 L39 # 7**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
You have so many different ways to reference to the ad hoc: "Ethernet Bandwidth Assessment effort", "assessment", "effort", etc. Just create the name, for example, "BWA" and use it consistently where needed. The creativity in naming this ad-hoc is not needed  
**SuggestedRemedy**  
Per comment  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
1. In 2.1 Line 23, add "(BWA)" after Bandwidth Assessment.  
2. add entry to Section 1. Abbreviations - BWA - Bandwidth Assessment  
3. Change "Bandwidth Assessment" to "BWA" where appropriate. Changes to titles of contributions are not considered appropriate.

**Cl 2 SC 2.1 P9 L46 # 79**  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
**Comment Type ER Comment Status X Bucket**  
Formatting of bullets and subbullets is not correct, as bullets / sub-bullets are all at same space, not allowing easy indication of what bullets - sub-bullets belong to  
**SuggestedRemedy**  
correct formatting of bullets / sub-bullets  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Change the formatting of the bullets to allow easier identification

**Cl 2 SC 2.1 P9 L55 # 9**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
Page in the Adobe PDF does not match the page in document, for example, document shows page 2, while it is page 9 of the document.  
**SuggestedRemedy**  
Please align  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Correct the page numbering throughout the document.

**Cl 2 SC 2.2 P10 L22 # 80**  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
**Comment Type ER Comment Status X Bucket**  
Formatting bullets incorrect  
**SuggestedRemedy**  
correct formatting of bullets  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Change the formatting of the bullets to allow easier identification

**Cl 2 SC 2.2 P10 L28 # 10**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
The relationshoo between NEA and BWA is not explained, yet they are used interchangeably in the document - they are not  
**SuggestedRemedy**  
Please clarify up fron tin the document that BWA was an activity under standing NEA activity  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Overview section includes following description defining the relationship - Based on the usefulness of the first effort, the IEEE 802.3 Industry Connections New Ethernet Applications Ad Hoc initiated the second Ethernet Bandwidth Assessment in September 2018. Similar in scope to the first bandwidth assessment, this proactive effort seeks to assess current industry bandwidth trends that will impact future Ethernet wireline applications.

**Cl 3 SC 3.1 P10 L53 # 11**  
Hajduczenia, Marek Charter Communications  
**Comment Type E Comment Status X Bucket**  
Any link to "2007 IEEE 802.3 Higher Speed Study Group (HSSG) Tutorial"?  
**SuggestedRemedy**  
Per comment  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
1. Add endnote after ".. (HSSG) Tutorial" to 2007 HSSG Tutorial - [http://www.ieee802.org/3/hssg/public/nov07/HSSG\\_Tutorial\\_1107.zip](http://www.ieee802.org/3/hssg/public/nov07/HSSG_Tutorial_1107.zip).

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

**CI 3 SC 3.1 P11 L15 # 12**  
Hajduczenia, Marek Charter Communications  
**Comment Type E Comment Status X Bucket**  
The disclaimer "All submitted information should ..." is already covered before, at the end of 2.2. There is little value repeating it over and over again  
**SuggestedRemedy**  
Strike thie indicated disclaimer  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
1. Replace cited disclaimer noted in 2.1, "All contributed information is solely the perspective of the individual contributors" with disclaimer text from 3.1 -  
"All submitted information should be considered a snapshot of the perceived bandwidth requirements at the time of submission to the IEEE 802.3 NEA Ad hoc or the publication of the referenced report."  
2. Delete disclaimer from 3.1

**CI 3 SC 3.2 P11 L22 # 13**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
It is a very confusign statement: "it is forecasted that device connections will grow from 18 billion to 28.5 billion devices and connections" - so what is actually growing in here? Device count? Connection count? Something in between  
**SuggestedRemedy**  
Please clarify  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Data forecast (see [http://www.ieee802.org/3/ad\\_hoc/bwa2/public/calls/19\\_0624/nowell\\_bwa\\_01\\_190624.pdf](http://www.ieee802.org/3/ad_hoc/bwa2/public/calls/19_0624/nowell_bwa_01_190624.pdf)) that supports this statement is noted as "Global Device / Connection Growth"  
Add end note after noted sentence to (18)  
Nowell([http://www.ieee802.org/3/ad\\_hoc/bwa2/public/calls/19\\_0624/nowell\\_bwa\\_01\\_190624.pdf](http://www.ieee802.org/3/ad_hoc/bwa2/public/calls/19_0624/nowell_bwa_01_190624.pdf).)

**CI 3 SC 3.2 P11 L23 # 14**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
"As noted in Equation (1), the number of users accessing a network is directly related to the "bandwidth explosion"" - you're confusng cause and effect. The bandwidth explosion is directly related to the number of users accessing .... The cause and effect are inverted  
**SuggestedRemedy**  
Please rewrite to fix  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Change "the number of users accessing a network is directly related to the "bandwidth explosion" [18] that a given network may experience."  
to  
"the "bandwidth explosion" [18] that a given network may experience is directly related to the number of users accessing a network."

**CI 3 SC 3.2.1 P5 L15 # 115**  
Trowbridge, Steve Nokia  
**Comment Type ER Comment Status X Bucket**  
Spurious commas, missing digit Internet Users for Japan for 2000, 2019  
**SuggestedRemedy**  
Insert the missing digits, remove the spurious commas  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Correct the table data and formatting

**CI 3 SC 3.2.1 P5 L16 # 116**  
Trowbridge, Steve Nokia  
**Comment Type ER Comment Status X Bucket**  
Spurious comma, missing digit Internet users for Nigeria 2019  
**SuggestedRemedy**  
Insert the missing digit, remove the spurious comma  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Correct the table data and formatting

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.2.1 P5 L27 # 117  
Trowbridge, Steve Nokia  
Comment Type ER Comment Status X Bucket  
Vietnam 2019 number is presumably millions rather than thousands based on percentage growth  
SuggestedRemedy  
Change 64 000 to 64 000 000  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Correct the table data and formatting

CI 3 SC 3.2.1 P5 L45 # 118  
Trowbridge, Steve Nokia  
Comment Type ER Comment Status X Bucket  
The two sentences in the paragraph don't go together. I think what "these countries" in the second sentence refers to is 2 billion people in the 12 countries that have less than 80% of their population connected to the Internet  
SuggestedRemedy  
Make the sentences consistent.  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Noted comment is on Page 12  
Refer to comment #66

CI 3 SC 3.2.1 P5 L45 # 66  
Bruckman, Leon Huawei  
Comment Type E Comment Status X Bucket  
"Given that there are ≈2 billion individuals in these countries,..." - Which countries ? Which individuals, connected, not connected ? The 8 or the 20 ? Base on observation #3, I assume it is 2 billion not connected in the 20 countries.  
SuggestedRemedy  
Change text to: "Given that there are ≈2 billion unconnected individuals in these 20 countries,..."  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.2.1 P6 L32 # 67  
Bruckman, Leon Huawei  
Comment Type E Comment Status X Bucket  
In Figure 2: What is "Global penetration by region"?  
SuggestedRemedy  
Define the term or remove it  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Replace the first sentence of the paragraph on Page 13 from:  
"The Internet World Stats website also presented data on a "Regional" basis, estimated for March 31, 2019, which is illustrated in (Figure 2)."  
to  
"The Internet World Stats website also presented data on a "Regional" basis, estimated for March 31, 2019, which is illustrated in (Figure 2). Figure 2 also highlights the relationship between the number of users in a region to the global number of users ("Global Penetration by Region")."  
To enable screen reader support, press Ctrl+Alt+Z To learn about keyboard shortcuts, press Ctrl+slash

CI 3 SC 3.2.1 P11 L28 # 15  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
Title of 3.2.1 should read "Individual Users"  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.2.1 P11 L49 # 17  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
"Table 2" should not break across lines  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Modify the text so "Table 2" does not break across lines

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

**Cl 3 SC 3.2.1 P11 L49 # 16**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
Probably we should sepcify what these 20 countries are top in - I assume top in terms of Internet user counts? Internet user density? Etc.  
**SuggestedRemedy**  
Plese clarify and add a sentence explaining what these countries are top in  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Modify this sentence - "This trend is also exhibited by the Top 20 countries noted." to  
This trend is also exhibited by the Top 20 countries per number of internet users as of March 31, 2019."

**Cl 3 SC 3.2.1 P12 L1 # 18**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
What is "usage" column in Table 2?  
**SuggestedRemedy**  
Please rename to something more self-explanatory or ad a footnoe to explain what the usage references to  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Add note to Table 2 describing Usage 2019 as the number of Internet Users in 2019 dividied by the Estimated 2019 Population.

**Cl 3 SC 3.2.1 P12 L5 # 20**  
Hajduczenia, Marek Charter Communications  
**Comment Type E Comment Status X Bucket**  
Is "EST" and "Est" supposed to be the same?  
**SuggestedRemedy**  
Aling and use one style  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Standardized on Est throughout the document.

**Cl 3 SC 3.2.1 P12 L7 # 21**  
Hajduczenia, Marek Charter Communications  
**Comment Type E Comment Status X Bucket**  
For some reason, font in Column # seems mych larger than in other columns  
**SuggestedRemedy**  
Use consistent font size, please  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Modify the fonts to be consistent throughout the table

**Cl 3 SC 3.2.1 P12 L42 # 19**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
"as billions of individuals were connected to the internet" - a bit over-dramatized - using Excel one can see these countries connected close to 2B people in this period of time. That is a cry shy of "billions" - let's not overdramatize, this is not supposed to be S-F literature.  
**SuggestedRemedy**  
Change to "as around 2 billion individual users were connected to the internet"  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Table 1 summarizes the number of connected people to the internet, as of 3/31/19, as 3, 117,533,898 people.  
Change "as billion of individuals were connected to the internet" to " around 3.1 billion individual users were connected to the internet"

**Cl 3 SC 3.2.1 P13 L2 # 82**  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
**Comment Type E Comment Status X Bucket**  
Figures 1 & 2 are difficult to read with colored backgrounds  
**SuggestedRemedy**  
Redo graphs without colored background  
**Proposed Response Response Status W**  
ACCEPT

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

**Cl 3 SC 3.2.2 P14 L1 # 23**  
Hajduczenia, Marek Charter Communications  
**Comment Type TR Comment Status X Bucket**  
While there is discussion on the number of connections, there is no discussion on the size (data rate, volume of data) of such connections. M2M do not download cat videos, do not stream Netflix, or are expected to be data rate and bandwidth intensive  
**SuggestedRemedy**  
To fully understand M2M impact on your activities, it is crucial to have information on data rate and data volume needed for M2M communication. Now information on M2M is rather single-sided and quite honestly - meaningless.  
**Proposed Response Response Status W**  
REJECT  
No information regarding data rate was presented to the Bandwidth Assessment activity.

**Cl 3 SC 3.2.2 P14 L5 # 22**  
Hajduczenia, Marek Charter Communications  
**Comment Type E Comment Status X Bucket**  
Strange format on "(Note-"Connected Car" is discussed further in 3.4.1)"  
**SuggestedRemedy**  
Change to Note that topics associated with a "Connected Car" are discussed in 3.4.1.  
**Proposed Response Response Status W**  
ACCEPT

**Cl 3 SC 3.3 P14 L50 # 84**  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
**Comment Type E Comment Status X Bucket**  
Poorly worded sentence - Internet usage is not necessarily done by a user on a single device  
**SuggestedRemedy**  
suggested rewording - A user may use more than just a single method or device to access the internet.  
**Proposed Response Response Status W**  
ACCEPT

**Cl 3 SC 3.3.1 P10 L4 # 68**  
Bruckman, Leon Huawei  
**Comment Type E Comment Status X Bucket**  
"while average hour internet traffic will only grow from ≈0.3 Pb/s to ≈6.3 Pb/s." The figure shows average ~1.3 Pb/s by 2022.  
**SuggestedRemedy**  
Change text to: "while average hour internet traffic will only grow from ≈0.3 Pb/s to ≈1.3 Pb/s."  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
See response to comment #32

**Cl 3 SC 3.3.1 P15 L16 # 85**  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
**Comment Type ER Comment Status X Bucket**  
Use of "M2M" is incomplete and does not appear to properly represent what was being communicated in the nowell contribution. Slides prior to the data being used in the BWA refer to IoT / M2M.  
**SuggestedRemedy**  
Change "M2M" to IoT / M2M  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Change the text as stated throughout the document



# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

**Cl 3 SC 3.3.1 P15 L21 # 24**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
There is a blue note in Figure 5, referencing to some "Figures {n}", but there are no such figures in the document. Remove the note in blue?  
**SuggestedRemedy**  
Per comment  
The same comment applies to Figure 6  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
  
Language of note is not clear - the note is highlighting the device share for years 2017 and 2022.  
Modify note in Fig 5 & 6 (and other Figures as appropriate)  
to  
"Noted percentages refer to 2017, 2022 device share")

**Cl 3 SC 3.3.1 P15 L40 # 25**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
What is "M2M module"?  
**SuggestedRemedy**  
Explain or change to M2M  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
  
Review of  
[http://www.ieee802.org/3/ad\\_hoc/bwa2/public/calls/19\\_0624/nowell\\_bwa\\_01\\_190624.pdf](http://www.ieee802.org/3/ad_hoc/bwa2/public/calls/19_0624/nowell_bwa_01_190624.pdf)  
provides no explanation of the term M2M Module, and references to cited numbers in this table are to items noted as "M2M"  
Change "M2M Module" to "M2M"

**Cl 3 SC 3.3.1 P15 L46 # 26**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
What is "Ultras High Definition TV"?  
**SuggestedRemedy**  
Change to "Ultra High Definition TV" and also defined in footnote whether it is HD and better, or 4k and better - definitions vary  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
  
Reference:  
[http://www.ieee802.org/3/ad\\_hoc/bwa2/public/calls/19\\_0624/nowell\\_bwa\\_01\\_190624.pdf](http://www.ieee802.org/3/ad_hoc/bwa2/public/calls/19_0624/nowell_bwa_01_190624.pdf) is an update on Cisco VNI.  
Cisco VNI notes "Ultra-High-Definition" as "4K"  
1) In Section 1, modify definition of UHD to "ultra-high definition (4K)"  
2) on Page 15, bullet beginning with Observation #2, add (4K) after "ultra-high definition"  
3) In Table 3 replace entry text "Ultras High Definition TV \*" with Ultra-High Definition (4K) TV \*\*

**Cl 3 SC 3.3.1 P15 L52 # 27**  
Hajduczenia, Marek Charter Communications  
**Comment Type T Comment Status X Bucket**  
"... the number of users alone cannot be considered ... " - correct, yet that is the focus of the initial sections in the document.  
**SuggestedRemedy**  
Change to read "the number of users alone does not present a complete picture" - since that is what you build on later on  
**Proposed Response Response Status W**  
ACCEPT

**Cl 3 SC 3.3.1 P15 L53 # 28**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
"number of devices per capital" - capital of what? Likely "per capita"?  
**SuggestedRemedy**  
Change to "number of devices per capita"  
**Proposed Response Response Status W**  
ACCEPT

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.3.1 P16 L10 # 29  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
Is there any reason for Row 3 to wrap around? Expand the size some and avoid the column 1 from wrapping around  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.3.1 P16 L17 # 30  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
Missing "." at the end of the sentence  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.3.1 P16 L38 # 31  
Hajduczenia, Marek Charter Communications  
Comment Type TR Comment Status X Bucket  
What are the two numbers shown in brackets in Figure 6 (and Figure 5)? They are not explained or referenced anywhere  
SuggestedRemedy  
Add a brief description (1/2 sentences tops) what these numbers really mean  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Refer to comment 24

CI 3 SC 3.3.1 P17 L3 # 32  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
There are a lot of very affirmative statements in the document about the future: "internet traffic will only grow from" - these are predictions or expectations

SuggestedRemedy  
All such language should be rewritten to imply these are expectations. For example, change "internet traffic will only grow from" to "internet traffic is expected to grow from"  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE

Replace this sentence -  
"From 2017 to 2022, busy hour traffic will grow from over 1 Pb/s to over 6 Pb/s, while average hour internet traffic will only grow from ~0.3 Pb/s to ~6.3 Pb/s."  
with  
From 2017 to 2022, busy hour traffic is projected to grow from over 1 Pb/s to over 6 Pb/s, while average hour internet traffic is expected to grow from ~0.3 Pb/s to ~6.3 Pb/s.

CI 3 SC 3.3.2 P17 L23 # 86  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type ER Comment Status X Bucket  
Formatting bullets incorrect  
SuggestedRemedy  
correct formatting of bullets  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Modify the formatting of the bullets

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.3.2 P17 L23 # 33  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
There is little reason to skimp on space by using "(Avg)" in text. Expand to say "(average)" in both instances and the associated Table on the next page  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Use "average" in place of "Avg"

CI 3 SC 3.3.2 P17 L33 # 34  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
Writing about the future in the past tense is a tad odd: "For 2022 North America had the highest Wi-Fi"  
SuggestedRemedy  
Change to "For 2022 North America is expected to have the highest Wi-Fi"  
It is also a rehash of the statement made in the previous bullet point, indicating the very same information  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE

While there is a repeat of specific information in the two noted bullets, each bullet addresses a different trend. The bullet starting with "For 2022 Asia Pacific..." the highest rates for the three areas are noted. For the bullet starting with "For 2022 North America.." is addressing North America's ranking in each of the three areas.

Replace "For 2022 North America had the highest Wi-Fi data rate and had the second highest data rate for both Fixed Broadband and Cellular."  
with  
"For 2022 North America is expected to have the highest Wi-Fi data rate and the second highest data rate for both Fixed Broadband and Cellular."

CI 3 SC 3.3.2 P18 L15 # 35  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
Figure 9 uses three colors in legend and gray seems to imply 100M+ range, while the actual bars use green color?  
SuggestedRemedy  
Align color on Figure  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
The figure is an embedded figure from  
[http://www.ieee802.org/3/ad\\_hoc/ngrates/public/18\\_11/zhao\\_nea\\_01\\_1118.pdf](http://www.ieee802.org/3/ad_hoc/ngrates/public/18_11/zhao_nea_01_1118.pdf).  
1. Update graph to align legend colors to colors in graph.  
2. Add Y-axis title " Chinese Broadband Users"

CI 3 SC 3.3.2.1 P11 L33 # 69  
Bruckman, Leon Huawei  
Comment Type E Comment Status X Bucket  
Figure 8 is not clear: What are the axis representing ? Where do you see 378M ?  
SuggestedRemedy  
Make the figure and text consistent and define the relevant axis  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE

Source material  
([http://www.ieee802.org/3/ad\\_hoc/ngrates/public/18\\_11/zhao\\_nea\\_01\\_1118.pdf](http://www.ieee802.org/3/ad_hoc/ngrates/public/18_11/zhao_nea_01_1118.pdf)) for the graph and text statements is inconsistent. The correct number supported by the graph is 350 million.

Change sentence -  
"As illustrated in Figure 8, the number of fixed broadband users reached 378 million (328 million were fiber broadband users) in 2017."  
to  
"As illustrated in Figure 8, the number of fixed broadband users reached 350 million (328 million were fiber broadband users) in 2017."

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.3.2.1 P18 L50 # 90  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
font size of note and legend at bottom of Figure 8 is difficult to read  
SuggestedRemedy  
increase font size of note and legend if possible  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.3.2.1 P19 L1 # 91  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
Figures 9 and 10 are difficult to read due to small font sizes.  
SuggestedRemedy  
Reproduce figures with larger fonts if possible.  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.3.2.2 P19 L42 # 36  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
"internet" or "Internet"? You use both in the document right now with no consistency  
SuggestedRemedy  
Likely, "Internet" (capitalized) should be used in the document  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Use "Internet" when referring to the Internet network

CI 3 SC 3.3.2.3 P13 L42 # 70  
Bruckman, Leon Huawei  
Comment Type E Comment Status X Bucket  
"By 2016 the connection speed for the countries considered ranged from 11.7 Mb/s to 171.6 Mb/s." I assume this refers to figure 15, then is "peak connection speed" and not "connection speed"  
SuggestedRemedy  
Change text to: "By 2016 the peak connection speed for the countries considered ranged from 11.7 Mb/s to 171.6 Mb/s."

Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.3.2.3 P20 L26 # 38  
Hajduczenia, Marek Charter Communications  
Comment Type TR Comment Status X Bucket  
Nowhere in the whole section there is any indication whether the rates referenced are upstream, downstream, average for both, or something else  
SuggestedRemedy  
Indicate whether the rates referenced are upstream, downstream, average for both, or something else

Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Source material  
([http://www.ieee802.org/3/ad\\_hoc/bwa2/public/calls/19\\_0611/dambrosia\\_bwa\\_01a\\_190611.pdf](http://www.ieee802.org/3/ad_hoc/bwa2/public/calls/19_0611/dambrosia_bwa_01a_190611.pdf)) reviewed, and the noted sentence is reflective of the submitted data, which only describes "connection rate"  
add note after 1st sentence of 2nd bullet describing Figure 13 - "(Note - the term connection rate was used with no reference to whether it was download or upload)"

CI 3 SC 3.3.2.3 P20 L35 # 92  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
It is unclear if the 3rd bullet is a major or subbullet.  
SuggestedRemedy  
Please clarify the sub-bullet, and correct accordingly.  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Modify the formatting of the bullets to clarify the difference between a bullet and subbullet

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.3.2.3 P20 L36 # 37  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
Extra space ahead of "Figure 14"  
SuggestedRemedy  
Remove extra space  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.3.2.3 P21 L1 # 93  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
Fig 12 is difficult to read due to small font sizes in legend. Fig 13 is difficult to read due to colored background.  
SuggestedRemedy  
Improve quality of both figures if possible  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.3.2.3 P21 L21 # 39  
Hajduczenia, Marek Charter Communications  
Comment Type TR Comment Status X Bucket  
It is not clear which Y axis applies to which curve  
SuggestedRemedy  
Add information (may be in text?) which Y axis applies to which data  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Modify axis / legend to clarify which axis data belongs to.

CI 3 SC 3.3.2.3 P22 L25 # 94  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
Fig 15 is difficult to read due to colored background  
SuggestedRemedy  
Improve quality of figure if possible  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.3.2.4 P22 L51 # 40  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
"solutions will satisfy industry needs until 2025" - it would be good to add the reference  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
1. Delete endnote from title of 3.3.2.4  
2. Add sentence at beginning of 3.3.2.4 - "This section addresses material presented to the IEEE 802.3 NEA Ad Hoc in support of EPON's future bandwidth requirements. [16]"

CI 3 SC 3.4 P23 L5 # 41  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
There is no reason to quote the titles in full in the document, we can use references using [x] scheme instead, which is much more readable and clear.  
SuggestedRemedy  
Avoid using full document titles in the main body of text, and use references instead.  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Update text to use references in place of full titles

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.4 P23 L16 # 95  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
Fig 16 is difficult to read due to colored background  
SuggestedRemedy  
Improve quality of figure if possible  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.4 P24 L1 # 96  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
and 49  
SuggestedRemedy  
Improve quality of figure if possible  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.4 P25 L4 # 42  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
A lot of terms in the table are not expanded on or defined anywhere. What is QUIC for example?  
SuggestedRemedy  
Add a table with acronyms to the document and expand them, either on the first use or at least keep them in the table  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE

The first column in Table 7 is the name or descriptive text of the mobile application. QUIC is not an acronym, but is the name of an IETF protocol that connects the Chrome web browser to Google servers.

1. Add "Application" to top of first column
2. Change "LATAM" in Table 7 to "Latin America"
3. Change "APAC" in Table 7 to "Asia-Pacific"

CI 3 SC 3.4.1 P26 L42 # 43  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
What "two previous efforts within the IEEE 802.3 Ethernet Working Group" ?  
SuggestedRemedy  
Spell them out or provide references to such  
Proposed Response Response Status W  
REJECT

The second part of the sentence notes the two prior efforts - "when it considered increasing the Ethernet data rate beyond 10 Gb/s in 2006 and 100 Gb/s in 2013."

CI 3 SC 3.4.1 P26 L42 # 44  
Hajduczenia, Marek Charter Communications  
Comment Type T Comment Status X Bucket  
There are already 8k TVs on the market, with 12/16K on the horizon as vendors push higher and higher pixel density. It seems that the IHD class should comprise 4K screens and better (higher resolution)?  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE

The statements made in this section represent the data presented in the contribution - [http://www.ieee802.org/3/ad\\_hoc/bwa2/public/calls/19\\_0624/nowell\\_bwa\\_01\\_190624.pdf](http://www.ieee802.org/3/ad_hoc/bwa2/public/calls/19_0624/nowell_bwa_01_190624.pdf)

add new paragraph -  
"It is anticipated that in the future support of video beyond ultra-high definition, such as 8k/12k/16k, will only serve to further exasperate support of future bandwidth growth."

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

**Cl 3 SC 3.4.2 P28 L20 # 45**  
Hajduczenia, Marek Charter Communications  
**Comment Type TR Comment Status X Bucket**  
There is no definition of what this "Virtual / Augmented Reality" uses and what it means - are these people streaming VR content across Internet or something else? Data is thrown in without much context, really.  
**SuggestedRemedy**  
Per comment  
**Proposed Response Response Status W**  
REJECT  
No description of "Virtual / Augmented Reality" Information provided in material presented to the Ad hoc Reference  
[http://www.ieee802.org/3/ad\\_hoc/bwa2/public/calls/19\\_0624/nowell\\_bwa\\_01\\_190624.pdf](http://www.ieee802.org/3/ad_hoc/bwa2/public/calls/19_0624/nowell_bwa_01_190624.pdf).

**Cl 3 SC 3.4.3 P21 L50 # 71**  
Bruckman, Leon Huawei  
**Comment Type E Comment Status X Bucket**  
"As shown in Figure 24, when considered connected cars, there are three networks / connections to be considered:". Text not clear  
**SuggestedRemedy**  
Change to: "As shown in Figure 24, when considering connected cars, there are three networks / connections to be considered:  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Change first sentence of 3.4.3 from  
"As shown in Figure 24, when considered connected cars, there are three networks / connections to be considered:"  
to  
"As shown in Figure 24, for connected cars, there are three networks / connections to consider:"

**Cl 3 SC 3.4.3 P29 L33 # 46**  
Hajduczenia, Marek Charter Communications  
**Comment Type ER Comment Status X Bucket**  
Inconsistent font size and formats of the table; align please  
**SuggestedRemedy**  
Per comment  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
use consistent fonts and formats within the table.

**Cl 3 SC 3.4.3 P29 L33 # 98**  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
**Comment Type E Comment Status X Bucket**  
In Table 8 Formatting / line spacing is odd. In addition in 2012, subbullets appears to have two bullets on the lines.  
**SuggestedRemedy**  
Use appropriate formatting for table  
**Proposed Response Response Status W**  
ACCEPT IN PRINCIPLE  
Modify the formatting of the table

**Cl 3 SC 3.4.3 P29 L38 # 119**  
Trowbridge, Steve Nokia  
**Comment Type ER Comment Status X Bucket**  
All bulleted items in the 2012 column have a spurious "o" at the front  
**SuggestedRemedy**  
Remove the spurious "o"s  
**Proposed Response Response Status W**  
ACCEPT

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.4.3 P30 L1 # 47  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
We do not use contractions in published text: "doesn't"  
SuggestedRemedy  
Remove all contractions from the document and expand them  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Remove contractions from the document

CI 3 SC 3.4.3 P30 L29 # 48  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
Why is "Generated by Embedded Mobility by Application" important at all?  
SuggestedRemedy  
Remove this statement and if it is important - add it to where the figure is referenced from  
Proposed Response Response Status W  
REJECT  
Information provided in Assessment represents material presented to the Ad hoc Reference  
[http://www.ieee802.org/3/ad\\_hoc/ngrates/public/18\\_09/dambrosia\\_bwa\\_01\\_0918.pdf](http://www.ieee802.org/3/ad_hoc/ngrates/public/18_09/dambrosia_bwa_01_0918.pdf)

CI 3 SC 3.4.4 P23 L31 # 112  
Wang, Xinyuan Huawei Technologies  
Comment Type E Comment Status X Bucket  
Suggest to add 3.4.4 "Artificial Intelligence" introduction section for "3.4 Increased Services & Applications"  
SuggestedRemedy  
Proposal for 3.4.4:  
Artificial intelligence (AI) is intelligence demonstrated by machines, in contrast to the natural intelligence displayed by humans as shown in Figure 26. AI computing platform will leverage high performance AI silicon processors, which would require high speed Ethernet network based infrastructure. For example, 100GbE ports were already being shipped for such applications in 2019.

Figure 26: refer to slides #4 of  
[http://www.ieee802.org/3/ad\\_hoc/ngrates/public/calls/19\\_1217/wang\\_nea\\_01a\\_191217.pdf](http://www.ieee802.org/3/ad_hoc/ngrates/public/calls/19_1217/wang_nea_01a_191217.pdf)

Proposed Response Response Status W  
REJECT  
The noted meeting was not a presentation to the Bandwidth Assessment activity, but was part of another NEA activity on looking at speeds beyond 400 GbE.



# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.5 P23 L36 # 72  
 Bruckman, Leon Huawei  
 Comment Type E Comment Status X Bucket  
 "From devices to interconnect to applications on a global and regional basis, the data presented has already been demonstrated that there is broad market diversity." Text not clear.  
 SuggestedRemedy  
 Change to: "From devices to interconnect to applications on a global and regional basis, the data presented has already demonstrated that there is broad market diversity."  
 Proposed Response Response Status W  
 ACCEPT IN PRINCIPLE  
 The sentence is a conclusion regarding prior data presented in the assessment. It does not address the material presented in this section.  
 Delete sentence - "From devices to interconnect to applications on a global and regional basis, the data presented has already been demonstrated that there is broad market diversity."

CI 3 SC 3.5 P24 L21 # 110  
 D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
 Comment Type TR Comment Status X Bucket  
 Vlad Kozlov [LightCounting] has provided updated information for Fig 27. The new data shows a significant decrease in growth rate of China mobile data from 2018 to 2019 - 200% to 100%. This helps to illustrate that significant growth rates will eventually slow down.  
 SuggestedRemedy  
 Updated figure provided to editor in email.  
 Replace last sentence - Conversely, the rate of growth for China mobile data has significantly increased from the 2011 to 2018 from 50 % to 200 %.  
 With  
 Conversely, as reported by CINIC, the rate of growth for China mobile data significantly increased from 2011 to 2018 from 50 % to 200 %, but fell to 100% for 2019.  
 Proposed Response Response Status W  
 ACCEPT

CI 3 SC 3.5 P31 L22 # 49  
 Hajduczenia, Marek Charter Communications  
 Comment Type TR Comment Status X Bucket  
 "that bandwidth growth will continue upward" - do you mean that volume continues to grow (not sure what "upward" means then) or that the growth rate accelerates (in which case "upward" should be removed and growth acceleration should be clarified)  
 SuggestedRemedy  
 Per comment  
 Proposed Response Response Status W  
 ACCEPT IN PRINCIPLE  
 1. Delete sentence " While there is ample data demonstrating that bandwidth growth will continue upward,"  
 2. Replace sentence "Figure 27 demonstrates the broad variation in observed growth patterns."  
 With  
 "Figure 27 demonstrates the broad variation in observed bandwidth growth patterns."

CI 3 SC 3.5 P31 L25 # 50  
 Hajduczenia, Marek Charter Communications  
 Comment Type E Comment Status X Bucket  
 Change "the rate of growth for China mobile data" to "the rate of growth for China Mobile data" since it is a carrier name  
 SuggestedRemedy  
 Per comment  
 Proposed Response Response Status W  
 ACCEPT IN PRINCIPLE  
 Refer to Comment #110.

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.5.1 P31 L50 # 99  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
This sentence can be approved to better show the impact of data centers on Ethernet standardization efforts -  
Bandwidth demand from data centers has fueled the development of Ethernet solutions  
SuggestedRemedy  
Change sentence to read -  
Supporting the bandwidth demand for data centers has justified the start of many Ethernet standardization and industry multi-source agreement efforts targeting I/O module form factors.  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.5.1 P31 L52 # 51  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
No other figures are marketed this way - remove any references to where these two figures came from, they already have reference pointing to the original contribution  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE

Replace sentence - Figure 28 and Figure 29 are market forecasts provided by Dell'Oro. With  
Figure 28 is a forecast of enterprise and cloud server unit shipments. Figure 29 is a forecast of data center ethernet switch capacity shipments.

CI 3 SC 3.5.1 P32 L2 # 100  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
Sentence can be improved -  
Server shipments for =>  
100 Gb/s are forecasted by 2023 to represent 25 % of all servers shipped.  
SuggestedRemedy  
Change to  
Shipments for servers supporting 100 Gb/s or greater are forecasted by 2023 to represent 25% of all server shipments.  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.5.1 P32 L33 # 101  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
Legibility of note at bottom of Fig 28 is limited.  
SuggestedRemedy  
Increase font size of note if possible  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.5.1 P33 L38 # 52  
Hajduczenia, Marek Charter Communications  
Comment Type TR Comment Status X Bucket  
Figure 30 is very confusing - it claims Data Center Data Traffic and Bandwidth of Connectivity and yet growth seems to decrease along years, and so does the bandwidth in optical connections  
SuggestedRemedy  
This figure requires much more context to appreciate what it shows versus what is currently shown on page 32.  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Add Y-axis title - "Growth Rate"

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.5.1 P34 L7 # 102  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
Fig 31 is difficult to read due to small font size  
SuggestedRemedy  
Increase font size of note if possible  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.5.1 P34 L25 # 53  
Hajduczenia, Marek Charter Communications  
Comment Type TR Comment Status X Bucket  
Figure 31 is confusing as well - what is "number of connections" in terms of ASN-2-ASN traffic? Number of TCP flows? Number of peers it attaches to? Throwing such a figure with no word of explanation borders on confusing at best.  
SuggestedRemedy  
It is also not clear what the "bandwidth connection" is, and whether it is representative of the aggregate capacity, actual traffic flow, etc. Again, no word on that is means and how to interpret this.  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Add the word "physical" in front of connections

CI 3 SC 3.5.3 P31 L48 # 75  
Malicoat, David Senko  
Comment Type E Comment Status X Bucket  
date 2012 is incorrect  
SuggestedRemedy  
change date to 2022  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.5.3 P34 L29 # 103  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
Fig 34 is not legible, due to small font sizes throughout figure  
SuggestedRemedy  
Increase font size of note if possible  
Proposed Response Response Status W  
ACCEPT

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.5.3 P35 L4 # 54

Hajduczenia, Marek

Charter Communications

Comment Type TR Comment Status X Bucket

"5.3 GB and is forecasted to grow to 257.1 GB" - that is completely unrealistic, considering that most people are sitting on monthly caps of a few GB per line and such a dramatic increase in monthly usage would trigger major costs for mobile operators and in turns - increase mobile connection costs

SuggestedRemedy

While I understand conclusions are drawn fro the figure, this conclusion is disjoint from reality of things.

Proposed Response Response Status W

ACCEPT IN PRINCIPLE

The original presentation of material ([http://www.ieee802.org/3/B10K/public/18\\_05/dambrosia\\_b10k\\_09\\_0518.pdf](http://www.ieee802.org/3/B10K/public/18_05/dambrosia_b10k_09_0518.pdf)) and the cited source for the information was reviewed. In the original cited source, the graph is embedded twice, Fig 10 and A2.6. In Figure 10 it is labeled as "Estimations of global mobile traffic per subscriptions per month from 2020 to 2030" and in Fig A2.6, it is labeled as "Estimation of mobile traffic consumed per subscriptions per month in China in 2020-2030". Review of the supporting text for Fig A2.6, however, indicates different (higher) numbers than what is shown in the figure. Due to the wrong quoted numbers it is believed that Fig 33 in the BWA is actually Fig 10 (global) in the cited source. The source defines the estimation as "using a method based on the estimated results of global mobile traffic divided by global mobile subscriptions (M2M traffic was not included)."

1. Change title of Fig 33 to  
Estimations of global mobile traffic per subscriptions per month from 2020 to 2030  
(M2M not included)

2. replace first sentence of 3.5.3 with  
Figure 33 is an estimate of mobile traffic consumed per subscription per month globally. The estimate uses a method based on the estimated results of global mobile traffic divided by global mobile subscriptions (M2M traffic was not included). In 2020 the amount of traffic per month is 5.3 GB and is forecasted to grow to 257.1 GB by 2030 for a CAGR of 47 %.

CI 3 SC 3.5.4 P36 L28 # 104

D'Ambrosia, John

Futurewei, US Subsidiary of Huawei

Comment Type E Comment Status X Bucket

Fig 36 is not legible, due to small font sizes throughout figure

SuggestedRemedy

Increase font sizes where possible

Proposed Response Response Status W

ACCEPT

CI 3 SC 3.5.4 P36 L45 # 55

Hajduczenia, Marek

Charter Communications

Comment Type ER Comment Status X Bucket

That is a long time into the future: 20220 - should be 2022? Right

SuggestedRemedy

Per comment

Proposed Response Response Status W

ACCEPT IN PRINCIPLE

Replace 2012 with 2022

CI 3 SC 3.5.4 P37 L6 # 56

Hajduczenia, Marek

Charter Communications

Comment Type TR Comment Status X Bucket

Table 9 shows "negative" capacity change - does it mean networks will be retired? This is confusing

SuggestedRemedy

Add a statement or two explaining what a negative capacity growth means

Proposed Response Response Status W

ACCEPT IN PRINCIPLE

As noted in text prior to table 9 - It was noted that metro-capacity of service provider networks is growing faster than core- capacity and will account for a third of total service provider network capacity by 20220 See Table 9.

The negative number shown merely shows that Core-regioinal and core-cross-country accounts for less of the service provider network capacity in 2022 as compared to 2017.

Change font color for negative numbers from red to black.

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 3 SC 3.5.4 P37 L8 # 105  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type ER Comment Status X Bucket  
Use of colored fonts should be minimized per IEEE Style Guideline  
SuggestedRemedy  
change red fonts in Table 9 to black  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Change the red fonts to black

CI 3 SC 3.5.5 P37 L22 # 57  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
No units in Table 10 -I assume these are TB? Is this data aggregate for the year? Peak rate? Something else?  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
The table shows the number of IX's in each region.  
Change "the growth of IPXs" to "the number of IXP's"

CI 3 SC 3.5.5 P38 L1 # 106  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
Fig 37 is difficult to read due to small size  
SuggestedRemedy  
increase size of figure and fonts if possible.  
Proposed Response Response Status W  
ACCEPT

CI 3 SC 3.5.5 P38 L26 # 58  
Hajduczenia, Marek Charter Communications  
Comment Type TR Comment Status X Bucket  
"it continues  
at this trend line the forecasted peak capacity would be at ~50 Tb/s in 2012." - likely 2022 and not 2012?  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Replace 2012 with 2022

CI 3 SC 3.5.5.2 P41 L26 # 59  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
What is the purpose of placing that much text in ()? :(For "traffic" only 60 % of the ASNs reported their AS's associated traffic. It should also be noted that the traffic categories provided are specified by PeeringDB.)  
It is also not clear that "AS" is - Autonomous System?  
SuggestedRemedy  
Remove () around text, expand on what "AS" is  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
1. remove brackets from around sentence  
2. replace "AS's" with "ASNs"

CI 3 SC 3.5.5.2 P41 L36 # 107  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type ER Comment Status X Bucket  
Figs 44, 45, and 46 each have two plots per the figure, making it very difficult to read.  
SuggestedRemedy  
break the two plots per figure into separate figures to make more legible. Make appropriate changes to the text to point to the new two figures created from each figure.  
Proposed Response Response Status W  
ACCEPT

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 4 SC 4.2 P37 L13 # 89  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type TR Comment Status X Bucket  
The calculated 2012 Forecast for BWA 1 noted in Table 11 was calculated incorrectly. The correct # should be 50 \* 3.75 Tb/s (peak) or 187.5 Tb/s. This is significantly off from the supporting 2020 data, and is not discussed.  
SuggestedRemedy  
Change "~37.5 Tb/s" to "~187.5 Tb/s" . Updated supporting text comparing the forecast to actual data to be provided.  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Commenter needs to provide contribution

CI 4 SC 4.2 P43 L51 # 60  
Hajduczenia, Marek Charter Communications  
Comment Type E Comment Status X Bucket  
Figure 47 is bleached out - any way it could be embedded with better resolution?  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Improved figure to be added

CI 4 SC 4.2 P44 L8 # 61  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
Title of Table 11 is confusing - it says "2012 Ethernet Bandwidth Forecast Comparison", yet is shows data for 2012 and 2020, titled also BWA1 and BWA2. A better title is needed?  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Change title of Table 11 to "2012 Ethernet Bandwidth Forecast Accuracy"  
Change the 1st row of the 2nd column from "2012 Forecast (BWA1)" to "Forecast"  
Change the 1st row of the 3rd column from "2020 Data (BWA2)" to "Actual"

CI 4 SC 4.2 P44 L22 # 62  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
So many ways to reference GE speeds: 40 GigE, 100 GbE, 100G, 100 G, 40 G, etc. You have definitions up front and yet do not follow them. Align with definitions you have up front.  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Align the speed references throughout the document to the definitions

CI 4 SC 4.2 P44 L30 # 108  
D'Ambrosia, John Futurewei, US Subsidiary of Huawei  
Comment Type E Comment Status X Bucket  
Issues with Fig 48 - neither graph has a title for the Yaxis. Also font sizes are too small to allow easy reading  
SuggestedRemedy  
add y-axis and increase size of fonts  
Proposed Response Response Status W  
ACCEPT

CI 4 SC 4.3 P38 L44 # 73  
Bruckman, Leon Huawei  
Comment Type E Comment Status X Bucket  
"When considering internet users around the world, it is important to understand that the number of users and usage rate vary greatly from country." Missing text  
SuggestedRemedy  
Change to: "When considering internet users around the world, it is important to understand that the number of users and usage rate vary greatly from country to country."  
Proposed Response Response Status W  
ACCEPT

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

CI 4 SC 4.4 P46 L34 # 63  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
"Gb/S" should be "Gb/s", multiple locations  
SuggestedRemedy  
Per comment  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Standardize on Gb/s throughout the document

CI 4 SC 4.5 P39 L51 # 113  
Wang, Xinyuan Huawei Technologies  
Comment Type E Comment Status X Bucket  
Suggest to add AI application to this section  
SuggestedRemedy  
Suggest to change to:  
Other applications, such as virtual/augmented reality, connected cars and artificial intelligence represent potential bandwidth drivers. For the 2017 to 2022 period virtual/augmented reality will drive traffic growth to a 65 % CAGR, so that by 2022, there is 4.02 exabyte per month of traffic. Connected/autonomous vehicles and Artificial Intelligence are a great unknown at this time. Limited data was shared regarding the application space with no new bandwidth forecasts shared.  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Add the following sentence to end of last paragraph in 4.5  
"It is noted that this assessment is based solely on the contributions noted in 2.1. It is recognized that there are other areas, such as high performance computing and artificial intelligence, that could have significant bandwidth demand in the future."

CI 4 SC 4.5 P46 L53 # 64  
Hajduczenia, Marek Charter Communications  
Comment Type ER Comment Status X Bucket  
"exabyte" is used as "EB" in most of the document  
SuggestedRemedy  
Update for consistency  
Proposed Response Response Status W  
ACCEPT IN PRINCIPLE  
Standardized on EB throughout the document

CI 4 SC 4.6 P41 L31 # 74  
Bruckman, Leon Huawei  
Comment Type E Comment Status X Bucket  
"As noted in the first Ethernet Bandwidth Assessment, whether or not these projections are realized or not will depend, among other things, on the ability to continually drive the cost per bit falling with time." Redundant text  
SuggestedRemedy  
Change to: "As noted in the first Ethernet Bandwidth Assessment, whether these projections are realized or not will depend, among other things, on the ability to continually drive the cost per bit falling with time."  
Proposed Response Response Status W  
ACCEPT

# IEEE 802.3 BWA Part II Report D1.0 1st Task Force review comments

Cl 4	SC 4.6	P47	L5	# 65
Hajduczenia, Marek		Charter Communications		
Comment Type	TR	Comment Status	X	
<p>The one conclusion for me is that it is not possible to accommodate these capacities just the standard way we have been doing business to date. We need to go to move to DWDM multi-channel systems, stabilize for example a single wavelength 100GE design and extend its reach, and then build from there to build higher capacity systems on a single fiber pair. Such a technology is crucial for operators outside of data center applications. In most cases, operators need short to medium reach PHYs that can do 100GE serial on multi-wavelengths on a single fiber pair, crucial especially in Colo locations where fiber availability is at premium.</p>				
<p><i>SuggestedRemedy</i></p>				
<p>Consider adding an optional development path for future Ethernet where DWDM systems are used, building on proven and mature 100GE serial technology rather than go to much higher data rates and/or parallel fiber strands. These technologies are focused on data center and not regular telco enviroment outside of the data enter.</p>				
Proposed Response	Response Status W			
REJECT				
<p>The scope of this effort is to assess current industry bandwidth trends that will impact future Ethernet wireline applications. As noted in the Overview - "However, like the first Ethernet Bandwidth Assessment effort, the second assessment is focused on gathering information, and not on recommendations or the creation of a call-for-interest for the next speed of Ethernet beyond 400 GbE."</p>				

Cl 4	SC 4.6	P47	L 15	# 109
D'Ambrosia, John		Futurewei, US Subsidiary of Huawei		
Comment Type	E	Comment Status	X	Bucket
Figures 51 and 52 are difficult to read. Axis title / legend difficult to read				
SuggestedRemedy				
improve readability of graph, which should include increasing size of fonts and perhaps moving legend to bottom of figure.				
Proposed Response		Response Status W		
ACCEPT				

Cl 6	SC 6	P43	L21	# 114
Wang, Xinyuan		Huawei Technologies		
Comment Type	E	Comment Status	X	Bucket
Add contribution presented at Ad Hoc on Dec 17th				
SuggestedRemedy				
[23] Xinyuan Wang, "Observation on the Rate of Beyond 400GbE" <a href="http://www.ieee802.org/3/ad_hoc/ngrates/public/calls/19_1217/wang_nea_01a_191217.pdf">http://www.ieee802.org/3/ad_hoc/ngrates/public/calls/19_1217/wang_nea_01a_191217.pdf</a>				
Proposed Response	Response Status W			
REJECT				
The noted meeting was not a presentation to the Bandwidth Assessment activity, but was part of another NEA activity on looking at speeds beyond 400 GbE.				