Cl **FM**   *SC* **FM**   *P* **1**   *L* **1**   # 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* **O**

Cl **FM**   *SC* **FM**   *P* **1**   *L* **16**   # 88

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **ER**   *Comment Status* **X**

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* **O**

Cl **FM**   *SC* **FM**   *P* **1**   *L* **17**   # 1

Hajduczenia, Marek   Charter Communications

Comment Type **E**   *Comment Status* **X**

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* **O**

Cl **FM**   *SC* **FM**   *P* **5**   *L* **9**   # 76

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **ER**   *Comment Status* **X**

Entries for Table 10 and Table 9 are out of order

SuggestedRemedy

reverse order of Table 9 and 10.

Proposed Response   *Response Status* **O**

Cl **FM**   *SC* **FM**   *P* **7**   *L* **3**   # 2

Hajduczenia, Marek   Charter Communications

Comment Type **E**   *Comment Status* **X**   *Bucket*

One too many Es in IEEEE

SuggestedRemedy

Change IEEEE to IEEE

Proposed Response   *Response Status* **O**

Cl **FM**   *SC* **FM**   *P* **18**   *L* **18**   # 77

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **TR**   *Comment Status* **X**

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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **FM**
SC **FM**

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Cl **FM** *SC* **FM** *P* **18** *L* **24** # 78

D'Ambrosia, John Futurewei, US Subsidiary of Huawei

Comment Type **TR** *Comment Status* **X**

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 lage 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* **O**

Cl **00** *SC* **0** *P* **14** *L* **12** # 83

D'Ambrosia, John Futurewei, US Subsidiary of Huawei

Comment Type **ER** *Comment Status* **X**

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* **O**

Cl **00** *SC* **0** *P* **25** *L* **40** # 97

D'Ambrosia, John Futurewei, US Subsidiary of Huawei

Comment Type **ER** *Comment Status* **X**

"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* **O**

Cl **2** *SC* **2.1** *P* **3** *L* **15** # 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* **O**

Cl **2** *SC* **2.1** *P* **9** *L* **22** # 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* **O**

Cl **2** *SC* **2.1** *P* **9** *L* **23** # 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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **2**
SC **2.1**

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Cl **2**　　　*SC* **2.1**　　　　　*P* **9**　　　*L* **24**　　　# 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* **O**

Cl **2**　　　*SC* **2.1**　　　　　*P* **9**　　　*L* **32**　　　# 81

D'Ambrosia, John　　　　　　　Futurewei, US Subsidiary of Huawei

Comment Type **ER**　　*Comment Status* **X**

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* **O**

Cl **2**　　　*SC* **2.1**　　　　　*P* **9**　　　*L* **36**　　　# 8

Hajduczenia, Marek　　　　　　　Charter Communications

Comment Type **E**　　*Comment Status* **X**

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* **O**

Cl **2**　　　*SC* **2.1**　　　　　*P* **9**　　　*L* **37**　　　# 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* **O**

Cl **2**　　　*SC* **2.1**　　　　　*P* **9**　　　*L* **39**　　　# 7

Hajduczenia, Marek　　　　　　　Charter Communications

Comment Type **ER**　　*Comment Status* **X**

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* **O**

Cl **2**　　　*SC* **2.1**　　　　　*P* **9**　　　*L* **46**　　　# 79

D'Ambrosia, John　　　　　　　Futurewei, US Subsidiary of Huawei

Comment Type **ER**　　*Comment Status* **X**

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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **2**
SC **2.1**

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Cl **2** *SC* **2.1** *P* **9** *L* **55** # 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* **O**

Cl **2** *SC* **2.2** *P* **10** *L* **22** # 80

D'Ambrosia, John Futurewei, US Subsidiary of Huawei

Comment Type **ER** *Comment Status* **X**

Formatting bullets incorrect

SuggestedRemedy

correct formatting of bullets

Proposed Response *Response Status* **O**

Cl **2** *SC* **2.2** *P* **10** *L* **28** # 10

Hajduczenia, Marek Charter Communications

Comment Type **ER** *Comment Status* **X**

The relationshoo between NEA and BWA is not explained, yet they are used intechangeably 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* **O**

Cl **3** *SC* **3.1** *P* **10** *L* **53** # 11

Hajduczenia, Marek Charter Communications

Comment Type **E** *Comment Status* **X**

Any link to "2007 IEEE 802.3 Higher Speed Study Group (HSSG) Tutorial"?

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

Cl **3** *SC* **3.1** *P* **11** *L* **15** # 12

Hajduczenia, Marek Charter Communications

Comment Type **E** *Comment Status* **X**

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* **O**

Cl **3** *SC* **3.2** *P* **11** *L* **22** # 13

Hajduczenia, Marek Charter Communications

Comment Type **ER** *Comment Status* **X**

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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.2**

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Cl **3**	*SC* **3.2**	*P* **11**	*L* **23**	# 14

Hajduczenia, Marek   Charter Communications

Comment Type   **ER**   *Comment Status* **X**

"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* **O**

Cl **3**	*SC* **3.2.1**	*P* **5**	*L* **15**	# 115

Trowbridge, Steve   Nokia

Comment Type   **ER**   *Comment Status* **X**

Spurious commas, missing digit Internet Users for Japan for 2000, 2019

SuggestedRemedy

Insert the missing digits, remove the spurious commas

Proposed Response   *Response Status* **O**

Cl **3**	*SC* **3.2.1**	*P* **5**	*L* **16**	# 116

Trowbridge, Steve   Nokia

Comment Type   **ER**   *Comment Status* **X**

Spurious comma, missing digit Internet users for Nigeria 2019

SuggestedRemedy

Insert the missing digit, remove the spurious comma

Proposed Response   *Response Status* **O**

Cl **3**	*SC* **3.2.1**	*P* **5**	*L* **27**	# 117

Trowbridge, Steve   Nokia

Comment Type   **ER**   *Comment Status* **X**

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* **O**

Cl **3**	*SC* **3.2.1**	*P* **5**	*L* **45**	# 118

Trowbridge, Steve   Nokia

Comment Type   **ER**   *Comment Status* **X**

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* **O**

Cl **3**	*SC* **3.2.1**	*P* **5**	*L* **45**	# 66

Bruckman, Leon   Huawei

Comment Type   **E**   *Comment Status* **X**

"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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.2.1**

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Cl **3**   *SC* **3.2.1**   *P* **6**   *L* **32**   # 67

Bruckman, Leon   Huawei

Comment Type   **E**   *Comment Status* **X**

In Figure 2: What is "Global penetration by region"?

SuggestedRemedy

Define the term or remove it

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.2.1**   *P* **11**   *L* **28**   # 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* **O**

Cl **3**   *SC* **3.2.1**   *P* **11**   *L* **49**   # 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* **O**

Cl **3**   *SC* **3.2.1**   *P* **11**   *L* **49**   # 16

Hajduczenia, Marek   Charter Communications

Comment Type   **ER**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.2.1**   *P* **12**   *L* **1**   # 18

Hajduczenia, Marek   Charter Communications

Comment Type   **ER**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.2.1**   *P* **12**   *L* **5**   # 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* **O**

Cl **3**   *SC* **3.2.1**   *P* **12**   *L* **7**   # 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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.2.1**

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Cl **3** *SC* **3.2.1** *P* **12** *L* **42** # 19

Hajduczenia, Marek Charter Communications

Comment Type **ER** *Comment Status* **X**

"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* **O**

Cl **3** *SC* **3.2.1** *P* **13** *L* **2** # 82

D'Ambrosia, John Futurewei, US Subsidiary of Huawei

Comment Type **E** *Comment Status* **X**

Figures 1 & 2 are difficult to read with colored backgrounds

SuggestedRemedy

Redo graphs without colored background

Proposed Response *Response Status* **O**

Cl **3** *SC* **3.2.2** *P* **14** *L* **1** # 23

Hajduczenia, Marek Charter Communications

Comment Type **TR** *Comment Status* **X**

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 bandwith 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* **O**

Cl **3** *SC* **3.2.2** *P* **14** *L* **5** # 22

Hajduczenia, Marek Charter Communications

Comment Type **E** *Comment Status* **X**

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* **O**

Cl **3** *SC* **3.3** *P* **14** *L* **50** # 84

D'Ambrosia, John Futurewei, US Subsidiary of Huawei

Comment Type **E** *Comment Status* **X**

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* **O**

Cl **3** *SC* **3.3.1** *P* **10** *L* **4** # 68

Bruckman, Leon Huawei

Comment Type **E** *Comment Status* **X**

"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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.3.1**

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Cl **3**   *SC* **3.3.1**   *P* **15**   *L* **16**   # 85

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type   **ER**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.3.1**   *P* **15**   *L* **21**   # 24

Hajduczenia, Marek   Charter Communications

Comment Type   **ER**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.3.1**   *P* **15**   *L* **40**   # 25

Hajduczenia, Marek   Charter Communications

Comment Type   **ER**   *Comment Status* **X**

What is "M2M module"?

SuggestedRemedy

Explain or change to M2M

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.3.1**   *P* **15**   *L* **46**   # 26

Hajduczenia, Marek   Charter Communications

Comment Type   **ER**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.3.1**   *P* **15**   *L* **52**   # 27

Hajduczenia, Marek   Charter Communications

Comment Type   **T**   *Comment Status* **X**

"… 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* **O**

Cl **3**   *SC* **3.3.1**   *P* **15**   *L* **53**   # 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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.3.1**

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Cl **3** *SC* **3.3.1** *P* **16** *L* **10** # 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* **O**

Cl **3** *SC* **3.3.1** *P* **16** *L* **17** # 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* **O**

Cl **3** *SC* **3.3.1** *P* **16** *L* **38** # 31

Hajduczenia, Marek Charter Communications

Comment Type **TR** *Comment Status* **X**

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* **O**

Cl **3** *SC* **3.3.1** *P* **17** *L* **3** # 32

Hajduczenia, Marek Charter Communications

Comment Type **ER** *Comment Status* **X**

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* **O**

Cl **3** *SC* **3.3.2** *P* **17** *L* **23** # 86

D'Ambrosia, John Futurewei, US Subsidiary of Huawei

Comment Type **ER** *Comment Status* **X**

Formatting bullets incorrect

SuggestedRemedy

correct formatting of bullets

Proposed Response *Response Status* **O**

Cl **3** *SC* **3.3.2** *P* **17** *L* **23** # 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)" n both instances and the associated Table on the next page

SuggestedRemedy

Per comment

Proposed Response *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.3.2**

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Cl **3**   *SC* **3.3.2**   *P***17**   *L***33**   # 34

Hajduczenia, Marek   Charter Communications

Comment Type **ER**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.3.2**   *P***18**   *L***15**   # 35

Hajduczenia, Marek   Charter Communications

Comment Type **ER**   *Comment Status* **X**

Figure 9 uses three colors in legend and gray seems to imply 100M+ range, while the atual bars use green color?

SuggestedRemedy

Align color on Figure

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.3.2.1**   *P***11**   *L***33**   # 69

Bruckman, Leon   Huawei

Comment Type **E**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.3.2.1**   *P***18**   *L***50**   # 90

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **E**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.3.2.1**   *P***19**   *L***1**   # 91

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **E**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.3.2.2**   *P***19**   *L***42**   # 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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.3.2.2**

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Cl **3**   *SC* **3.3.2.3**   *P* **13**   *L* **42**   # 70

Bruckman, Leon   Huawei

Comment Type   **E**   *Comment Status* **X**

"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* **O**

Cl **3**   *SC* **3.3.2.3**   *P* **20**   *L* **26**   # 38

Hajduczenia, Marek   Charter Communications

Comment Type   **TR**   *Comment Status* **X**

Nowehere 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* **O**

Cl **3**   *SC* **3.3.2.3**   *P* **20**   *L* **35**   # 92

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type   **E**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.3.2.3**   *P* **20**   *L* **36**   # 37

Hajduczenia, Marek   Charter Communications

Comment Type   **E**   *Comment Status* **X**

Extra space ahead of "Figure 14"

SuggestedRemedy

Remove extra space

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.3.2.3**   *P* **21**   *L* **1**   # 93

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type   **E**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.3.2.3**   *P* **21**   *L* **21**   # 39

Hajduczenia, Marek   Charter Communications

Comment Type   **TR**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.3.2.3**   *P* **22**   *L* **25**   # 94

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type   **E**   *Comment Status* **X**

Fig 15 is difficult to read due to colored background

SuggestedRemedy

Improve quality of figure if possible

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.3.2.3**

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Cl **3**　　*SC* **3.3.2.4**　　　*P* **22**　　*L* **51**　　# 40

Hajduczenia, Marek　　　　　Charter Communications

Comment Type　**E**　　*Comment Status*　**X**

"solutions will satisfy industry needs until 2025" - it would be good to add the reference

SuggestedRemedy

Per comment

Proposed Response　　　　*Response Status* **O**

Cl **3**　　*SC* **3.4**　　　*P* **23**　　*L* **5**　　# 41

Hajduczenia, Marek　　　　　Charter Communications

Comment Type　**ER**　　*Comment Status*　**X**

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* **O**

Cl **3**　　*SC* **3.4**　　　*P* **23**　　*L* **16**　　# 95

D'Ambrosia, John　　　　　Futurewei, US Subsidiary of Huawei

Comment Type　**E**　　*Comment Status*　**X**

Fig 16 is difficult to read due to colored background

SuggestedRemedy

Improve quality of figure if possible

Proposed Response　　　　*Response Status* **O**

Cl **3**　　*SC* **3.4**　　　*P* **24**　　*L* **1**　　# 96

D'Ambrosia, John　　　　　Futurewei, US Subsidiary of Huawei

Comment Type　**E**　　*Comment Status*　**X**

and 49

SuggestedRemedy

Improve quality of figure if possible

Proposed Response　　　　*Response Status* **O**

Cl **3**　　*SC* **3.4**　　　*P* **25**　　*L* **4**　　# 42

Hajduczenia, Marek　　　　　Charter Communications

Comment Type　**ER**　　*Comment Status*　**X**

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* **O**

Cl **3**　　*SC* **3.4.1**　　　*P* **26**　　*L* **42**　　# 43

Hajduczenia, Marek　　　　　Charter Communications

Comment Type　**ER**　　*Comment Status*　**X**

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* **O**

Cl **3**　　*SC* **3.4.1**　　　*P* **26**　　*L* **42**　　# 44

Hajduczenia, Marek　　　　　Charter Communications

Comment Type　**T**　　*Comment Status*　**X**

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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.4.1**

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Cl **3**　　*SC* **3.4.2**　　　　*P* **28**　　*L* **20**　　# 45

Hajduczenia, Marek　　　　Charter Communications

Comment Type **TR**　　*Comment Status* **X**

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* **O**

Cl **3**　　*SC* **3.4.3**　　　　*P* **21**　　*L* **50**　　# 71

Bruckman, Leon　　　　Huawei

Comment Type **E**　　*Comment Status* **X**

"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* **O**

Cl **3**　　*SC* **3.4.3**　　　　*P* **29**　　*L* **33**　　# 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* **O**

Cl **3**　　*SC* **3.4.3**　　　　*P* **29**　　*L* **33**　　# 98

D'Ambrosia, John　　　　Futurewei, US Subsidiary of Huawei

Comment Type **E**　　*Comment Status* **X**

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* **O**

Cl **3**　　*SC* **3.4.3**　　　　*P* **29**　　*L* **38**　　# 119

Trowbridge, Steve　　　　Nokia

Comment Type **ER**　　*Comment Status* **X**

All bulleted items in the 2012 column have a spurious "o" at the front

SuggestedRemedy

Remove the spurious "o"s

Proposed Response　　*Response Status* **O**

Cl **3**　　*SC* **3.4.3**　　　　*P* **30**　　*L* **1**　　# 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* **O**

Cl **3**　　*SC* **3.4.3**　　　　*P* **30**　　*L* **29**　　# 48

Hajduczenia, Marek　　　　Charter Communications

Comment Type **E**　　*Comment Status* **X**

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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected　　RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.4.3**

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Cl **3**   *SC* **3.4.4**   *P* **23**   *L* **31**   # 112

Wang, Xinyuan   Huawei Technologies

Comment Type **E**   *Comment Status* **X**

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

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.5**   *P* **23**   *L* **36**   # 72

Bruckman, Leon   Huawei

Comment Type **E**   *Comment Status* **X**

"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* **O**

Cl **3**   *SC* **3.5**   *P* **24**   *L* **21**   # 110

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **TR**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.5**   *P* **31**   *L* **22**   # 49

Hajduczenia, Marek   Charter Communications

Comment Type **TR**   *Comment Status* **X**

"that bandwidth growth will continue upward" - do you mean that volume continues to grow (not sure what "upward" means then) or that the groth rate accerelates (in which case "upward" should be removed and groth acceleration should be clarified)

SuggestedRemedy

Per comment

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.5**   *P* **31**   *L* **25**   # 50

Hajduczenia, Marek   Charter Communications

Comment Type **E**   *Comment Status* **X**

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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **3**   Page 14 of 20
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **3.5**   12/23/2019 8:30:03 AM
SORT ORDER: Clause, Subclause, page, line

Cl **3**   *SC* **3.5.1**   *P* **31**   *L* **50**   # 99

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type   **E**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.5.1**   *P* **31**   *L* **52**   # 51

Hajduczenia, Marek   Charter Communications

Comment Type   **ER**   *Comment Status* **X**

No other figures are marketed this way - remove any references to where these two figures came from, they already have reference pointingto the original contribution

SuggestedRemedy

Per comment

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.5.1**   *P* **32**   *L* **2**   # 100

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type   **E**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.5.1**   *P* **32**   *L* **33**   # 101

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type   **E**   *Comment Status* **X**

Legibility of note at bottom of Fig 28 is limited.

SuggestedRemedy

Increase font size of note if possible

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.5.1**   *P* **33**   *L* **38**   # 52

Hajduczenia, Marek   Charter Communications

Comment Type   **TR**   *Comment Status* **X**

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 comtext to appreciate what it shows versus what is currently shown on page 32.

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.5.1**   *P* **34**   *L* **7**   # 102

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type   **E**   *Comment Status* **X**

Fig 31 is difficult to read due to small font size

SuggestedRemedy

Increase font size of note if possible

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.5.1**

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Cl **3**　　　*SC* **3.5.1**　　　　　*P* **34**　　　*L* **25**　　　# 53

Hajduczenia, Marek　　　　　Charter Communications

Comment Type **TR**　　*Comment Status* **X**

Figure 31 is confusing as well - what is "number of connections" in terms of ASN-2-ASN traffic? Numbe rof 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 tarffic flow, etc. Again, no word on that is means and how to interpret this.

Proposed Response　　　　*Response Status* **O**

Cl **3**　　　*SC* **3.5.3**　　　　　*P* **35**　　　*L* **4**　　　# 54

Hajduczenia, Marek　　　　　Charter Communications

Comment Type **TR**　　*Comment Status* **X**

"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* **O**

Cl **3**　　　*SC* **3.5.3**　　　　　*P* **31**　　　*L* **48**　　　# 75

Malicoat, David　　　　　Senko

Comment Type **E**　　*Comment Status* **X**　　　　　*Bucket*

date 2012 is incorrect

SuggestedRemedy

change date to 2022

Proposed Response　　　　*Response Status* **O**

Cl **3**　　　*SC* **3.5.4**　　　　　*P* **36**　　　*L* **28**　　　# 104

D'Ambrosia, John　　　　　Futurewei, US Subsidiary of Huawei

Comment Type **E**　　*Comment Status* **X**

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

SuggestedRemedy

Increase font sizes where possible

Proposed Response　　　　*Response Status* **O**

Cl **3**　　　*SC* **3.5.3**　　　　　*P* **34**　　　*L* **29**　　　# 103

D'Ambrosia, John　　　　　Futurewei, US Subsidiary of Huawei

Comment Type **E**　　*Comment Status* **X**

Fig 34 is not legible, due to small font sizes throughout figure

SuggestedRemedy

Increase font size of note if possible

Proposed Response　　　　*Response Status* **O**

Cl **3**　　　*SC* **3.5.4**　　　　　*P* **36**　　　*L* **45**　　　# 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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **3**
SC **3.5.4**

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Cl **3**   *SC* **3.5.4**   *P* **37**   *L* **6**   # 56

Hajduczenia, Marek   Charter Communications

Comment Type **TR**   *Comment Status* **X**

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 capaity growth means

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.5.4**   *P* **37**   *L* **8**   # 105

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **ER**   *Comment Status* **X**

Use of colored fonts should be minimized per IEEE Style Guideline

SuggestedRemedy

change red fonts in Table 9 to black

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.5.5**   *P* **37**   *L* **22**   # 57

Hajduczenia, Marek   Charter Communications

Comment Type **ER**   *Comment Status* **X**

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* **O**

Cl **3**   *SC* **3.5.5**   *P* **38**   *L* **1**   # 106

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **E**   *Comment Status* **X**

Fig 37 is difficult to read due to small size

SuggestedRemedy

increase size of figure and fonts if possible.

Proposed Response   *Response Status* **O**

Cl **3**   *SC* **3.5.5**   *P* **38**   *L* **26**   # 58

Hajduczenia, Marek   Charter Communications

Comment Type **TR**   *Comment Status* **X**

"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* **O**

Cl **3**   *SC* **3.5.5.2**   *P* **41**   *L* **26**   # 59

Hajduczenia, Marek   Charter Communications

Comment Type **E**   *Comment Status* **X**

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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general   *Cl* **3**   Page 17 of 20
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn   *SC* **3.5.5.2**   12/23/2019 8:30:03 AM
SORT ORDER: Clause, Subclause, page, line

Cl **3**   *SC* **3.5.5.2**   *P* **41**   *L* **36**   # 107

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **ER**   *Comment Status* **X**

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* **O**

Cl **4**   *SC* **4.2**   *P* **37**   *L* **13**   # 89

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **TR**   *Comment Status* **X**

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* **O**

Cl **4**   *SC* **4.2**   *P* **43**   *L* **51**   # 60

Hajduczenia, Marek   Charter Communications

Comment Type **E**   *Comment Status* **X**

Figure 47 is bleached out - any way it could be embedded with better resolution?

SuggestedRemedy

Per comment

Proposed Response   *Response Status* **O**

Cl **4**   *SC* **4.2**   *P* **44**   *L* **8**   # 61

Hajduczenia, Marek   Charter Communications

Comment Type **ER**   *Comment Status* **X**

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* **O**

Cl **4**   *SC* **4.2**   *P* **44**   *L* **22**   # 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 defintions up front and yet do not follow them. Align with definitions you have up front.

SuggestedRemedy

Per comment

Proposed Response   *Response Status* **O**

Cl **4**   *SC* **4.2**   *P* **44**   *L* **30**   # 108

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type **E**   *Comment Status* **X**

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* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **4**
SC **4.2**

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Cl **4**   *SC* **4.3**   *P* **38**   *L* **44**   # 73

Bruckman, Leon   Huawei

Comment Type **E**   *Comment Status* **X**

"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* **O**

Cl **4**   *SC* **4.4**   *P* **46**   *L* **34**   # 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* **O**

Cl **4**   *SC* **4.5**   *P* **39**   *L* **51**   # 113

Wang, Xinyuan   Huawei Technologies

Comment Type **E**   *Comment Status* **X**

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* **O**

Cl **4**   *SC* **4.5**   *P* **46**   *L* **53**   # 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* **O**

Cl **4**   *SC* **4.6**   *P* **41**   *L* **31**   # 74

Bruckman, Leon   Huawei

Comment Type **E**   *Comment Status* **X**

"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* **O**

Cl **4**   *SC* **4.6**   *P* **47**   *L* **5**   # 65

Hajduczenia, Marek   Charter Communications

Comment Type **TR**   *Comment Status* **X**

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 avaliabilty is at premium.

SuggestedRemedy

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 technlogies are focused on data center and not regular telco enviroment outside of the data enter.

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general
COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn
SORT ORDER: Clause, Subclause, page, line

Cl **4**
SC **4.6**

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Cl **4**   *SC* **4.6**   *P* **47**   *L* **15**   # 109

D'Ambrosia, John   Futurewei, US Subsidiary of Huawei

Comment Type   **E**   *Comment Status* **X**

    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* **O**

Cl **6**   *SC* **6**   *P* **43**   *L* **21**   # 114

Wang, Xinyuan   Huawei Technologies

Comment Type   **E**   *Comment Status* **X**

    Add contribution presented at Ad Hoc on Dec 17th

SuggestedRemedy

    [23] Xinyuan Wang, "Observation on the Rate of Beyond 400GbE"
    http://www.ieee802.org/3/ad_hoc/ngrates/public/calls/19_1217/wang_nea_01a_191217.pdf

Proposed Response   *Response Status* **O**

TYPE: TR/technical required ER/editorial required GR/general required T/technical E/editorial G/general

COMMENT STATUS: D/dispatched A/accepted R/rejected   RESPONSE STATUS: O/open W/written C/closed Z/withdrawn

SORT ORDER: Clause, Subclause, page, line

Cl **6**
SC **6**

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