Cl **30** *SC* **30.2.5** *P* **24** *L* **30** # I-69

Ran, Adee Cisco Systems, Inc.

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

Table 30-6 is in subclause 30.2.5, which is not listed in this draft. The table looks as if it is part of the last subclause mentioned, 30.13.1.16.

"Update" is not a valid editorial instruction.

In the table, the new column heading "Support for Time Sync (optional)" is not underlined, and the cell borders look weird.

SuggestedRemedy

Add the subclause heading "30.2.5 Capabilities" before the table.

Change instruction to "Change Table 30-6 as shown below".

Apply underline to the new column heading and clean up the cell borders.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1** *P* **26** *L* **20** # I-29

Law, David Hewlett Packard Enterprise

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

While 'x though y' is American English, and I may not understand its use correctly, I thought it was used for sequences for three or more values, not for just two values.

SuggestedRemedy

Change '1.1809 through 1.1810' to read '1.1809 and 1.1810' in table 45-3.
Change '1.1811 through 1.1812' to read '1.1811 and 1.1812' in table 45-3.
Change '1.1809 through 1.1810' to read '1.1809 and 1.1810' in table 90-1.
Change 'through' to read 'and' in the eleven other instances in table 90-1 of adjacently number registers.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.1.175** *P* **26** *L* **35** # I-70

Ran, Adee Cisco Systems, Inc.

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

The hyphen before "see 90.7" is a separator, and should be an en dash.

Preferably, make it a separate sentence to break up the very long text.

Similarly in 45.2.2.20, 45.2.3.67, perhaps others.

SuggestedRemedy

Change
"in registers 1.1811 and 1.1812) - see 90.7."
to
"in registers 1.1811 and 1.1812). See 90.7."

Change other instances as appropriate with editorial license.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

In 45.2.1.175, changed
"in registers 1.1811 and 1.1812) - see 90.7."
to
"in registers 1.1811 and 1.1812). See 90.7."

Appled similar changes to 45.2.2.20, 45.2.4.28, 45.2.6.14.

Cl **45** *SC* **45.2.1.175** *P* **27** *L* **8** # I-71

Ran, Adee Cisco Systems, Inc.

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

In Table 45–139, rows 3-4 (bits 1 and 0), the value 0 is described as "PMA/PMD does not provide information on transmit path data delay"

45.2.1.176 states that "If any of the two register sets are not valid, then the value corresponding to the invalid register set is not included in the maximum PMA/PMD transmit path data delay" - so it is possible that there is no information in ns resolution but there is information in sub-ns resolution.

Note that in the corresponding Table 45–293 (PCS), these bits are described as being only related to delay "with ns resolution" (this is new text but isn't underlined).

Similarly for these two rows in Table 45–230, Table 45–336, Table 45–361, Table 45–375.

SuggestedRemedy

Insert "with ns resolution" at the end of the text in the rows for bits 0 and 1 in Table 45–139 and other tables listed in the comment.

In Table 45–293, apply underline to the newly inserted text "with ns resolution" (4 times).

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Inserted "with ns resolution" at the end of the text in the rows for bits 0 and 1 in Table 45–139, Table 45–230, Table 45–336, Table 45–361, Table 45–375.

In Table 45–293, applied underline to the newly inserted text "with ns resolution" (4 times).

Cl **45** *SC* **45.2.1.176** *P* **27** *L* **29** # I-68

Law, David Hewlett Packard Enterprise

Comment Type **ER** *Comment Status* **A** *Edits to 90.7*

The changes to subclause 45.2.1.176 'TimeSync PMA/PMD transmit path data delay (registers 1.1801, 1.1802, 1.1803, 1.1804, 1.1809, and 1.1810)' and other path data delay register descriptions, are added a cross-reference to subclause 90.7. On review of subclause 90.7, I didn't see any mention of the individual path data delay values until the twelfth (fourth to last paragraph) paragraph of the subclause. Due to these cross-references, and because I believe use of these path data delay values are a fundamental component of the overall PHY data delay shown in figure 90-5, I suggest that this paragraph and associated notes be moved towards the start of subclause 90.7.

Note: I have submitted another comment to change the fourth to last paragraph of 90.7, as well as to move it towards the start of subclause. If these changes are rejected, I still suggest moving this paragraph towards the start of subclause.

SuggestedRemedy

Move the fourth to last paragraph of 90.7, along with notes 4 and 5, to be the second paragraph of subclause 90.7.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

The text used for the beginning portion of 90.7 is given below. It incorporates solutions for comments I-68, I-65, I-66, I-20, and I-21.

==========

The TimeSync capability uses egress and ingress times captured at the xMII and makes use of transmit and receive path data delay measurements, as shown in Figure 90-5, to estimate the corresponding egress and ingress times at the MDI.
The path data delay measurements are based on a data delay measurement point in the packet. This point shall be either the beginning of the SFD or the beginning of the first symbol after the SFD (see 45.2.3.69a). The choice of the data delay measurement point is implementation-dependent and does
not change until the PHY is reset or powered down.
<text of NOTE 1 was not unchanged>
<moved Figure 90-5 to this location>
The transmit path data delay is defined as the time it takes for a packet's data delay measurement point to pass from the xMII input to the MDI output. The receive path data delay is defined as the time it takes for a packet's data delay measurement point to pass from the MDI input to the xMII output.
To obtain the egress or ingress time of the path data delay measurement point of a packet at the MDI, the TimeSync Client adjusts the egress or ingress time that it captured for the data delay measurement point of the packet at the xMII by the path data delay, if available (see Figure 90-5), and the dynamic path data delay, if supplied (see 90.4.2). The accuracy of the calculated egress or ingress time at the MDI is therefore dependent on the accuracy of the transmit and receive path data delay values, if available, and of the dynamic path

data delay, if supplied.
To support the calculation of the path data delay, each MMD within a PHY may provide up to two quartets of values, one quartet provides the integer nanoseconds portion, the other quartet provides the fractional nanoseconds portion. Each quartet consists of two pairs of values, the maximum transmit path data delay and the minimum transmit path data delay, and the maximum receive path data delay and the minimum receive path data delay. The provision by an MMD of either pair of values for either portion is independently optional. A single quartet of values for the PHY data delay may be obtained by summing together the values, if available, of each corresponding member of both quartets for each MMD.
<text of NOTE 4 was not unchanged>
<text of NOTE 5 was not unchanged>

Cl **45** *SC* **45.2.1.176** *P* **27** *L* **33** # I-67

Law, David Hewlett Packard Enterprise

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

Subclause 45.2.1.176 'TimeSync PMA/PMD transmit path data delay (registers 1.1801, 1.1802, 1.1803, 1.1804, 1.1809, and 1.1810)' says that 'The maximum PMA/PMD transmit path data delay value is given in two sets of registers. The first set (registers 1.1801 and 1.1802, see Table 45–140) ...' and 'The second set (register 1.1809, see Table 45–140) ...'. I don't think a single register is normally reference to as a 'set'.

SuggestedRemedy

Suggest that the following changes are made to the third and fourth paragraphs of subclauses 45.2.1.176, 45.2.1.177, 45.2.2.21, 45.2.2.22, 45.2.3.68, 45.2.3.69, 45.2.4.29, 45.2.4.30, 45.2.5.29, 45.2.5.30, 45.2.6.15 and 45.2.6.16.

From:

'... is given in two sets of registers. The first set (registers ...) gives the integer nanoseconds portion ... The second set (register ...) gives the fractional nanoseconds portion ... If both sets of registers are valid ... from these two sets of registers. If any of the two register sets are not valid ... to the invalid register set is ...'

To:

'... is provided in two components. The first component (registers ....) provides the integer nanoseconds portion ... The second component (register ...) provides the fractional nanoseconds portion ... If both components are valid ... from these two components. If either of the two components is not valid ... to the invalid component is ...'.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.67.1** *P* **34** *L* **32** # I-30

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A**

The first sentence of the first paragraph of subclause 45.2.3.67.1 'SFD data delay measurement point (3.1800.13)' says 'When read as a zero, bit 3.1800.13 indicates that the PCS does not support the use of the beginning of the SFD as the data delay measurement ...' It then, however, the first sentence of the last paragraph says, 'When both bits 3.1800.12 and 3.1800.13 are zero, the location of the data delay measurement point is the beginning of the SFD ...'.

It therefore seems, despite what the first sentence says, when read as a zero, bit 3.1800.13 may or may not indicate support of the beginning of the SFD as the data delay measurement point.

In addition, the first sentence of the last paragraph of Subclause 45.2.3.67.1 says 'When both bits 3.1800.12 and 3.1800.13 are zero ... the value of the register 3.1813.13 is ignored.' and 'For other cases, the location of the data delay measurement point is indicated by the value of the register 3.1813.13.'. Subclause 45.2.3.69a.1 'Data delay measurement point (3.1813.13)' however says that 'This bit has an effect only if both data delay measurement point ability bits are set to 1 in the TimeSync PCS capability register (see 45.2.3.67).'.

The latter statement in subclause 45.2.3.69a.1 seems the correct one. Unless the PCS can support both the beginning of the SFD and the first symbols after the SFD as the DDMP, the configuration bit will have no effect.

SuggestedRemedy

[1] Replace the first paragraph of subclause 45.2.3.67.1 with 'When bit 3.1800.13 is read as a one, or when both bits 3.1800.13 and 3.1800.12 are read as a zero, the PCS supports the use of the beginning of the SFD as the data delay measurement point (see 90.7) to calculate the PCS path data delays.'.

[2] Replace the second paragraph of subclause 45.2.3.67.1 with 'When bit 3.1800.13 is read as a zero, and bit 3.1800.12 is read as a one, the PCS does not support the use of the beginning of the SFD as the data delay measurement point (see 90.7) to calculate the PCS path data delays.'

[3] Delete the last paragraph of subclause 45.2.3.67.1.

[4] Delete the last paragraph of subclause 45.2.3.67.2.

[5] Replace the first paragraph of subclause 45.2.5.28.1 with 'When bit 5.1800.13 is read as a one, or when both bits 5.1800.13 and 5.1800.12 are read as a zero, the PCS supports the use of the beginning of the SFD as the data delay measurement point (see 90.7) to calculate the DTE XS path data delays.'.

[6] Replace the second paragraph of subclause 45.2.5.28.1 with 'When bit 5.1800.13 is read as a zero, and bit 5.1800.12 is read as a one, the PCS does not support the use of

the beginning of the SFD as the data delay measurement point (see 90.7) to calculate the DTE XS path data delays.'.

[7] Delete the last paragraph of subclause 45.2.5.28.1.

[8] Delete the last paragraph of subclause 45.2.5.28.2.

Response *Response Status* **W**

ACCEPT.

Cl **45** *SC* **45.2.3.67.3** *P* **35** *L* **3** # I-31

Law, David Hewlett Packard Enterprise

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

Subclause 45.2.3.67.3 'Multilane ability (3.1800.11)' says that 'When read as a one, bit 3.1800.11 indicates that the PCS is able to report transmit and receive path data delays for multiple PCS lanes using the method described in 90.7 and 90A.4.'. It's not entirely clear what this is about in 90.7 or 90A.4, as neither has a cross-reference back to subclause 45.2.3.67.3 nor to register bit 3.1800.11.

Subclause 90.7 says 'For a PHY that includes an FEC and/or a PCS lane distribution function ...' that '... it is recommended that the transmit and receive path data delays be reported as if the data delay measurement point is at the start of the FEC codeword and/or multiple PCS lane distribution sequence.'.

Annexe 90A.4 says 'As explained in 90.7, the TimeSync PCS transmit path data delay register would use the greatest PCS lane distribution delay as its constant value (which corresponds to the start of the transmit PCS lane distribution function) and the TimeSync PCS receive path data delay register would use the smallest PCS lane merging delay as its constant value (which corresponds to the start of the receive PCS lane merging function).'.

Perhaps the Multilane ability bit indicates that the above recommendations in 90.7 and 90A.4 about the transmit path data delay and receive path data delay values are followed.

SuggestedRemedy

[1] In subclause 45.2.3.67.3, change the text '... using the method described in 90.7 and 90A.4.' to read '... using the method recommended in 90.7 and 90A.4.'.'.
[2] Add a cross-reference in subclause 90.7 and annexe 90A.4 along to the 'multilane ability' status.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

[1] In subclause 45.2.3.67.3, changed the text '... using the method described in 90.7 and 90A.4.' to read '... using the method recommended in 90.7 and 90A.4.'.' and applied the same change in the second paragraph of this subclause.

[2] In subclause 90.7, added "(when the multilane ability (3.1800.11) bit is set - see 45.2.3.67.3)" after "and/or multiple PCS lane distribution sequence."

[3] in subclause 90A.4, added "(when the multilane ability (3.1800.11) bit is set - see 45.2.3.67.3)" after "for the given multiple PCS lane function"

Cl **45** *SC* **45.2.3.67.4** *P* **35** *L* **10** # I-83

Law, David Hewlett Packard Enterprise

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

Please avoid the use of a bus name as a subclause title.

SuggestedRemedy

[1] Change 'NUM_BIT_CHANGE ability (3.1800.10)' to read 'PCS Dynamic Path Data Delay ability (3.1800.10)'.
[2] Change 'NUM_BIT_CHANGE' to read 'PCS Dynamic Path Data Delay' on page 24, line 23; page 34, line 5 (twice); page 34, line 6; page 35, line 9; page 35, line 12; page 67, line 24; and page 67, line 51.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

[1] Changed 'NUM_BIT_CHANGE ability (3.1800.10)' to read 'PCS Dynamic Path Data Delay ability (3.1800.10)'.
[2] Changed 'NUM_BIT_CHANGE' to read 'PCS Dynamic Path Data Delay' on page 24, line 23; page 34, line 5 (twice); page 34, line 6; page 35, line 9; page 67, line 24; and page 67, line 51.

The change on page 35, line 12 was not applied since this line identifies the NUM_BIT_CHANGE signal names and should be left as is.

Cl **45** *SC* **45.2.3.67.4** *P* **35** *L* **12** # I-73

Ran, Adee Cisco Systems, Inc.

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

"the PCS is able to report PCS Dynamic Path Data Delay (PDPDD) as TX_NUM_BIT_CHANGE and RX_NUM_BIT_CHANGE values, passed from the PCS across the xMII to the gRS"

These values are not part of any existing xMII. This amendment does not change these interfaces (as mentioned in another comment).

It would suffice to say that the PCS is able to report the values, without specifying the interface.

Also, the second paragraph says "the PCS does not support the calculation of" - inconsistent with the first.

SuggestedRemedy

Change the quoted sentence to
"the PCS is able to report PCS Dynamic Path Data Delay (PDPDD) as TX_NUM_BIT_CHANGE and RX_NUM_BIT_CHANGE values to the gRS".

In the second paragraph, change "does not support" to "is not able to report".

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.67.4** *P* **35** *L* **13** # I-72

Ran, Adee Cisco Systems, Inc.

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

TX_NUM_BIT_CHANGE and RX_NUM_BIT_CHANGE are new concepts, and are not explained. References to 90.5.3 and 90.5.4 would be useful here.

SuggestedRemedy

Insert "(see 90.5.3 and 90.5.4) after "as TX_NUM_BIT_CHANGE and RX_NUM_BIT_CHANGE values".

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.67.4** *P* **35** *L* **13** # I-77

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A**

The last sentence of the first paragraph of subclause 45.2.3.67.4 'NUM_BIT_CHANGE ability (3.1800.10)' says that 'The gRS also supports the corresponding PDPDD parameter in its TS_TX.indication and TS_RX.indication primitives.'. As the PDPDD parameter is being added by the IEEE P802.3cx project, there will be many existing gRS implementation that don't support the PDPDD parameter. Since this bit is in the PCS MMD, and an implementer a PCS that is independent of the gRS (e.g., an implementer of a discrete PHY or discrete PCS) cannot know if the implementation will eventually be paired with gRS that supports the PDPDD parameter in its TS_TX.indication and TS_RX.indication primitives.'.

SuggestedRemedy

Delete the last sentence of the first paragraph of subclause 45.2.3.67.4.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved per comment #li-73.

Cl **45** *SC* **45.2.3.69a.1** *P* **38** *L* **26** # I-62

Law, David Hewlett Packard Enterprise

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

Suggest that '... used to set the...' should be changed to read '... used to select the ...'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.3.69a.1** *P* **38** *L* **30** # I-32

Law, David Hewlett Packard Enterprise

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

Suggest that '... the first symbol after ...' should be changed to read '... beginning of the first symbol after ...'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.5.31.1** *P* **47** *L* **3** # I-63

Law, David Hewlett Packard Enterprise

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

Suggest that '... used to set the...' should be changed to read '... used to select the ...'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **45** *SC* **45.2.5.31.1** *P* **47** *L* **3** # I-27

Rodrigues, Silvana Huawei Technologies Co., Ltd

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

The following text states:
"Bit 5.1813.13 is used to set the data delay measurement point (see 90.7)."

However there is no mention of Bit 5.1813.13, neither its register.

SuggestedRemedy

Add a reference to 45.2.5.31 on page 63, line 35, so it reads:

"....SFD (see 45.2.3.69a and 45.2.5.31). ..."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Added a reference to 45.2.5.31 on page >>62<<, line 35, so it reads:

"....SFD (see 45.2.3.69a and 45.2.5.31). ..."

Cl **90** *SC* **90.4** *P* **53** *L* **31** # I-74

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A**

The replaced Figure 90–1 has signals TX_NUM_BIT_CHANGE and RX_NUM_BIT_CHANGE which appear to be part of the xMII. However, none of the xMII defined in the standard include such signals.

In 90.5.3 and 90.5.4 these signals are defined as "logical signals intended for use with an intra-chip interface. A physical instantiation of these signals is not defined" - which is inconsistent with several of the xMII definitions.

If necessary, these signals can be defined as a new optional interface, instead of changing the existing multiple xMII.

Note that in the replaced Figure 90–2 these signals do appear separatly from the xMII signals.

SuggestedRemedy

Make the dashed line under "xMII" shorter such that it does not encompass the new signals, to clarify that they are not part of the xMII interfaces.

Consider defining a new optional interface per the comment.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Made the dashed line under "xMII" shorter such that it does not encompass the new signals, to clarify that they are not part of the xMII interfaces.

Cl **90** *SC* **90.4.1.2** *P* **53** *L* **50** # I-33

Law, David Hewlett Packard Enterprise

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

Not sure why '... egress and ingress of packets provided by the TSSI, ...' is qualified by '... the event corresponding to ...'. I believe that the TSSI provides a direct indication of the egress and ingress of packets.

SuggestedRemedy

Suggest that the text 'The TimeSync Client can use the indication of the event corresponding to the egress and ingress of packets provided by the TSSI, ...' to read 'The TimeSync Client can use the indication of the egress and ingress of packets provided by the TSSI, ...'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Changed the text

'The TimeSync Client can use the indication of the event corresponding to the egress and ingress of packets provided by the TSSI, ...'

to read

'The TimeSync Client uses the indication of the egress and ingress of packets provided by the TSSI, ...'.

Cl **90** *SC* **90.4.1.2** *P* **53** *L* **50** # I-75

Ran, Adee Cisco Systems, Inc.

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

"The TimeSync Client can use the indication of the event corresponding to the egress and ingress of packets provided by the TSSI"

This is not good standard language - according to 1.1.6 Word usage, "The word can is used for statements of possibility and capability, whether material, physical, or causal (can equals is able to)."

Here, and in the remainder of this subclause, (P54 L5, L8, L11, L14), the text does not describe a capability - it describes what the TimeSync Client does (not "is able to do") and what the delay values are used for (they are not "able to be used").

SuggestedRemedy

Change "can use" to "uses", and "can be used" to "is used".

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.4.1.2** *P* **53** *L* **52** # I-34

Law, David Hewlett Packard Enterprise

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

The first paragraph of subclause 90.4.1.2 'Responsibilities of TimeSync Client' says ' The TimeSync Client ... capture the egress and ingress times of packets relevant to the protocol at the xMII'. Based on this paragraph, the TimeSync Client 'captures' egress and ingress times at the xMII.

The second paragraph, however, says, 'When the TimeSync Client captures a relevant packet egress event it can use the time of that event at the xMII, ...'. Similarly, the third paragraph says, 'When the TimeSync Client captures a relevant packet ingress event it can use the time of that event at the xMII, ...'. Based on these two paragraphs, the TimeSync Client 'captures' packet events.

The draft needs to be consistent with what is being captured by the TimeSync client, and I believe it should be the egress and ingress times at the xMII as described in the first paragraph.

SuggestedRemedy

[1] Change the text in the first sentence of the second paragraph of subclause 90.4.1.2 that reads 'When the TimeSync Client captures a relevant packet egress event, it can use the time of that event at the xMII, along with ...' to read 'When the TimeSync Client captures the egress time of a relevant packet at the xMII, it can be used along with ...'.

[2] Change the text in the first sentence of the third paragraph of subclause 90.4.1.2 that reads 'When the TimeSync Client captures a relevant packet ingress event, it can use the time of that event at the xMII, along with ...' to read 'When the TimeSync Client captures the ingress time of a relevant packet at the xMII, it can be used along with ...'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

[1] Changed the text in the first sentence of the second paragraph of subclause 90.4.1.2 that reads 'When the TimeSync Client captures a relevant packet egress event, it can use the time of that event at the xMII, along with ...' to read 'When the TimeSync Client captures the egress time of a relevant packet at the xMII, it is used along with ...'.

[2] Changed the text in the first sentence of the third paragraph of subclause 90.4.1.2 that reads 'When the TimeSync Client captures a relevant packet ingress event, it can use the time of that event at the xMII, along with ...' to read 'When the TimeSync Client captures the ingress time of a relevant packet at the xMII, it is used along with ...'.

Cl **90** *SC* **90.4.1.2** *P* **54** *L* **5** # I-2

Seaman, Michael MICK SEAMAN

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

This amendment and Clause 90 contains a wealth of fine MAC specific detail on packet transmission, consequently is not clear how other timing standards (which may support use of different MACs) should best refer to this description. Accordingly there could be some delay, discussion, and disagreement subsequent to the approval of this amendment as to how the reference should be worded. This could be avoided and clarified now by providing a translation to 802.1AS in this amendment.

SuggestedRemedy

Define the term "timestamp measurement plane" (see 802.1AS-2020 Figure 8-2, and related text) and state that, in this standard (or at least in Clause 90) it is the XMI. Similarly define the "timestamp reference plane" as (in this standard/clause) the MDI.Reference to these two planes, together with the quartets of values that express the difference (and uncertainty in the difference) between the timing observed at the measurement plane and an ideal (but not feasible) observation at the reference plane should be sufficient text for timing standards making use of this amendment. Actual text for such a reference would be useful.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Instead of defining these terms again in 802.3cx, it is easier to just correspond the 802.3 sublayers and its path data delay to the corresponding elements from 802.1AS and 1588.

Appended the following to "90.3 Relationship with other IEEE standards":

"The path data delay in this standard is illustrated in Figure 90-5 and can be corresponded to the timestamping mechanisms in IEEE Std 1588 and IEEE Std 802.1AS. The MDI of this standard corresponds to the timestamp generation reference plane in IEEE Std 1588 and IEEE Std 802.1AS.
The path data delay of the PHY RX and the PHY TX in this standard corresponds to the ingressLatency and the egressLatency, respectively, from IEEE Std 1588 and IEEE Std 802.1AS. The xMII of this standard corresponds to the timestamp measurement plane in IEEE Std 802.1AS."

Cl **90** *SC* **90.4.1.2** *P* **54** *L* **7** # I-35

Law, David Hewlett Packard Enterprise

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

Suggest that '... the egress time at the ...' should be changed to read '... the egress time of the DDMP at the ...'

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.4.1.2** *P* **54** *L* **9** # I-36

Law, David Hewlett Packard Enterprise

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

Is it correct that the difference between the maximum and minimum data delay values can be used by the TimeSync Client to 'improve' the accuracy of the calculated egress and ingress times at the MDI?

I assume that the TimeSync Client will use the mean of the maximum and minimum data delay values to adjust the captured packet ingress and egress times to calculate the packet ingress or egress time at the MDI. As a result, isn't half of the difference between the maximum and minimum data delay values the +/- maximum uncertainly for the ingress or egress time calculated at the MDI. So rather than 'improve' the accuracy, doesn't the difference provide the uncertainty of the calculated ingress and egress times?

SuggestedRemedy

[1] Change the text in the last sentence of the second paragraph of subclause 90.4.1.2 that reads '... used by the TimeSync Client to improve the accuracy of the calculated egress ...' to read '... used by the TimeSync Client to determine the uncertainly of the calculated egress ...'.

[2] Change the text in the last sentence of the third paragraph of subclause 90.4.1.2 that reads '... used by the TimeSync Client to improve the accuracy of the calculated ingress ...' to read '... used by the TimeSync Client to determine the uncertainly of the calculated ingress time at the MDI ...'.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.4.1.2** *P* **54** *L* **13** # I-37

Law, David Hewlett Packard Enterprise

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

Suggest that '... the ingress time at the ...' should be changed to read '... the ingress time of the DDMP at the ...'

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.4.2** *P* **54** *L* **21** # I-38

Law, David Hewlett Packard Enterprise

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

Typo, '... provided by the RS ...' should read '... provided by the gRS ..'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.4.2** *P* **54** *L* **21** # I-39

Law, David Hewlett Packard Enterprise

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

Subclause 90.4.2 'TSSI' says 'The following specifies the service interface provided by the RS and the path data delay change signaling by the PHY to the TimeSync Client.'. The path data delay change signalling isn't specified in subclause 90.4.2, instead it is specified in subclause 90.5.3 'TX_NUM_BIT_CHANGE<15:0>' and 90.5.4 'RX_NUM_BIT_CHANGE<15:0>'. In addition, the path data delay change signalling is from the PHY to the gRS (see figure 90-1), not from the PHY to the TimeSync Client.

SuggestedRemedy

Suggest that the sentence 'The following specifies the service interface provided by the RS and the path data delay change signaling by the PHY to the TimeSync Client.' in subclause 90.4.2 is changed to read 'The following specifies the service interface provided by the RS to the TimeSync Client.'.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.4.2** *P* **54** *L* **21** # I-40

Law, David Hewlett Packard Enterprise

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

Suggest that '... the RS ...' should be changed to read '... the gRS ...'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.4.2** *P* **54** *L* **26** # I-76

Ran, Adee Cisco Systems, Inc.

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

"The path data delay of a packet is measured using a specific point, the data delay measurement point (DDMP), in the packet"

This definition could be reworded for clarity.

Specifically, although the term DDMP is used throughout the draft, in its definition, the word "point" is not natural for a location in a packet.

SuggestedRemedy

Change the quoted sentence to
"The path data delay of a packet is measured using a specific location in the packet called the data delay measurement point (DDMP)".

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.4.2** *P* **54** *L* **26** # I-41

Law, David Hewlett Packard Enterprise

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

The acronym DDMP is defined five times through the text '... the data delay measurement point (DDMP) ...' found on page 54, lines 26 and 41, page 55, lines 1 and 45, and page 56, line 5. In addition, despite the definition of the acronym DDMP, the full term ' data delay measurement point' is used 104 other times in the draft.

SuggestedRemedy

Suggest that the acronym DDMP should be defined once, then used, or not defined.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Defined DDMP on the first use in the Clause / Annex and deleted all other expansions in the text.

Cl **90** *SC* **90.4.2** *P* **54** *L* **27** # I-42

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A**

IEEE Std 802.3-2022 subclause 1.4.545 defines 'symbol' as '... the smallest unit of data transmission on the medium.'. As a result, strictly speaking, an xMII doesn't use symbols.

SuggestedRemedy

Suggest that text along the lines of 'Within the scope of this clause, the term first symbol after the SFD denotes the first octet after the SFD when referencing an xMII' to subclause 90.4 'TSSI' where the term 'first symbol after the SFD' is first used, or somewhere else considered appropriate.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Added the text "The term 'first symbol after the SFD' denotes the first octet after the SFD when referencing an xMII' to subclause 90.4 'TSSI' where the term 'first symbol after the SFD' is first used.

Cl **90** *SC* **90.4.2** *P* **54** *L* **28** # I-43

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A**

Subclause 90.4.2 'TSSI' says that 'The DDMP is either the beginning of the SFD or the beginning of the first symbol after the SFD in the packet, as selected by registers 3.1813.13 and 5.1813.13.' however the Clause 45 registers are optional, so it is not clear how this is selected when the registers are not implemented.

Taking Clause 82 'Physical Coding Sublayer (PCS) for 64B/66B, type 40GBASE-R and 100GBASE-R' as an example of how this is addressed elsewhere in IEEE Std 802.3-2022, subclause 82.3.1 'PCS MDIO function mapping' says 'The optional MDIO capability described in Clause 45 defines several variables that may provide control and status information for and about the PCS. Mapping of MDIO control variables to PCS control variables is shown in Table 82–10. Mapping of MDIO status variables to PCS status variables is shown in Table 82–11.'. This approach means that registers, that may or may not be implemented, are not referenced by functions in the PCS.

It seems that this may have also been the intended approach for IEEE P802.3cx since subclause 90.6 'Overview of management features' says 'The Management Data Input/Output (MDIO) capability described in Clause 45 defines several variables that provide TimeSync status information for the PMD, as shown in Table 90–1:', however, there are no variables shown in Table 90–1.

SuggestedRemedy

[1] Add a column to Table 90–1 to provide the variables that the last sentence of subclause 90.6 'Overview of management features' already references.

[2] Reference these variables rather than register numbers in the body of Clause 90.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

If the register is not implemented, then the function obviously does not exist. If the register is implemented but the register bit was not previously defined (e.g., register bit 3.1800.13, First symbol after SFD data delay measurement point ability), then the original default value of 0 of the register bit should reflect the disabling of the new function (DDMP = beginning of first symbol after SFD) and, where appropriate, the enabling of the originally available function (DDMP = SFD).
IEEE P802.3cx deals with registers in the same way as they were for clause 45 and clause 90 in 802.3-2018. There does not appear to be any need to change this.

In 90.6, changed the text as follows:
"The Management Data Input/Output (MDIO) capability described in Clause 45 defines <new>many register bits</new><strike>several variables</strike> that provide TimeSync status information for the PMD, as shown in Table 90–1."

Cl **90** *SC* **90.4.2** *P* **55** *L* **26** # I-18

Tse, Richard Microchip Technology, Inc.

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

"SFD" is used for the first time here and should be spelled out.
The subsequent spelling out of SFD in 90.7 should be removed.

There are many different spell-outs of SFD in 802.3. The spell-out of SFD in this specification should follow that from subclause 1.5 of 802.3: start-of-frame delimiter

SuggestedRemedy

Change:

"The DDMP is either the beginning of the SFD or the beginning of the first symbol after the SFD in the packet, as selected by registers 3.1813.13 and 5.1813.13"

to

"The DDMP is either the beginning of the start-of-frame delimiter (SFD) or the beginning of the first symbol after the SFD in the packet, as selected by registers 3.1813.13 and 5.1813.13"

In the first paragraph of 90.7, SFD does not need to be spelled out again. Change "start of frame delimiter (SFD)" to "SFD".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Comment reference is actually page 54 line 26, suggested change will be made at that location.

Cl **90** *SC* **90.4.3.1.1** *P* **55** *L* **2** # I-44

Law, David Hewlett Packard Enterprise

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

Primitives are generated, see subclause 90.4.3.1.2 'Condition for generation' and subclause 90.4.3.2.2 'Condition for generation'.

SuggestedRemedy

Change the four instances of '... primitive was issued as ...' found on page 55, lines 2 and 4, and page 56, lines 6 and 8, to read '... primitive was generated as ...'.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.4.3.1.1** *P* **55** *L* **11** # I-45

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A**

The first sentence of the antepenultimate paragraph of subclause 90.4.3.1.1 'Semantics' of the TS_TX.indication primitive says 'The MM parameter is mandatory when the MAC Merge sublayer (see Clause 99) is instantiated and the beginning of the SFD is chosen as the data delay measurement point ...' and the last sentence says 'The MM parameter is not provided when ... the beginning of the SFD is not chosen as the data delay measurement point.'. Similar statements are made in the antepenultimate paragraph of subclause 90.4.3.2.1 'Semantics' of the TS_RX.indication primitive.

The minutes of the IEEE P802.3br Task Force November 2014 plenary session meeting include 'Issue #2: TSSI interface' that reads as follows <https://www.ieee802.org/3/br/public/2014-11%20San%20Antonio,%20TX/8023-IET-TF-1411-Tretter-Meeting%20Minutes-20141105.pdf#page=4>.

"There might be an ambiguity of whether a TimeSync indication was due to an express or preemptable frame. To resolve that, one of the following is needed:

– two TSSIs, one for each MAC,
– an optional parameter indicating express or preemptable added to the TSSI primitives in Clause 90, or
– an additional value such as P_DETECTED should be added for the SFD parameter]

Result:

An optional parameter indicating express or preemptable will be added to the TSSI primitives in Clause 90."

In addition, the response to comment #13 received on IEEE P802.3br draft D1.0 during 1st Task Force review comments includes the following <https://www.ieee802.org/3/br/Comments%20received%20on%20IEEE%20P802.3br%20drafts/P8023br-1-0-comment-proposed%20dispositions_v2.pdf#page=16>.

"The TSSI is broken without this change because there are cases where one will not be able to tell whether an indication on that interface is from the frame on the eMAC or on the pMAC."

I couldn't find any more details, but on transmit I imagine the issue is if a MA_DATA.request to send a frame is made to both the preemptable MAC (pMAC) and the express MAC (eMAC) at about the same instant, it is difficult to predict which will be transmitted first. Depending on the delay through the respective MAC and PLS to the MAC Merge sublayer, the express frame may be transmitted first, followed by the preemptable frame. This will mean the first TS_TX.indication will be for the express frame, and the second for the preemptable frame. Alternatively, the preemptable frame might be transmitted first, and then preempted by the express frame. This will mean the first TS_TX.indication will be for the preemptable frame, and the second for the express frame. If, for example, the egress time of the express frame that results from the MA_DATA.request to eMAC is of interest to the TimeSync client, it will need to know which TS_TX.indication is associated with the express frame.

On receive, both an express frame followed by a preemptable frame, and a preemptable frame being preempted by an express frame, will result in a MA_DATA.indication from the eMAC first followed by a MA_DATA.indication from the pMAC. The order of the TS_RX.indication will however be different for these two cases. In the first case of an express frame followed by a preemptable frame, the first TS_RX.indication will be for the express frame, the second for the preemptable frame. In the second case, a preemptable frame being preempted by an express frame, the first TS_RX.indication will be for the preemptable frame, the second for the express frame. Similar to the above, if the ingress time of the express frame supplied by the MA_DATA.indication from the eMAC is of interest to the TimeSync client, it will need to know which TS_RX.indication is associated with the express frame.

It seems to be for the above reasons that the MM parameter is supplied by both the TS_TX.indication and TS_RX.indication primitives. If this is the case, it seems that the MM parameter should be mandatory when the MAC Merge sublayer is instantiated, regardless of the data delay measurement point.

Further, there are no SFDs in packets when the MAC Merge sublayer is instantiated. The SFD is replaced with an SMD-E in an express packet, although SMD-E is the same value as the SFD. The SFD is replaced with the SMD-S in a preemptable packet. As a result, strictly speaking, the draft shouldn't refer to the 'first symbol after the SFD' when the Merge sublayer is instantiated.

[1] Change the antepenultimate paragraph of subclause 90.4.3.1.1 to read:

The MM parameter is mandatory when the MAC Merge sublayer (see Clause 99) is instantiated. The MM parameter, when present, can take one of two possible values, i.e., PMAC or EMAC. The value EMAC indicates the SMD-E (SFD) value has been detected at the xMII. The value PMAC indicates that an SMD-S value has been detected at the xMII (see Table 99–1).

[2] Change the antepenultimate paragraph of subclause 90.4.3.1.1 to read:

The MM parameter is mandatory when the MAC Merge sublayer (see Clause 99) is instantiated. The MM parameter, when present, can take one of two possible values, i.e., PMAC or EMAC. The value EMAC indicates the SMD-E (SFD) value has been detected at the xMII. The value PMAC indicates that an SMD-S value has been detected at the xMII (see Table 99–1).

[3] Change the second and third paragraphs of subclause 90.5.1 to read as follows:

When the MAC Merge sublayer is not instantiated, the TS_DDMP_Detect_TX function detects the occurrence of the data delay measurement point.
The TS_TX.indication primitive shall be generated only when the data delay measurement point is detected on the transmit signals of the xMII.

When the MAC Merge sublayer is instantiated and the beginning of the SFD is selected as the data delay measurement point, the TS_DDMP_Detect_TX function detects the occurrence of the beginning of certain Start mPacket Delimiters (SMD). The TS_TX.indication primitive shall be generated only when the SMD-E for an express packet or the SMD-S for a preemptable packet (see 99.3.3) is detected on the transmit signals of the xMII. When the MAC Merge sublayer is instantiated and the beginning of the first symbol after the SFD is selected as the data delay measurement point, the TS_DDMP_Detect_TX function detects the occurrence of the beginning of the first symbol after certain SMDs. The TS_TX.indication primitive shall be generated only when the beginning of the first symbol after the SMD-E for an express packet or the SMD-S for a preemptable packet (see 99.3.3) is detected on the transmit signals of the xMII. When the MAC Merge sublayer is instantiated, the value of the MM parameter of the TS_TX.indication primitive shall be set to EMAC if an SMD-E was detected and to PMAC if an SMD-S was detected on the transmit signals of the xMII.

[4] Change the second and third paragraphs of subclause 90.5.2 to read as follows:

When the MAC Merge sublayer is not instantiated, the TS_DDMP_Detect_RX function detects the occurrence of the data delay measurement point.
The TS_RX.indication primitive shall be generated only when the data delay measurement point is detected on the received signals of the xMII.

When the MAC Merge sublayer is instantiated and the beginning of the SFD is selected as the data delay measurement point, the TS_DDMP_Detect_RX function detects the occurrence of the beginning of certain SMDs. The TS_RX.indication primitive shall be generated only when the SMD-E for an express packet or the SMD-S for a preemptable packet is detected on the receive signals of the xMII. When the MAC Merge sublayer is instantiated and the beginning of the first symbol after the SFD is selected as the data delay measurement point, the TS_DDMP_Detect_RX function detects the occurrence of the beginning of the first symbol after certain SMDs. The TS_RX.indication primitive shall be generated only when the beginning of the first symbol after the SMD-E for an express packet or the SMD-S for a preemptable packet (see 99.3.3) is detected on the receive signals of the xMII. When the MAC Merge sublayer is instantiated, the value of the MM parameter of the TS_RX.indication primitive shall be set to EMAC if an SMD-E was detected and to PMAC if an SMD-S was detected on the receive signals of the xMII.

SuggestedRemedy

[1] Change the antepenultimate paragraph of subclause 90.4.3.1.1 to read:

The MM parameter is mandatory when the MAC Merge sublayer (see Clause 99) is instantiated. The MM parameter, when present, can take one of two possible values, i.e., PMAC or EMAC. The value EMAC indicates the SMD-E (SFD) value has been detected at the xMII. The value PMAC indicates that an SMD-S value has been detected at the xMII (see Table 99–1).

[2] Change the antepenultimate paragraph of subclause 90.4.3.2.1 to read:

The MM parameter is mandatory when the MAC Merge sublayer (see Clause 99) is instantiated. The MM parameter, when present, can take one of two possible values, i.e., PMAC or EMAC. The value EMAC indicates the SMD-E (SFD) value has been detected at the xMII. The value PMAC indicates that an SMD-S value has been detected at the xMII (see Table 99–1).

[3] Change the second and third paragraphs of subclause 90.5.1 to read as follows:

When the MAC Merge sublayer is not instantiated, the TS_DDMP_Detect_TX function detects the occurrence of the data delay measurement point.
The TS_TX.indication primitive shall be generated only when the data delay measurement point is detected on the transmit signals of the xMII.

When the MAC Merge sublayer is instantiated and the beginning of the SFD is selected as the data delay measurement point, the TS_DDMP_Detect_TX function detects the occurrence of the beginning of certain Start mPacket Delimiters (SMD). The TS_TX.indication primitive shall be generated only when the SMD-E for an express packet or the SMD-S for a preemptable packet (see 99.3.3) is detected on the transmit signals of the xMII. When the MAC Merge sublayer is instantiated and the beginning of the first symbol after the SFD is selected as the data delay measurement point, the TS_DDMP_Detect_TX function detects the occurrence of the beginning of the first symbol after certain SMDs. The TS_TX.indication primitive shall be generated only when the beginning of the first symbol after the SMD-E for an express packet or the SMD-S for a preemptable packet (see 99.3.3) is detected on the transmit signals of the xMII. When the MAC Merge sublayer is instantiated, the value of the MM parameter of the TS_TX.indication primitive shall be set to EMAC if an SMD-E was detected and to PMAC if an SMD-S was detected on the transmit signals of the xMII.

[4] Change the second and third paragraphs of subclause 90.5.2 to read as follows:

When the MAC Merge sublayer is not instantiated, the TS_DDMP_Detect_RX function detects the occurrence of the data delay measurement point.
The TS_RX.indication primitive shall be generated only when the data delay measurement point is detected on the receive signals of the xMII.

When the MAC Merge sublayer is instantiated and the beginning of the SFD is selected as the data delay measurement point, the TS_DDMP_Detect_RX function detects the occurrence of the beginning of certain SMDs. The TS_RX.indication primitive shall be generated only when the SMD-E for an express packet or the SMD-S for a preemptable packet is detected on the receive signals of the xMII. When the MAC Merge sublayer is instantiated and the beginning of the first symbol after the SFD is selected as the data delay measurement point, the TS_DDMP_Detect_RX function detects the occurrence of the beginning of the first symbol after certain SMDs. The TS_RX.indication primitive shall be generated only when the beginning of the first symbol after the SMD-E for an express packet or the SMD-S for a preemptable packet (see 99.3.3) is detected on the receive signals of the xMII. When the MAC Merge sublayer is instantiated, the value of the MM parameter of the TS_RX.indication primitive shall be set to EMAC if an SMD-E was detected and to PMAC if an SMD-S was detected on the receive signals of the xMII.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

[1] Association of PMAC and EMAC is not clear for the scenario where the DDMP is the

beginning of the first symbol after SFD. Changed the remedy to the following: "The MM parameter is mandatory when the MAC Merge sublayer (see Clause 99) is instantiated. The MM parameter, when present, can take one of two possible values, i.e., PMAC or EMAC. The value EMAC indicates the TS_TX.indication primitive is associated with a packet that has an SMD-E (SFD). The value PMAC indicates the TS_TX.indication primitive is associated with a packet that has an SMD-S (see Table 99–1)."
[2] same as for [1] above, except changed to "TS_RX.indication"
[3] Clarified the association of the SMD-E and SMD-S for the scenario where DDMP is the beginning of first symbol after SFD. Changed the last sentence as follows: "When the MAC Merge sublayer is instantiated, the value of the MM parameter of the TS_TX.indication primitive shall be set to EMAC if an SMD-E preceded the DDMP and to PMAC if an SMD-S preceded the DDMP."
[4] Same as for [3] above, except changed to "TS_RX.indication"

Cl **90** *SC* **90.4.3.1.1** *P* **55** *L* **19** # I-46

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **R**

Subclause 90.5.1 'TS_DDMP_Detect_TX function' says that 'When the MAC Merge sublayer is instantiated and the beginning of the SFD is selected as the data delay measurement point the TS_DDMP_Detect_TX function detects the occurrence of the beginning of the SFD for an express packet or preemptable packet start (SMD-E or SMD-S, see 99.3.3).'. Since a SMD-S is a preemptable packet start, preemptable packet fragments use SMD-C continuation fragment, a TS_TX.indication is not generated for continuation fragments when DDMP=SFD. It is therefore not clear to me why the text 'When DDMP=FIRST_SYMBOL, the TS_TX.indication is not generated for continuation fragments.' has been added. A TS_TX.indication is not generated for continuation fragments, regadless of the data delay measurement point.

SuggestedRemedy

[1] Either delete the text 'When DDMP=FIRST_SYMBOL, the TS_TX.indication is not generated for continuation fragments.' from subclause 90.4.3.1.1 or change it to read 'The TS_TX.indication shall not be generated for continuation fragments'.

[2] Either delete the text 'When DDMP=FIRST_SYMBOL, the TS_RX.indication is not generated for continuation fragments.' from subclause 90.4.3.2.1 or change it to read 'The TS_RX.indication shall not be generated for continuation fragments'.

[3] Either delete the text 'When DDMP=FIRST_SYMBOL, the TS_TX.indication is not generated for continuation fragments.' from subclause 90.5.1 or change it to read 'The TS_TX.indication shall not be generated for continuation fragments'.

[4] Either delete the text ' When DDMP=FIRST_SYMBOL, the TS_RX.indication is not generated for continuation fragments.' from subclause 90.5.2 or change it to read 'The TS_RX.indication shall not be generated for continuation fragments'.

Response *Response Status* **W**

REJECT.

The earlier paragraphs of the referenced subclauses identify that TS_TX.indication (or TS_RX.indication) primitive is generated for SFD, SMD-E, and SMD-S. However, those specifications do not apply if the DDMP=FIRST_SYMBOL. Thus, we must specifically add the condition that the TS_TX.indication (or TS_RX.indication) primitive is not generated for continuation fragments when DDMP=FIRST_SYMBOL.

Cl **90** *SC* **90.4.3.1.1** *P* **55** *L* **22** # I-48

Law, David Hewlett Packard Enterprise

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

Subclause 90.4.3.1.1 'Semantics' of the TS_TX.indication primitive says (page 55, line 22) that 'The PCS Dynamic Path Data Delay (PDPDD) ... supports dynamic transmit path data delay calculation'.

Subclause 90.5 generic 'Reconciliation Sublayer (gRS)', when discussing the TX_NUM_BIT_CHANGE<15:0> signals which are used to generate the PDPDD parameter, says (page 57, line 11) that 'These signals provide ... for enabling the calculation of highly accurate path data delay values.'. Similarly, subclause 90.5.3 'TX_NUM_BIT_CHANGE<15:0>' says (page 59, line 33) that these signals '... provides dynamic transmit path data delay values to support the calculation of high accuracy transmit path data delay values ...'.

The draft should be consistent terminology about what the TX_NUM_BIT_CHANGE<15:0> signals, and therefore the PDPDD parameter, are used for. Either 'dynamic transmit path data delay calculation', or 'high accuracy transmit path data delay values'.

SuggestedRemedy

Suggest that:

[1] On page 55, line 22, change '... supports dynamic transmit path data delay calculation' to read '... supports high accuracy dynamic transmit path data delay calculations.'.

[2] On page 56, line 25, change '... supports dynamic receive path data delay calculation' to read '... supports high accuracy dynamic receive path data delay calculations.'.

[3] On page 57, line 11, change '... for enabling the calculation of highly accurate path data delay values.' to read '... supporting high accuracy dynamic transmit path data delay calculations.'.

[4] On page 59, line 33, change '... support the calculation of high accuracy transmit path data delay values ...' to read '... supporting high accuracy dynamic transmit path data delay calculations ...'.

[5] On page 60, line 17, change '... support the calculation of high accuracy receive path data delay values ...' to read '... supporting high accuracy dynamic receive path data delay calculations ...'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

[1] On page 55, line 22, changed '... supports dynamic transmit path data delay calculation' to read '... supports high accuracy dynamic transmit path data delay calculations.'.

[2] On page 56, line 25, changed '... supports dynamic receive path data delay calculation' to read '... supports high accuracy dynamic receive path data delay calculations.'.

[3] The proposed change doesn't fit well into the original sentence. Changed the original sentence as follows: "These signals provide the dynamic path data delay information to be forwarded to the TimeSync Client for the support of high accuracy dynamic transmit path data delay calculations."

[4] The proposed change doesn't fit well into the original sentence. Changed the original sentence as follows: "TX_NUM_BIT_CHANGE is an optional bundle of sixteen logical signals (TX_NUM_BIT_CHANGE<15:0>) that provides dynamic transmit path data delay values to support high accuracy dynamic transmit path data delay calculations by the TimeSync client"

[5] same as [4], above, i.e., "RX_NUM_BIT_CHANGE is an optional bundle of sixteen logical signals (RX_NUM_BIT_CHANGE<15:0>) that provides dynamic receive path data delay values to support high accuracy dynamic receive path data delay calculations by the TimeSync client"

Cl **90** *SC* **90.4.3.1.1** *P* **55** *L* **22** # I-47

Law, David Hewlett Packard Enterprise

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

IEEE Std 802.3-2022 subclause 1.4215 defines 'bit time (BT)' as 'The duration of one bit as transferred to and from the Media Access Control (MAC). The bit time is the reciprocal of the bit rate. For example, for 100BASE-T the bit time is 10–8 s or 10 ns.'. I'm not sure why this defined term is being qualified by 'xMII' in the IEEE P802.3cx draft.

SuggestedRemedy

Change the four instances of '... xMII bit times ...' found on page 55, line 22, page 56, line 26, page 59, line 37, and page 60, line 21 to read '... bit times ...'. Change the four instances of '... xMII bit time' on page 70, lines 2, 13, 27 and 37 to read '... bit time'.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Change the four instances of '... xMII bit times ...' found on page 55, line 22, page 56, line 26, page 59, line 37, and page 60, line 21 to read '... bit times ...'. Change the four instances of '... xMII bit time' on page 70, lines 2, 13, 27 and 37 to read '... bit time'.

On the first use of "bit time", addd reference back to 1.4.160

Cl **90** *SC* **90.4.3.1.1** *P* **55** *L* **27** # I-49

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A**

The description of the PCS Dynamic Path Data Delay (PDPDD) parameter of the TS_TX.indication primitive in the last paragraph of subclause 90.4.3.1.1 'Semantics' says 'The value is conveyed from the PHY to the gRS by the optional TX_NUM_BIT_CHANGE<15:0> signals.'. While it is correct that the value is transferred across these signals, a value is conveyed across these signals on every clock edge that transmit data is transferred, and this text does not identify which transfer to use.

SuggestedRemedy

[1] Replace the last sentence of subclause 90.4.3.1.1 'Semantics' with 'The PDPDD is the dynamic transmit path data delay value conveyed from the PHY to the gRS by the optional TX_NUM_BIT_CHANGE<15:0> signals on the clock edge that also conveyed the data delay measurement point in the transmit data from the gRS to the PHY.'.

[2] Replace the last sentence of subclause 90.4.3.1.1 'Semantics' with 'The PDPDD is the dynamic receive path data delay value conveyed from the PHY to the gRS by the optional RX_NUM_BIT_CHANGE<15:0> signals on the clock edge that also conveyed the data delay measurement point in the receive data from the PHY to the gRS.'.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

[1] Replaced the last sentence of subclause 90.4.3.1.1 'Semantics' with 'The PDPDD value is conveyed from the PHY to the gRS by the optional TX_NUM_BIT_CHANGE<15:0> signals. See 90.5.3.'.

[2] Replaced the second last sentence of subclause 90.4.3.2.1 'Semantics' with 'The PDPDD delay is value conveyed from the PHY to the gRS by the optional RX_NUM_BIT_CHANGE<15:0> signals. See 90.5.4.'.

[3] Deleted the last sentence in 90.4.3.2.1. This sentence is already present three paragraphs earlier and does not need to be repeated.

Cl **90** *SC* **90.5** *P* **57** *L* **5** # I-50

Law, David Hewlett Packard Enterprise

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

Suggest that '... the RS ...' should be changed to read '... the gRS ...'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.5** *P* **57** *L* **8** # I-78

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A**

"In addition, an optional bundle of sixteen logical xMII transmit signals (TX_NUM_BIT_CHANGE<15:0>) and an optional bundle of sixteen logical xMII receive signals (RX_NUM_BIT_CHANGE<15:0>) are output from the PHY to the gRS"

Since these signals are optional, they _may_ be output from the PHY to the gRS.

Also, as defined in the management registers there is only one option common to both TX_NUM_BIT_CHANGE<15:0> and RX_NUM_BIT_CHANGE<15:0> - so it's not two optional bundles.

Also, as noted in another comment, the xMIIs are not redefined by this amendment, so these signals are not part of the xMII.

SuggestedRemedy

Change the quoted sentence to
"In addition, an optional bundle of sixteen logical signals (TX_NUM_BIT_CHANGE<15:0>) and sixteen logical receive signals (RX_NUM_BIT_CHANGE<15:0>) may be output from the PHY to the gRS".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Changed the quoted sentence to
"In addition, an optional bundle of sixteen logical transmit signals (TX_NUM_BIT_CHANGE<15:0>) and sixteen logical receive signals (RX_NUM_BIT_CHANGE<15:0>) may be output from the PHY to the gRS".

Cl **90** *SC* **90.5** *P* **57** *L* **10** # I-51

Law, David Hewlett Packard Enterprise

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

Subclause 90.5.3 'TX_NUM_BIT_CHANGE<15:0>' says that it '... provides a value ranging from -32768 to +32767 in two's complement format.'. Subclause 90.4.3.1.1 'Semantics', however, says that 'The PCS Dynamic Path Data Delay (PDPDD) is an optional parameter ...' and that 'It provides a value ranging from -32768 to +32767 ...'. Since one is specified to be encoded in two's complement format on a sixteen-bit bus, and the other has no specified encoding and is carried as a parameter of an abstract service interface, suggest it is best to not say one is 'forwarded' to the other.

SuggestedRemedy

Suggest that the last sentence of subclause 90.5 'generic Reconciliation Sublayer (gRS)' that reads 'These signals provide the dynamic path data delay information to be forwarded to the TimeSync Client for enabling the calculation of highly accurate path data delay values.' should be changed to read 'These signals provide the dynamic path data delay information that is used to generate the PDPDD parameter passed to the TimeSync Client in the TS_TX.indicate and TS_RX.indicate primitives, respectively, to enable the calculation of highly accuracy path data delay values.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Changed the last sentence of subclause 90.5 "generic Reconciliation Sublayer (gRS)" that reads
"These signals provide the dynamic path data delay information to be forwarded to the TimeSync Client for enabling the calculation of highly accurate path data delay values."
to read
"These signals provide the dynamic path data delay information that is used to generate the PDPDD parameter passed to the TimeSync Client in the TS_TX.indicate and TS_RX.indicate primitives, respectively, to enable the calculation of higher accuracy path data delay values."

Cl **90** *SC* **90.5** *P* **57** *L* **11** # I-79

Ran, Adee Cisco Systems, Inc.

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

"for enabling the calculation of highly accurate path data delay values"
This reads like promotional text; "highly accurate" is subjective.

SuggestedRemedy

Change the quoted text to
"for enabling the calculation of higher accuracy path data delay values"

In 90.5.3 and 90.5.4, change "high accuracy" to "higher accuracy".

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

The first issue was incorporated into response to comment I-51

In 90.5.3 and 90.5.4, changed "high accuracy" to "higher accuracy".

Cl **90** *SC* **90.5.2** *P* **57** *L* **42** # I-80

Ran, Adee Cisco Systems, Inc.

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

The word "instantiated" is deleted and re-inserted, here and in the following paragraph. The text is harder to read this way.

SuggestedRemedy

Keep the word from the base text without change, in both paragraphs.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.5.2** *P* **59** *L* **9** # I-52

Law, David Hewlett Packard Enterprise

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

Change 'TX PHY' to read 'PHY TX' and 'RX PHY' to 'PHY RX'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Changed 'TX PHY' to read 'PHY TX' and 'RX PHY' to 'PHY RX', including changes to Figures 90A-2, 90A-3, 90A-4, and 90A-5

Cl **90** *SC* **90.5.3** *P* **59** *L* **29** # I-81

Ran, Adee Cisco Systems, Inc.

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

The new subclause heading does not need to be underlined.

Also, in the subclause text, the first paragraph discusses "an optional bundle of sixteen logical signals", and the second one starts with "They" - apparently referring to the signals (plural), not to the bundle (singular). Also in 90.5.4.

SuggestedRemedy

Remove the underline format

Change "They" to "These signals" here and in 90.5.4.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

TX_NUM_BIT change was already defined as logical signals in the previous sentence, so it is redundant to say “these signals are logical signals” again.

Changed text in 90.5.3 and 90.5.4 to read as follows: "These logical signals are intended for use with an intra-chip interface. A physical instantiation of these logical signals is not defined."

Cl **90** *SC* **90.5.3** *P* **59** *L* **30** # I-53

Law, David Hewlett Packard Enterprise

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

Please avoid the use of a bus name as a subclause title.

SuggestedRemedy

[1] Change '90.5.3 TX_NUM_BIT_CHANGE<15:0>' to read 'Dynamic transmit path data delay'.

[2] Change the text 'TX_NUM_BIT_CHANGE is an optional bundle of sixteen logical signals (TX_NUM_BIT_CHANGE<15:0>) that provides dynamic transmit path data delay values to support the calculation of high accuracy transmit path data delay values by the TimeSync client.' in the first sentence of subclause 90.5.3 to read 'The optional dynamic transmit path data delay information supports the calculation of high accuracy transmit path data delay values by the TimeSync client. It is provided as a bundle of sixteen logical signals (TX_NUM_BIT_CHANGE<15:0>).'.

[3] Change the text 'TX_NUM_BIT_CHANGE<15:0> are sourced by the PHY ...' in the fourth sentence of subclause 90.5.3 to read 'The dynamic transmit path data delay information is sourced by the PHY ...'.

[4] Change '90.5.4 RX_NUM_BIT_CHANGE<15:0>' to read 'Dynamic receive path data delay'.

[5] Change the text 'RX_NUM_BIT_CHANGE is an optional bundle of sixteen logical signals (RX_NUM_BIT_CHANGE<15:0>) that provides dynamic receive path data delay values to support the calculation of high accuracy receive path data delay values by the TimeSync client.' in the first sentence of subclause 90.5.4 to read 'The optional dynamic receive path data delay information supports the calculation of high accuracy receive path data delay values by the TimeSync client. It is provided as a bundle of sixteen logical signals (RX_NUM_BIT_CHANGE<15:0>).'.

[6] Change the text 'RX_NUM_BIT_CHANGE<15:0> are sourced by the PHY ...' in the fourth sentence of subclause 90.5.3 to read 'The dynamic receive path data delay information is sourced by the PHY ...'.

Response *Response Status* **W**

ACCEPT.

Cl **90** *SC* **90.5.3** *P* **59** *L* **31** # I-54

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A** *MII*

While the MII uses the rising edge of TX_CLK (see 22.3.1) and RX_CLK (see 22.3.2), and the GMII uses the rising edge of GTX_CLK (see 35.2.2.1) and RX_CLK (see 35.2.2.2), the XGMII and rates above use both the rising edge and falling edge of TX_CLK (see 46.3.1.1) and RX_CLK (see 46.3.2.1).

As a result, for the MII and GMII it appears correct that TX_NUM_BIT_CHANGE<15:0> and RX_NUM_BIT_CHANGE<15:0> should be '... sourced by the PHY for each TX_CLK (GTX_CLK for GMII) period ...' and '... sourced by the PHY for each RX_CLK period ...'. This, however, doesn't appear correct for the XGMII and rates above. For these rates, it appears that TX_NUM_BIT_CHANGE<15:0> and RX_NUM_BIT_CHANGE<15:0> should be sourced twice for each TX_CLK and RX_CLK period. Similarly, figures 90-3 and 90-4 appear to only apply to the MII and GMII.

SuggestedRemedy

[1] Replace the fourth sentence of subclause 90.5.3 with 'A 10 Mb/s MAU or 100 Mb/s PHY conveys a dynamic transmit path data delay value across the MII to the gRS using the TX_NUM_BIT_CHANGE<15:0> signals on each rising edge of TX_CLK that conveys transmit data across the MII. A 1 Gb/s PHY conveys a dynamic transmit path data delay value across the GMII to the gRS using the TX_NUM_BIT_CHANGE<15:0> signals on the rising edge of each GTX_CLK that conveys transmit data across the MII. A 10 Gb/s or higher rate PHY conveys a dynamic transmit path data delay value across the xGMII to the gRS using the TX_NUM_BIT_CHANGE<15:0> signals on each rising edge and each falling edge of TX_CLK that conveys transmit data across the xMII. The dynamic transmit path data delay value, conveyed by the TX_NUM_BIT_CHANGE<15:0> signals, ranges from -32768 to +32767 and is encoded in two's complement format.

[2] Change the last sentence of subclause 90.5.3 to read 'The relationship between the TX_CLK, TXD and TX_NUM_BIT_CHANGE for a 10 Mb/s MAU or 100 Mb/s or 1Gb/s PHY, is illustrated in Figure 90–3.'.

[3] Add a new last sentence to subclause 90.5.3 that reads 'The relationship between the TX_CLK, TXD and TX_NUM_BIT_CHANGE for a 10 Gb/s and higher rate PHYs is illustrated in Figure 90–3.'.

[4] Add a new figure, after figure 90-3, that illustrates the relationship between the TX_CLK, TXD and TX_NUM_BIT_CHANGE for 10 Gb/s and higher rate PHYs.

[5] Replace the fourth sentence of subclause 90.5.4 with

'A 10 Mb/s MAU or 100 Mb/s or 1 Gb/s PHY conveys a dynamic receive path data delay value across the MII to the gRS using the RX_NUM_BIT_CHANGE<15:0> signals on each rising edge of RX_CLK that conveys receive data across the MII. A 10 Gb/s or higher rate PHY conveys a dynamic receive path data delay value across the xGMII to the gRS using the RX_NUM_BIT_CHANGE<15:0> signals on each rising edge and each falling edge of RX_CLK that conveys receive data across the xMII. The dynamic receive path data delay value, conveyed by the RX_NUM_BIT_CHANGE<15:0> signals, ranges from -32768 to +32767 and is encoded in two's complement format.

[6] Change the last sentence of subclause 90.5.4 to read 'The relationship between the RX_CLK, RXD and RX_NUM_BIT_CHANGE for a 10 Mb/s MAU or 100 Mb/s or 1Gb/s PHY, is illustrated in Figure 90–4.'.

[7] Add a new last sentence to subclause 90.5.3 that reads 'The relationship between the RX_CLK, RXD and RX_NUM_BIT_CHANGE for a 10 Gb/s and higher rate PHYs is illustrated in Figure 90–3.'.

[8] Add a new figure, after figure 90-4, that illustrates the relationship between the RX_CLK, RXD and RX_NUM_BIT_CHANGE for 10 Gb/s and higher rate PHYs.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

It is not true that all rates above 10G use both edges of the xMII clock. Here are some excerpts for 10G, 25G, 40G, 100G, 200G, and 400G xMIIs:
□XGMII (10G) in 46.1 uses both edges of the xMII clock
□25GMII (25G) in Clause 106 is the same as XGMII
□XLMII (40G) and CGMII (100G) in Clause 81 only uses the rising edge of the xMII clock
□200GMII (200G) and 400GMII (400G) in clause 117.2 are the same as CGMII and only uses the rising edge of the xMII clock

The following changes were applied in 90.5.3

[1] Changed the sentences:

"TX_NUM_BIT_CHANGE<15:0> are sourced by the PHY for each active TX_CLK (GTX_CLK for GMII) edge upon which transmit data is transferred from the gRS to the PHY and provides a value ranging from -32768 to +32767 in two's complement format."
"The relationship between the TX_¬CLK, TXD and TX_NUM_BIT_CHANGE is illustrated in Figure 90–3 for a xMII that is active only on the rising TX_CLK edge."

[2] Inserted a new figure showing active rising and falling TX_CLK edges

[3] Added a new sentence "The relationship between the TX_CLK, TXD and TX_NUM_BIT_CHANGE is illustrated in Figure 90–X for a xMII that is active on both rising and falling TX_CLK edges."

Applied similar changes to 90.5.4 for the RX_NUM_BIT_CHANGE

Cl **90** *SC* **90.5.3** *P* **59** *L* **35** # I-55

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A** *MII*

While the MII uses the rising edge of TX_CLK (see 22.3.1) and RX_CLK (see 22.3.2), and the GMII uses the rising edge of GTX_CLK (see 35.2.2.1) and RX_CLK (see 35.2.2.2), the XGMII and rates above use both the rising edge and falling edge of TX_CLK (see 46.3.1.1) and RX_CLK (see 46.3.2.1).

As a result, for the MII and GMII it appears correct that TX_NUM_BIT_CHANGE<15:0> and RX_NUM_BIT_CHANGE<15:0> should be '... sourced by the PHY for each TX_CLK (GTX_CLK for GMII) period ...' and '... sourced by the PHY for each RX_CLK period ...'. This, however, doesn't appear correct for the XGMII and rates above. For these rates it appears that TX_NUM_BIT_CHANGE<15:0> and RX_NUM_BIT_CHANGE<15:0> should be sourced twice for each TX_CLK and RX_CLK period. Similarly, figures 90-3 and 90-4 appear to only apply to the MII and GMII.

SuggestedRemedy

[1] Replace the fourth sentence of subclause 90.5.3 with 'A 10 Mb/s MAU or 100 Mb/s PHY conveys the dynamic transmit path data delay across the MII to the gRS using the TX_NUM_BIT_CHANGE<15:0> signals on each rising edge of TX_CLK. A 1 Gb/s PHY conveys the dynamic transmit path data delay across the GMII to the gRS using the TX_NUM_BIT_CHANGE<15:0> signals on each rising edge of GTX_CLK. A 10 Gb/s or higher rate PHY conveys the dynamic transmit path data delay across the xGMII to the gRS using the TX_NUM_BIT_CHANGE<15:0> signals on both the rising edge and falling edge of TX_CLK. The dynamic transmit path data delay conveyed to the gRS using the TX_NUM_BIT_CHANGE<15:0> signals is a value ranging from -32768 to +32767 in two's complement format.'.

[2] Change the last sentence of subclause 90.5.3 to read 'The relationship between the TX_CLK, TXD and TX_NUM_BIT_CHANGE for a 10 Mb/s MAU or 100 Mb/s or 1Gb/s PHY, is illustrated in Figure 90–3.'.

[3] Add a new last sentence to subclause 90.5.3 that reads 'The relationship between the TX_CLK, TXD and TX_NUM_BIT_CHANGE for a 10 Gb/s and higher rate PHYs is illustrated in Figure 90–3.'.

[4] Add a new figure, after figure 90-3, that illustrates the relationship between the TX_CLK, TXD and TX_NUM_BIT_CHANGE for 10 Gb/s and higher rate PHYs.

[5] Replace the fourth sentence of subclause 90.5.4 with 'A 10 Mb/s MAU or 100 Mb/s or 1Gb/s PHY conveys the dynamic receive path data delay across the MII to the gRS using the RX_NUM_BIT_CHANGE<15:0> signals on each rising edge of RX_CLK. A 10 Gb/s or higher rate PHY conveys the dynamic receive path data delay across the xGMII to the gRS using the RX_NUM_BIT_CHANGE<15:0> signals on both the rising edge and falling edge of RX_CLK. The dynamic receive path data delay conveyed to the gRS using the RX_NUM_BIT_CHANGE<15:0> signals is a value ranging from -32768 to +32767 in two's complement format.'.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Resolved per comment #I-54

Cl **90** *SC* **90.5.3** *P* **59** *L* **37** # I-90

Ran, Adee Cisco Systems, Inc.

Comment Type **TR** *Comment Status* **A**

"The value reports number of xMII bit times of dynamic transmit path data delay that are experienced by the data transferred from the gRS to the PHY, relative to the mean PCS transmit path data delay"

This description may not address dynamic delays caused by possible extender sublayers (XS) which are functionally similar to the PCS, but specified separately.
The XS should be mentioned because, ideally, the value of TX_NUM_BIT_CHANGE should represent the sum of the dynamic delays caused by the PCS, the XS, and any other sublayers (e.g. FEC if it is separate), not just the PCS; and if there are multiple xMII instances, each one should have its own TX_NUM_BIT_CHANGE.

Similarly for RX_NUM_BIT_CHANGE in 90.5.4.

SuggestedRemedy

At the least, change "mean PCS transmit data delay" to "mean PHY transmit data delay". Preferably, add some statements about PHYs with intermediate xMII instances (using XS) and the need to have multiple TX_NUM_BIT_CHANGE values in that case.

Apply similar changes in 90.5.4.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Changed "mean PCS transmit data delay" to "mean PHY transmit data delay".

Applied similar changes in 90.5.4.

Cl **90** *SC* **90.6** *P* **54** *L* **28** # I-28

Rodrigues, Silvana Huawei Technologies Co., Ltd

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

The following text is new and therefore should be shown with change control.

"each of which can be derived from corresponding managed objects with nanosecond resolution and, optionally, also with sub-nanosecond resolution,"

SuggestedRemedy

Mark the following text to indicate that it is new text:
"each of which can be derived from corresponding managed objects with nanosecond resolution and, optionally, also with sub-nanosecond resolution,"

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

The comment is actually against page 64, line 28, suggested change will be made at that location.

Cl **90** *SC* **90.6** *P* **61** *L* **22** # I-64

Law, David Hewlett Packard Enterprise

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

Suggest that '... used to set the...' should be changed to read '... used to select the ...'.

SuggestedRemedy

See comment.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Changed the text '... used to set the...' to read '... used to select or to get ...'.

Cl **90** *SC* **90.7** *P* **62** *L* **28** # I-19

Tse, Richard Microchip Technology, Inc.

Comment Type **TR** *Comment Status* **A**

Except for the instances of "data delay measurement point", "data delay" should be prefixed by "path".

SuggestedRemedy

There are 19 instances of in 90.7, including the subclause's heading, in Figure 90-5, and in the caption for Figure 90-5..
There is one instance in 45.2.5.31.
There is one instance in 90.2.
There is one instance in 90.3.
There are two instances in 90.4.1.2.
There are 18 in 90.7, including FIgure 5 and its caption

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.7** *P* **62** *L* **31** # I-65

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A** *Edits to 90.7*

Subclause 90.7 says that 'The TimeSync capability requires measurement of data delay in the transmit and receive paths ...'. Is it correct that it is 'required', for example, the provision of path delay registers is optional. If a PHY or an MMD within a PHY doesn't provide the optional path delay registers I thought TimeSync could be supported, it would just impact the accuracy. I also note that the management attributes TimeSyncCapabilityNsTX, aTimeSyncCapabilityNsRX, aTimeSyncCapabilitySubNsTX and aTimeSyncCapabilitySubNsRX are all '... equal to the logical OR operation ...' of the respective path data delay ability bits. Based on this, these aTimeSyncCapability attributes will be "true" if just one of the MMDs that form the PHY provides path data delay registers.

SuggestedRemedy

Change the first sentence of subclause 90.7 to read 'To obtain the egress or ingress time of the data delay measurement point of a packet at the MDI, the TimeSync Client adjusts the egress or ingress time it captured for data delay measurement point of the packet at the xMII, by the data delay (see figure 90-5), and the dynamic path data delay if supplied (see 90.4.2). The accuracy of the calculated egress or ingress time at the MDI will therefore be dependent on the accuracy of the transmit and receive path data delay values, if available, and the and the dynamic path data delay if supplied, used in the calculation.'.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

This comment was addressed in response to comment #i-68

Cl **90** *SC* **90.7** *P* **62** *L* **36** # I-20

Tse, Richard Microchip Technology, Inc.

Comment Type **E** *Comment Status* **A** *Edits to 90.7*

"PHY" should be "the PHY"

SuggestedRemedy

Change

"The choice of the data delay measurement point is implementation-dependent, and does not change until PHY is reset or powered down."

to

"The choice of the data delay measurement point is implementation-dependent, and does not change until the PHY is reset or powered down."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment was addressed in response to comment #I-68

Cl **90** *SC* **90.7** *P* **62** *L* **39** # I-1

Arnold, Douglas Meinberg-USA

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

The sentence uses the word "may" to indicate possibilities, but the 2021 IEEE SA Style Manual states:
"The word may is used to indicate a course of action permissible within the limits of the standard (may equals is permitted to).
The word can is used for statements of possibility and capability, whether material, physical, or causal (can equals is able to). "
There are numerous other instances of the the word "may" used to indicate possibilities in the draft.

SuggestedRemedy

Search on the word "may" and change all of the instances where "may" is used to indicate possibilities to either "can" or "might".

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Upon review, changed all instances of "may" to "can" in Clause 90 and Annex 90A, less footnote 6 on page 64 associated with PICS copyright release note.

Cl **90** *SC* **90.7** *P* **62** *L* **42** # I-21

Tse, Richard Microchip Technology, Inc.

Comment Type **E** *Comment Status* **A** *Edits to 90.7*

This paragraph belongs immediately after the first sentence in 90.7.
The sentence structures in this paragraph can be improved.
The path data delay should be corresponded to a packet.

SuggestedRemedy

Change

"The transmit path data delay is defined from the time the data delay measurement point passes the xMII input to the time it passes the MDI output. The receive path data delay is defined from the time the data delay measurement point passes the MDI input to the time it passes the xMII output."

to

"The transmit path data delay is defined as the time it takes for a packet's data delay measurement point to pass from the xMII input to the the MDI output. The receive path data delay is defined as the time it takes for a packet's data delay measurement point to pass from the MDI input to the xMII output."

move this paragraph to immediately follow the very first sentence in 90.7.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

This comment was addressed in response to comment #I-68

Cl **90** *SC* **90.7** *P* **62** *L* **46** # I-56

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A**

Subclause 90.7 says 'For a PHY that includes an FEC and/or a PCS lane distribution function, the transmit and receive path data delays may show significant variation depending upon the position of the data delay measurement point within the FEC codeword and in the multiple PCS lane distribution sequence.' and '... it is recommended that the transmit and receive path data delays be reported as if the data delay measurement point is at the start of the FEC codeword and/or multiple PCS lane distribution sequence.'.

Annexe 90A.4 'Considerations for multiple PCS lane functions' says 'As explained in 90.7, the TimeSync PCS transmit path data delay register would use the greatest PCS lane distribution delay as its constant value (which corresponds to the start of the transmit PCS lane distribution function) and the TimeSync PCS receive path data delay register would use the smallest PCS lane merging delay as its constant value (which corresponds to the start of the receive PCS lane merging function).'.

Despite what annexe 90A.4 says, subclause 90.7 doesn't seem to explain what value to use as the constant value in the transmit and receive delay path registers. Instead, subclause 90.7 seems to explain the data delay measurement point in an FEC codeword

SuggestedRemedy

Suggest that the recommendation about the transmit and receive delay path registers found in annexe 90A.4 be added to subclause 90.7, and that informative text about data delay measurement points in an FEC codeword and/or multiple PCS lane distribution sequence be added to annexe 90A.4.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

This comment was addressed in response to comment #I-23 + appended the following sentence to the suggested remedy from I-23:
"This results in the maximum FEC and the maximum PCS lane distribution delays being allocated to the PHY TX and the minimum FEC and the minimum PCS lane distribution delays being allocated to the PHY RX."

Cl **90** *SC* **90.7** *P* **62** *L* **46** # I-22

Tse, Richard Microchip Technology, Inc.

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

Sentence format can be improved.
"multiple" can be eliminated without changing the meaning of the sentence and might reduce confusion.

SuggestedRemedy

Change

"For a PHY that includes an FEC and/or a PCS lane distribution function, the transmit and receive path data delays may show significant variation depending upon the position of the data delay measurement point within the FEC codeword and in the multiple PCS lane distribution sequence."

to

"For a PHY that includes an FEC and/or a PCS lane distribution function, the transmit and receive path data delays may show significant variation depending on how the packet's data delay measurement point aligns to an FEC codeword and/or to a PCS lane distribution sequence."

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.7** *P* **62** *L* **50** # I-23

Tse, Richard Microchip Technology, Inc.

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

A "the" is missing before "multiple PCS lane…"
.
The word "multiple" can be eliminated without changing the meaning of the sentence and might reduce confusion

The alignment of FEC codewords and PCS distribution sequences can be better described.

SuggestedRemedy

Change

"...it is recommended that the transmit and receive path data delays be reported as if the data delay measurement point is at the start of the FEC codeword and/or multiple PCS lane distribution sequence. For PHYs with both FEC and PCS lane distribution, the start of the FEC codeword is guaranteed to coincide with the start of a PCS lane distribution sequence."

to

"...it is recommended that the transmit and receive path data delays be reported as if the data delay measurement point is at the start of the FEC codeword and/or at the start of the PCS lane distribution sequence. For PHYs with both FEC and PCS lane distribution, the start of an FEC codeword coincides with the start of a PCS lane distribution sequence periodically during their respective processions."

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.7** *P* **64** *L* **4** # I-57

Law, David Hewlett Packard Enterprise

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

Suggest that figure 90-5 be aligned to other layer diagrams, see IEEE Std 802.3-2022 figures 1-1 and 44- for examples.

SuggestedRemedy

Suggest that:

[1] 'HIGHER LAYERS' be surrounded by an open top box.
[2] 'MAC Clients' be changed to read 'LLC (LOGICAL LINK CONTROL) OR OTHER MAC CLIENT'.
[3] The 'OAM (Optional)' box is deleted.
[4] 'MAC Control (Optional)' should be changed to read 'MAC CONTROL (OPTIONAL)'.
[5] 'MAC' should be changed to read 'MAC—MEDIA ACCESS CONTROL'
[6] 'gRS' should be changed to read 'GENERIC RECONCILIATION'
[7] The 'gRS' and 'PHY' boxes should be narrower than the boxes about the 'gRS' box.

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Changed Figure 90-5 per comment + added editoral instructions to replace Figure 90-5.

Cl **90** *SC* **90.7** *P* **64** *L* **12** # I-59

Law, David Hewlett Packard Enterprise

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

Suggest that the boxes at the top and bottom of the xMII in figure 90-5, which I believe signify physical instantiation of the MII with connectors, are deleted as not all MIIs support physical instantiation. This would align the depiction of the xMII in figure 90-5 to its depiction in IEEE Std 802.3-2022 figure 1-1.]

SuggestedRemedy

Delete the box at the top and bottom of the xMII in figure 90-5.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.7** *P* **64** *L* **12** # I-58

Law, David Hewlett Packard Enterprise

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

The RS, and therefore the gRS, is part of the physical layer, not the data link layer, see IEEE Std 802.3-2022 figure 1-1.

SuggestedRemedy

Change the dotted line, starting between the physical layer and the data link layer on the OSI reference model, from ending at the bottom of the gRS to ending between the MAC and gRS.

Response *Response Status* **C**

ACCEPT.

Cl **90** *SC* **90.7** *P* **64** *L* **22** # I-3

Seaman, Michael MICK SEAMAN

Comment Type **TR** *Comment Status* **A**

NOTE 3 on this page appears to contain a conformance provision (a recommendation, "should") although notes are non-normative. Further what is being said appears to be a definition of the delay to be measured, and not a recommendation at all.

SuggestedRemedy

Replace "should not include delay" with "does not include delay".

Response *Response Status* **W**

ACCEPT.

Cl **90** *SC* **90.7** *P* **64** *L* **24** # I-4

Seaman, Michael MICK SEAMAN

Comment Type **TR** *Comment Status* **A** *timing reference plane*

The term "timing reference point" is not defined in this amendment, so it is not clear what is being observed in NOTE 3. However the term "reference point" is used in 802.1AS in the definition of "message timestamp point", i.e. the point in a frame which when passing the measurement plane gives rise to the timing indication. There is no sense in which this point (a point in a moving frame) is being moved closer to the MDI (a point in the system). Rather the effect described moves the "timing reference plane" relative to the MDI.

SuggestedRemedy

Define or make use of the 802.1AS term "timing reference plane". It is this that is being moved relative to the MDI in the case indicated.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Changed

"timing reference plane"

to

"timestamp generation reference plane"

Cl **90** *SC* **90.7** *P* **64** *L* **24** # I-24

Tse, Richard Microchip Technology, Inc.

Comment Type **TR** *Comment Status* **A** *timing reference plane*

"timing reference point" is not the proper term for this. "reference plane" should be used instead.

SuggestedRemedy

Change

"...and only shifts the timing reference point farther from the MDI."

to

"...and only shifts the reference plane for one end of the path data delay measurement away from the MDI."

Response *Response Status* **C**

ACCEPT IN PRINCIPLE.

Changed

"timing reference plane"

to

"timestamp generation reference plane"

Cl **90** *SC* **90.7** *P* **64** *L* **26** # I-66

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A** *Editr to 90.7*

Subclause 90.7 says 'The obtained data delay measurement shall be reported in the form of a quartet of values ... which can be derived from corresponding managed objects with nanosecond resolution and, optionally, also with sub-nanosecond resolution, as defined for the oTimeSync managed object class (30.13.1).'.

Provision of the oTimeSync managed object class in implementations, as with all management objects, is optional. I, therefore, suggest that it is best not to say that the quartet of path data delay values can be obtained from the oTimeSync managed object class.

It is not clear what value would be reported if one or more of the MMDs in a PHY does not supply path data delay values. The management attributes aTimeSyncCapabilityNsTX, aTimeSyncCapabilityNsRX, aTimeSyncCapabilitySubNsTX and aTimeSyncCapabilitySubNsRX are all '... equal to the logical OR operation ...' of the respective path data delay ability bits. Based on this, these aTimeSyncCapability attributes will be "true" if just one of the MMDs that form the PHY provides path data delay registers. It, therefore, appears that a TimeSyncCapability attribute could be set to "true", and therefore I assume the associated TimeSyncDelay attribute would supply a value, even though that value consisted of only path data delay from only one of the MMDs.

Finally, since this is describing how the data delay shown in figure 90-5 may be obtained, which I believe is the fundamental component of path data delay, I suggest that this paragraph and associated notes be moved towards the start of subclause 90.7.

SuggestedRemedy

[1] Change the fourth to last paragraph of 90.7 to read 'To support the calculation of the data delay, each MMD within a PHY may provide up to two quartets of values, one quartet provides the integer nanoseconds portion, the other quartet provides the fractional nanoseconds portion. Each quartet consists of two pairs of values, the maximum transmit path data delay and the minimum transmit path data delay, and the maximum receive path data delay and the minimum receive path data delay. The provision by an MMD of either pair of values for either portion is independently optional. A single quartet of values for the PHY data delay may be obtained by summing together the values, if available, of each corresponding member of both quartets for each MMD.'.

[2] Move the fourth to last paragraph of 90.7, along with notes 4 and 5, to be the second paragraph of subclause 90.7.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

This comment was addressed in response to comment #I-68

Cl **90** *SC* **90.7** *P* **64** *L* **26** # I-60

Law, David Hewlett Packard Enterprise

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

The fourth to last paragraph of subclause 90.7 in IEEE P802.3cw draft D3.0 reads:

The obtained data delay measurement shall be reported in the form of a quartet of values; the maximum transmit data delay, the minimum transmit data delay, the maximum receive data delay, and the minimum receive data delay, each of which can be derived from corresponding managed objects with nanosecond resolution and, optionally, also with sub-nanosecond resolution, as defined for the oTimeSync managed object class (30.13.1).

The equivalent paragraph in IEEE Std 802.3-2022 reads:

The obtained data delay measurement shall be reported in the form of a quartet of values; the maximum transmit data delay, the minimum transmit data delay, the maximum receive data delay, and the minimum receive data delay, as defined for the oTimeSync managed object class (30.13.1).

While IEEE P802.3cw draft D3.0 has added text to the paragraph in IEEE Std 802.3-2022, the new text has not been marked in underscore.

SuggestedRemedy

Annotate changes being made by IEEE P802.3cw draft D3.0 to 90.7.

Response *Response Status* **W**

ACCEPT.

Cl **90** *SC* **90.7** *P* **64** *L* **31** # I-5

Seaman, Michael MICK SEAMAN

Comment Type **TR** *Comment Status* **A**

Re NOTE 4. Why doesn't the quartet of delay values include the TS_DDMP_Detect_TX delay? A simple search did not detect a reported value for this delay. Is the "may" here is purely speculative as to the behavior of the TimeSync client? The prior paragraph refers to a single quartet so it is unclear as to which/how many "minimum transit data delay values" are being referenced and what the utility of taking a mean of two sums of arbitrarily many values might be.

SuggestedRemedy

Include the delay and delay variability associated with the gRS functions within each quartet of values (increasing uncertainty if necessary) or provide a reference to the means by which the client obtains the necessary values to adjust for delays within the gRS.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

Changed NOTE 4 to the following: "NOTE 4—The data delay values represent only the data delay in the PHY sublayers. The TimeSync Client might also compensate for implementation-specific delays that are not accounted for by the path data delay values reported by the PHY sublayer managed objects from 30.13.1 and by the PDPDD parameters from 90.4.3. The handling of these implementation-specific delays is outside the scope of this standard."

Added the following text "The uncertainty of the transmit and receive path data delays of the corresponding sublayer can also be determined from this quartet of values. The minimum path data delay error of the sublayer can be achieved by using the mean of its maximum and minimum path data delay values as its path data delay value." to the paragraph before NOTE 4.

Cl **90** *SC* **90.7** *P* **64** *L* **35** # I-61

Law, David Hewlett Packard Enterprise

Comment Type **TR** *Comment Status* **A**

On the receive path, isn't the ingress time of the data delay measurement point (DDMP) at the MDI calculated in the TimeSync Client by subtracting all delays between the MDI and the TS_DDMP_Detect_RX function (which report the ingress time of the DDMP to the TimeSync Client) from the ingress time captured by TimeSync Client. In summary, the ingress time at the MDI = ingress time captured by TimeSync Client - (MDI to xMII delay + xMII to TS_DDMP_Detect_RX function delay).

As an example, if the DDMP delay 'across' a PHY from the MDI to the xMII is 100ns, and within the gRS the delay from DDMP ingress at the xMII to the TS_DDMP_Detect_RX function reporting the DDMP to the TimeSync Client is 20ns, the ingress time at the MDI is the ingress time captured by TimeSync Client - (100 + 20)ns = Ingress time captured by TimeSync Client - 120ns.

The note 4 text says '... the TimeSync Client may need to subtract the value of the delay associated with the TS_DDMP_Detect_RX function to the mean of the sum of the minimum receive data delay values and the sum of the maximum receive data delay values reported by individual MMD(s).'. In summary this seems to say that the ingress time at the MDI = ingress time captured by TimeSync Client - (MDI to xMII delay - xMII to TS_DDMP_Detect_RX function delay).

Taking the same example vales as above, but using the calculation described in note 4, the ingress time at the MDI would be the ingress time captured by TimeSync Client - (100 - 20)ns = Ingress time captured by TimeSync Client - 80ns which doesn’t seem correct.

SuggestedRemedy

In note 4, change the text '... may need to subtract the value ...' to read '... may need to add the value ...'.

Note: If the above change is rejected, and the subtraction remains, the '... to ...' needs to be change to '... from ...' in the text '... may need to subtract the value of the delay associated with the TS_DDMP_Detect_RX function to the mean of the sum of the minimum ...'.

Response *Response Status* **W**

ACCEPT IN PRINCIPLE.

This comment was addressed in response to comment #I-5

Cl **90** *SC* **90.8** *P* **64** *L* **46** # I-82

Ran, Adee Cisco Systems, Inc.

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

The PICS typically starts on a separate page. There is room for that in the next page.

SuggestedRemedy

Make the PICS start on the top of the page.

Response *Response Status* **C**

ACCEPT.

Cl **90A** *SC* **90A.2** *P* **67** *L* **37** # I-84

Ran, Adee Cisco Systems, Inc.

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

Missing period at the end of the paragraph

SuggestedRemedy

Add a period.

Response *Response Status* **C**

ACCEPT.

Cl **90A** *SC* **90A.4** *P* **69** *L* **4** # I-25

Tse, Richard Microchip Technology, Inc.

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

During WG balloting, one comment suggested that the term "intrinsic delay" might be thought of as a special unique term. The sentence could be reformatted to clarify that this is not a special term and that "intrinsic" just means what it normally means. Once the word "intrinsic" is introduced properly, its meaning in subsequent occurrences should be clear.

SuggestedRemedy

Change

"This concept takes advantage of the fact that the sum of the intrinsic delay variation of the transmit multiple PCS lane distribution operation and of the intrinsic delay variation of the receive multiple PCS lane merging operation is a predetermined constant for the given multiple PCS lane function."

to

"This concept takes advantage of the fact that the sum of the delay variations that are intrinsic to the transmit multiple PCS lane distribution operation or to the receive multiple PCS lane merging operation is a predetermined constant for the given multiple PCS lane function."

Response *Response Status* **C**

ACCEPT.

Cl **90A** *SC* **90A.4** *P* **69** *L* **9** # I-85

Ran, Adee Cisco Systems, Inc.

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

"modelled" in L9 and in L19, "modeled" in L17 and other 4 locations in this draft.

In 802.3-2022 a doubled ell appears in "modelling" only twice (30.7.1 and 75.9.2) and there are 11 instances of "modeled", so this spelling is established.

SuggestedRemedy

Change "modelled" to "modeled" (twice).

Response *Response Status* **C**

ACCEPT.

Cl **90A** *SC* **90A.5** *P* **69** *L* **31** # I-86

Ran, Adee Cisco Systems, Inc.

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

"Unlike other PHY functions, these events do not generate PCS path data delay variations that can be pre-determined"
The sentence is confusing: these events do generate delay variations. The size of the variations can be predetermined (as shown in table 90A-1), but each specific delay cannot be determined.
Also, "pre-determined" is inconsistent with "predetermined" in 90A.4.
The wording can be improved.

SuggestedRemedy

Change
"Unlike other PHY functions, these events do not generate PCS path data delay variations that can be pre-determined and the transmit path data delay variation is not mirrored by the receive path data delay variation"
To
"Unlike other PHY functions, these events generate PCS path data delay variations that do not result in a constant sum of the transmit and receive delays, and thus cannot be predetermined".

Response *Response Status* **C**

ACCEPT.

Cl **90A** *SC* **90A.5.1** *P* **69** *L* **6** # I-87

Ran, Adee Cisco Systems, Inc.

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

"when alignment marker, codeword maker, or Idle(s) is inserted"
The "(s)" makes this grammatically incorrect.
Later in the same sentence, "when Idle is removed" is in singular. Also, list items a) and b) in this subclause and in 90A.5.2 have "Idle insertion/removal" without (s).

Also in 90A.5.2 item b) iii), second instance (the first instance "when Idle is inserted" is in singular).

SuggestedRemedy

Change "Idle(s)" to "Idle", in 90A.5.1 b) iii) and in 90A.5.2 b) iii).

Response *Response Status* **C**

ACCEPT.

Cl **90A** *SC* **90A.5.1** *P* **69** *L* **53** # I-26

Tse, Richard Microchip Technology, Inc.

Comment Type **TR** *Comment Status* **A**

PDPDD is a parameter of a primitive, not a primitve

SuggestedRemedy

Change "PDPDD primitive" to "PDPDD parameter"

Response *Response Status* **C**

ACCEPT.

Cl **90A** *SC* **90A.6** *P* **71** *L* **10** # I-89

Ran, Adee Cisco Systems, Inc.

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

This subclause describes "transmit skew" as something that is separate from the "skew of the medium". It is not clear why this distinction should be made only for the transmit side (from the xMII to the MDI) and not for the receive side (from the MDI to the xMII), where a similar skew can occur.

When a link is up, all these skews should be constant, and the sum of transmit, medium, and receive delays (including deskew buffers) should be the same across all lanes. The transmit skew is unknown to the receiver, but can be thought of as part of the medium's skew.

SuggestedRemedy

If the intent of this subclause is to address the fact that the xMII-to-MDI transmit skew can vary across PHY reset events (such that the sum of the skews in the transmitter and in the medium is not observed as a constant by the receiver) then this should be stated more clearly.

Response *Response Status* **C**

REJECT.

No specific changes were proposed.

The intent for separating the Tx skew from the medium skew is to enable the tackling of each skew individually
*Tx skew on each side of the medium will be implementation dependent. So, the best solution is to minimize this to reduce its effects. This is recommended by this standard.
*In each direction, the medium skew is accommodated by the Rx deskew FIFOs. This function makes all the medium (in each direction) equal to the one with the most delay.
*The remaining issue is the asymmetry of the max medium delay in the upstream and downstream directions. This last issue is specific to the medium (i.e., is not part of an 802.3 PHY) and can only be handled outside of 802.3.

Cl **90A** *SC* **90A.7** *P* **72** *L* **45** # I-88

Ran, Adee Cisco Systems, Inc.

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

"the data stream before the transmit function and the receive stream after the receive function are identical"
Both are data streams.

SuggestedRemedy

Change "receive stream" to "data stream".

Response *Response Status* **C**

ACCEPT.