



Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI **FM** SC **FM** P3 L1 # 107

Hajduczenia, Marek Charter Communications  
 Comment Type **E** Comment Status **A** keywords-abstract

Abstract is TBD at this time

*SuggestedRemedy*

Use the following text: "This amendment to IEEE Std 802.3-2018 defines optional enhancements to Ethernet support for time synchronization protocols to provide improved timestamp accuracy in support of ITU-T Recommendation G.8273.2 'Class C' and 'Class D' system time error performance requirements."

Response Response Status **C**

ACCEPT IN PRINCIPLE.

"This amendment to IEEE Std 802.3-202x modifies Clause 90 and adds Annex 90A to enhance support for time synchronization protocols to provide optional sub-nanosecond reporting of the transmit and receive path delays, selection of timing reference point, and dynamic reporting of path delay variation."

CI **FM** SC **FM** P3 L2 # 216

Wienckowski, Natalie General Motors  
 Comment Type **ER** Comment Status **A** keywords-abstract

TBDs are not allowed in document.

*SuggestedRemedy*

Add a list of Keywords: Timestamp

Response Response Status **W**

ACCEPT IN PRINCIPLE.

See comment #108

CI **FM** SC **FM** P4 L8 # 195

Grow, Robert RMG Consulting  
 Comment Type **E** Comment Status **A** 802.3-202x

IEEE style has changed (2020 IEEE Standards Style Manual, 11.1).

*SuggestedRemedy*

Delete 2nd paragraph of the Editor's Note.

Response Response Status **C**

ACCEPT.

CI **FM** SC **FM** P8 L4 # 131

Lewis, Jon Dell Technologies  
 Comment Type **E** Comment Status **A** bucket

IEEE P802.3xx should have the project specified

*SuggestedRemedy*

Change to "IEEE P802.3cx"

Response Response Status **C**

ACCEPT.

CI **FM** SC **FM** P8 L9 # 130

Lewis, Jon Dell Technologies  
 Comment Type **E** Comment Status **A** bucket

Pete Anslow is no longer the IEEE 802.3 secretary

*SuggestedRemedy*

Change to Jon Lewis

Response Response Status **C**

ACCEPT.

CI **FM** SC **FM** P8 L17 # 196

Grow, Robert RMG Consulting  
 Comment Type **E** Comment Status **A** bucket

The WG member list is now known and should be included.

*SuggestedRemedy*

Add 802.3 member list at beginning of WG ballot.

Response Response Status **C**

ACCEPT.

CI **FM** SC **FM** P10 L3 # 197

Grow, Robert RMG Consulting  
 Comment Type **E** Comment Status **A** bucket

This note will be included in the published standard.

*SuggestedRemedy*

Change P802.3cx to IEEE Std 802.3cx-20xx.

Response Response Status **C**

ACCEPT.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI **FM** SC **FM** P **13** L **18** # **182**

Marris, Arthur Cadence Design Systems

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

This description of the amendment is inadequate. It does not indicate which clause is changing or in what ways the standard is being enhanced. Also the phrase "This amendment defines optional enhancements to Ethernet support for time synchronization protocols" is hard to parse and understand.

*SuggestedRemedy*

Change the description to point out this is an amendment to the IEEE 802.3 base standard to change clause 90 in order to improve timestamp accuracy to meet the needs of of ITU-T Recommendation G.8273.2 'Class C' and 'Class D' system time error performance requirements

Response Response Status **W**

ACCEPT IN PRINCIPLE.

Use text per comment #107.

CI **FM** SC **FM** P **16** L **54** # **198**

Grow, Robert RMG Consulting

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

The internal title page is missing.

*SuggestedRemedy*

Please insert the internal title page with the "Important Notice" and explanation of editing instructions.

Response Response Status **W**

ACCEPT.

CI **00** SC **0** P **1** L **1** # **222**

Wienckowski, Natalie General Motors

Comment Type **TR** Comment Status **R** PAR, CSD, objectives

The Draft Objective of this project is to "Define optional enhancements to Ethernet support for time synchronization protocols to provide improved timestamp accuracy in support of ITU-T Recommendation G.8273.2 'Class C' and 'Class D' system time error performance requirements.

This draft is not defining optional enhancements, it is completely rewriting time synchronization so that the previous definition is no longer supported without access to an out-of-date specification.

*SuggestedRemedy*

Rewrite the document so that it is defining optional enhancements, as stated in the Draft Objective, instead of removing support for the previous timeSync definitions.

Response Response Status **W**

REJECT.

The current draft of P802.3cx does not remove support for 802.3-2018 Clause 90, but adds hooks to support these implementations through proper indication of compatibility for newer PHYs. Note that Clause 90 as defined in 802.3-2018 is also an optional feature to support. Nothing has changed in this respect.

CI **00** SC **0** P **1** L **1** # **223**

Carlson, Steven HSD, Bosch, Ethernovia

Comment Type **TR** Comment Status **R** PAR, CSD, objectives

Working Group ballot review requires comparison of the draft with the project (PAR, CSD and objectives). The posted project documents are all listed as "DRAFT" and the PAR specifically states that it is unapproved. Because of this, it is impossible to review the draft properly

*SuggestedRemedy*

Post the approved PAR, CSD, and objectives.

Response Response Status **W**

REJECT.

This is not a change to the draft.  
TF Chair to post final versions of the PAR, CSD and objectives.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

**Cl 00 SC 0 P1 L1 # 214**  
 Wienckowski, Natalie General Motors  
**Comment Type TR Comment Status R PAR, CSD, objectives**  
 The Unapprove PAR states "Scope of the project: Define optional enhancements to Ethernet support for time synchronization protocols to provide improved timestamp accuracy in support of ITU-T Recommendation G.8273.2 'Class C' and 'Class D' system time error performance requirements."  
**SuggestedRemedy**  
 Rewrite the document so that it is defining optional enhancements, as stated in the Draft PAR, instead of removing support for the previous timeSync definitions.  
**Response Response Status W**  
 REJECT.  
 The current draft of P802.3cx does not remove support for 802.3-2018 Clause 90, but adds hooks to support these implementations through proper indication of compatibility for newer PHYs.  
 Note that Clause 90 as defined in 802.3-2018 is also an optional feature to support.  
 Several comments in this comment cycle intend to add clarity to the backward compatibility with Clause 90 from 802.3-2018. See comment #184, which adds standard change markup to Clause 90 rather than replacing it.  
 There is insufficient information in the suggested remedy to implement changes to the draft.

**Cl 00 SC 0 P1 L1 # 213**  
 Wienckowski, Natalie General Motors  
**Comment Type TR Comment Status R PAR, CSD, objectives**  
 How can this be a valid project? The PAR Status is: Unapproved PAR, PAR for an Amendment to an existing IEEE Standard  
**SuggestedRemedy**  
 This needs to have an approved PAR, approved CSD, and approved Objectives.  
**Response Response Status W**  
 REJECT.  
 This is not a change to the draft.  
 TF Chair to post final versions of the PAR, CSD and objectives

**Cl 00 SC 0 P1 L1 # 212**  
 Wienckowski, Natalie General Motors  
**Comment Type TR Comment Status R PAR, CSD, objectives**  
 The Draft CSD for this project states "Improved accuracy time synchronization will be defined as an optional extension to existing interfaces and management clauses. "  
**SuggestedRemedy**  
 Rewrite the document so that it is defining optional enhancements, as stated in the Draft CSD, instead of removing support for the previous timeSync definitions.  
**Response Response Status W**  
 REJECT.  
 The current draft of P802.3cx does not remove support for 802.3-2018 Clause 90, but adds hooks to support these implementations through proper indication of compatibility for newer PHYs.  
 Note that Clause 90 as defined in 802.3-2018 is also an optional feature to support.  
 Several comments in this comment cycle intend to add clarity to the backward compatibility with Clause 90 from 802.3-2018. See comment #184, which adds standard change markup to Clause 90 rather than replacing it.  
 There is insufficient information in the suggested remedy to implement changes to the draft.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 00 SC 0 P1 L1 # 224

Carlson, Steven HSD, Bosch, Ethernetovia

Comment Type TR Comment Status R PAR, CSD, objectives

The project's DRAFT objective: "The Draft Objective of this project is to "Define optional enhancements to Ethernet support for time synchronization protocols to provide improved timestamp accuracy in support of ITU-T Recommendation G.8273.2 'Class C' and 'Class D' system time error performance requirements." The ITU document provides no quantifiable metrics for this project and it would be impossible to determine if the project meets this objective.

SuggestedRemedy

Change objective to: Define optional enhancements to Clause 90 to provide sub-nanosecond reporting of TX and RX delays and selection of the first symbol after the detection of SFD as the time synchronization point." The TF is invited to refine this wording; the important point is the elimination of the ITU reference and the replacment with a quantifiable metric for the project.

Response Response Status W

REJECT.

The goal of P802.3cx TF is to improve timestamping accuracy to allow satisfaction of ITU G.8273.2 performance targets. To do this, all known issues/shortcomings in the 802.3 standard that can impair timestamping have been addressed. Because there are many other elements that affect the performance of a G.8273.2 boundary clock or ordinary clock it is not possible to define a target just for 802.3 that determines whether the ITU targets are met.

No changes to draft needed.

CI 00 SC 0 P26 L27 # 152

Zimmerman, George CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type E Comment Status A bucket

the editing instruction says "insert two new rows" I see four new rows inserted. (bits 15, 14, 3, and 2)

SuggestedRemedy

Change editing instruction to read "Insert new rows in Table 45-173..."

Response Response Status C

ACCEPT.

CI 20 SC 20 P17 L1 # 199

Grow, Robert RMG Consulting

Comment Type E Comment Status A bucket

Subclause numbers of existing titles are not ocnsistent with P802.3/D2.1. Additionally inserted subclauses are incorrectly numbered.

SuggestedRemedy

Update subclause numbers. P802.3/D2.1 has:  
 "aTimeSyncDelayTXmax" numbered 30.13.1.3  
 "aTimeSyncDelayTXmin" numbered 30.13.1.4  
 "aTimeSyncDelayRXmax" numbered 30.13.1.5  
 "aTimeSyncDelayRXmin" numbered 30.13.1.6  
 no subclause 30.13.1.7  
 "TimeSync PMA/PMD capability (Register 1.1800)" numbered 45.2.1.175

Response Response Status C

ACCEPT.

CI 30 SC 30.13.1.1 P17 L20 # 187

Stewart, Heath Analog Devices

Comment Type E Comment Status A bucket

A number of elements have been added to a sentence structure composed of a list1 (see list2 respectively.) List1 has a number of new elements added while list2 does not. This breaks the one-to-one respectfully usage model. 30.13.1.2 has the same issue.

SuggestedRemedy

See 30.13.1.4 for a bullet format which allows finer-grained "see" assignments.

Response Response Status C

ACCEPT.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 30 SC 30.13.1.2 P17 L39 # 217

Wienckowski, Natalie General Motors

Comment Type E Comment Status A

Usually when "respectively" is used, there are two lists of equal length. In this case, there are 12 items in the first list and 6 in the second. I believe each reference in the second list applies to 2 items in the first list.

SuggestedRemedy

Change: 1.1800.0, 1.1800.2, 2.1800.0, 2.1800.2, 3.1800.0, 3.1800.2, 4.1800.0, 4.1800.2, 5.1800.0, 5.1800.2, 6.1800.0, and 6.1800.2 (see 45.2.1.146, 45.2.2.20, 45.2.3.66, 45.2.4.28, 45.2.5.28, 45.2.6.14, respectively).  
 To: 1.1800.0, 1.1800.2 (see 45.2.1.146), 2.1800.0, 2.1800.2 (see 45.2.2.20), 3.1800.0, 3.1800.2 (see 45.2.3.66), 4.1800.0, 4.1800.2 (see 45.2.4.28), 5.1800.0, 5.1800.2 (see 45.2.5.28), 6.1800.0, and 6.1800.2 (see 45.2.6.14).

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #187

CI 30 SC 30.13.1.4 P17 L44 # 125

Anslow, Pete Independent

Comment Type E Comment Status A bucket

aTimeSyncDelayTXmax is 30.13.1.3 not 30.13.1.4.  
 The following subclauses are all numbered 1 higher than they should be.

SuggestedRemedy

Re-number 30.13.1.4 through 30.13.1.8 to be 30.13.1.3 through 30.13.1.7

Response Response Status C

ACCEPT.

CI 30 SC 30.13.1.4 P18 L7 # 188

Stewart, Heath Analog Devices

Comment Type E Comment Status A bucket

An additional item was added to an and conjunction but the list ended up with one too many ands.

SuggestedRemedy

Change  
 for DTE XS: 5.1801 and, 5.1802, and 5.1809, see 45.2.5.29  
 to  
 for DTE XS: 5.1801, 5.1802, and 5.1809, see 45.2.5.29

Response Response Status C

ACCEPT IN PRINCIPLE.

Mark the first "and" with the strike-through

CI 30 SC 30.13.1.4 P18 L8 # 133

Tse, Richard Microchip Technology

Comment Type E Comment Status A bucket

The first "and" in this sentence should be deleted:

"for DTE XS: 5.1801and, 5.1802, and 5.1809, see 45.2.5.29"

SuggestedRemedy

Change to  
 "for DTE XS: 5.1801, 5.1802, and 5.1809, see 45.2.5.29"

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #188

CI 30 SC 30.13.1.7 P19 L33 # 153

Zimmerman, George CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type E Comment Status A bucket

"Clause 90" is not an active cross reference. This happens numerous times in the text, tables and labels - and appears to be universal in clauses 30 and 45.

SuggestedRemedy

replace references to Clause 90 in clauses 30 and 45 with active cross references. Editor may leave references to IEEE Std 802.3-2018 Clause 90 as normal text.

Response Response Status C

ACCEPT.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

Cl 30 SC 30.13.1.8 P19 L40 # 126  
 Anslow, Pete Independent  
 Comment Type E Comment Status A bucket  
 "Clause 45" should be a cross-reference  
 the BEHAVIOUR DEFINED AS section should end with a semicolon  
 SuggestedRemedy  
 Make "Clause 45" a cross-reference  
 On line 48 change "... equal to TRUE." to "... equal to TRUE.;" (trailing semicolon)  
 Response Response Status C  
 ACCEPT.

Cl 30 SC 30.13.1.8 P21 L1 # 218  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status A bucket  
 SuggestedRemedy  
 remove blank page  
 Response Response Status C  
 ACCEPT.

Cl 45 SC 45 P L # 231  
 Ran, Adee Cisco  
 Comment Type ER Comment Status R  
 Clause 45 describes register assignment when MDIO is implemented, but many  
 implementations may use different management interfaces, so having the full detailed  
 description in clause 45 may be inappropriate.  
 The technical descriptions of registers and bits in clause 45 would better be placed in  
 clause 90, such that the reader interested in timesync will have the information in a more  
 readable form, and the description will apply to non-MDIO implementations as well.  
 On addition, review and maintenance of clause 45 is very inconvenient, and should not be  
 made even more so.

SuggestedRemedy  
 Move the description of registers to clause 90 using variable names instead of register  
 addresses. Add a register mapping table pointing to registers in clause 45. Clause 45  
 tables should include only the variable names and references to clause 90.

Response Response Status W  
 REJECT.

Clause 45 is where we document registers and their behavior / configuration options. 90.6  
 Overview of management features already contains the mapping to individual Clause 45  
 registers and high level text explaining what individual registers do.

No changes to draft needed.

Cl 45 SC 45 P22 L1 # 200  
 Grow, Robert RMG Consulting  
 Comment Type E Comment Status A bucket  
 The renumbering of clause 45 in P802.3/D2.1 has major effects on this draft's clause 45  
 changes.  
 SuggestedRemedy  
 Most subclause numbers do not now agree with P802.3/D2.1. Table numbers are  
 significantly different in P802.3/D2.1, and base text also has changed in P802.3/D2.1 (e.g.,  
 probably 200 or so cross references in deleted base text, and new text will need to be  
 verified. Editors may find editing subclause numbers best, with base text update updates  
 varying with the nature of the change. If inserted text in this draft is a true cross reference,  
 then many of these will be corrected when the subclause or table number is reset. Major  
 update is required.  
 Response Response Status C  
 ACCEPT.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 45 SC 45.2 P22 L 2 # 219  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status A bucket  
 Missing Heading between 45 and 45.2.1  
 SuggestedRemedy  
 Need to add 45.2 MDIO Interface Registers  
 Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1 P22 L 13 # 220  
 Wienckowski, Natalie General Motors  
 Comment Type E Comment Status A bucket  
 The editor's notes say unchanged rows are not shown, but an unchanged row is shown.  
 SuggestedRemedy  
 Remove row: 1.1805 through 1.1808  
 Response Response Status C  
 ACCEPT.

CI 45 SC 45.2.1 P22 L 14 # 230  
 Ran, Adee Cisco  
 Comment Type TR Comment Status A bucket  
 Registers 147 and 148 are already assigned in 802.3dc D2.1.  
 Maybe other registers too.  
 Register allocation should be aligned with any previous amendment of 802.3dc.  
 SuggestedRemedy  
 Change register assignments to only ones that are reserved as of 802.3dc and its amendments schedule to be published prior to 802.3cx.  
 Response Response Status W  
 ACCEPT.

CI 45 SC 45.2.1 P22 L 46 # 122  
 Gorshe, Steve Microchip Technology  
 Comment Type E Comment Status A support  
 Table 45-110: Is it confusing to refer to the improved timestamp capability as "IEEE Std 802.3-2018 Clause 90 support" when that could be interpreted to mean the 2018 version as originally published?  
 SuggestedRemedy

Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #238

CI 45 SC 45.2.1.146 P22 L 34 # 227  
 Ran, Adee Cisco  
 Comment Type ER Comment Status A support  
 "IEEE Std 802.3-2018, clause 90" - mentioning this standard within itself is not required - the clause number is sufficient.  
 Also, this amendment is likely to the next revision, so 2018 will soon be obsolete.  
 Multiple occurrences.  
 SuggestedRemedy  
 Delete "IEEE Std 802.3-2018" from multiple places in the text where a clause or annex is referenced.  
 Response Response Status W  
 ACCEPT IN PRINCIPLE.  
 See comment #238

CI 45 SC 45.2.1.146 P22 L 34 # 165

Slavick, Jeff Broadcom

Comment Type TR Comment Status A support

The modifications that are being made by 802.3cx are to enable higher accuracy time mode. So the new mode of high accuracy timing would be a new ability bit to add and not I'm compliant to 2018 version of Cl90 versus current day version.

*SuggestedRemedy*

Change 3.1800.15 and 5.1800.15 to be TimeSync Dynamic Delay Support with a description of "1 = Path data delay change signals supported. 0 = Path data delay change signals not supported or necessary" and a RO access.

Revert bit 14 of each of 3.1800 and 5.1800 registers back to a Reserved bit.

Replace the paragraph describing this bit in 45.2.3.66 and 45.2.5.28 with "The TimeSync Dynamic Delay Support (bit 3.1800.15) indicates if TimeSync service interface will provide dynamic delay adjustments to the TimeSync Client."

using the appropriate bit reference.

Revert 1.1800.15:14, 2.1800.15:14, 4.1800.15:14, 5.1800.15:14 and 6.1800.15:14 back to reserved bit and remove the paragraph in each of the sub-clauses that described those fields.

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #238

CI 45 SC 45.2.1.146 P22 L 34 # 201

Grow, Robert RMG Consulting

Comment Type ER Comment Status A support

The reference to IEEE Std 802.3-2018 is difficult to understand and as this draft is written, there is no difference between the bits. (Though some may not know this, a reference to IEEE Std 802.3-2018 includes its approved amendments, so if this was Amendment 15 to the 2018 revision, until there is a new revision, both IEEE Std 802.3-2018 and IEEE Std 802.3 are the same set of documents.) Clarity can be easily improved with this amendment becoming an amendment to IEEE Std 802.3-20xx.

*SuggestedRemedy*

The TimeSync PMA/PMD capability register bits 1.1800.15 and 1.1800.14 indicate support for different revisions of Clause 90 TimeSync. Register bit 1.1800.15 indicates support for capability as specified in IEEE Std 802.3-2018 as amended, and register bit 1.1800.14 indicates support for subsequent revisions as amended (e.g., IEEE Std 802.3-20xx including its amendments). Note that for backward compatibility reasons, the values in register 1.1800.15 are inverted from typical usage, i.e., the value of 0 indicates the support for IEEE Std 802.3-2018, Clause 90 TimeSync.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comment #238

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 45 SC 45.2.1.146 P22 L 34 # 238

Law, David HPE  
 Comment Type TR Comment Status A support

Register 1.1800 already provides the 1.1800.3 'TimeSync fine resolution transmit path data delay' bit and 1.1800.2 'TimeSync fine resolution receive path data delay' bit so it isn't clear to me what additional information the 1.1800.15 'IEEE Std 802.3-2018, Clause 90 support' and the 1.1800.14 'IEEE Std802.3, Clause 90 support' bits provide. Bit 1.1800.15 appears to be a NOR of 1.1800.1 and 1.1800.0 and bit 1.1800.14 appears to be an OR of 1.1800.3 and 1.1800.2. In addition, it appears that an existing implementation that does not support any path data delay registers, and therefore sets all bits of register 1.1800 to zero, would now read 'PMA/PMD supports IEEE Std 802.3-2018, Clause 90 TimeSync' which is not correct as it doesn't provide any path data delay registers.

SuggestedRemedy

- [1] Delete the new text to be inserted in subclause 45.2.1.146 (line 34 - 38) as well as the addition of register bits 1.1800.15 and 1.1800.14.
- [2] Make similar changes for bits 2.1800.15 and 2.1800.14; bits 4.1800.15 and 4.1800.14; 5.1800.15 and 5.1800.14; and 6.1800.15 and 6.1800.14.

Response Response Status C

ACCEPT IN PRINCIPLE.

Changes per comment + update the first paragraph in 90A.2, which refers to the "IEEE Std 802.3 clause 90 support" register bit

CI 45 SC 45.2.1.146 P22 L 35 # 229

Ran, Adee Cisco  
 Comment Type TR Comment Status A support

Bits 14 and 15 were reserved as 0 prior to this amendment. The value 0 cannot be assigned to support of an optional feature. It is unclear why backward compatibility requires this assignment.

If there are other similar assignments that contradict the previously reserved bit semantics, they should be corrected too.

SuggestedRemedy

Invert the meaning of bits 14 and 15 such that "0" indicates "not supported", or find another solution that does not contradict existing devices.

Apply in other cases if necessary.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comment #238

CI 45 SC 45.2.1.146 P22 L 38 # 221

Wienckowski, Natalie General Motors  
 Comment Type ER Comment Status A support

I'm not sure why this mentions IEEE Std 802.3-2018 as this is in the process of being superceded. Should just refer to Clause 90. You can't depend on people continuing to get out of date specs forever.  
 If a specific name is needed, you could call it low\_resolution\_time\_sync, or something similar.

SuggestedRemedy

Change: IEEE Std 802.3-2018, Clause 90 TimeSync  
 To: Clause 90 TimeSync  
 Here and throughout the document.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comment #238

CI 45 SC 45.2.1.146 P22 L 42 # 228

Ran, Adee Cisco  
 Comment Type ER Comment Status A bucket

New tables were added, Table 45-110 is a different table in 802.3dc D2.1.

Similarly for other tables, and for subclauses.

SuggestedRemedy

Change to Table 45-139.

Align table, subclause and other numbering with 802.3dc.

Response Response Status W

ACCEPT.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 45 SC 45.2.1.146 P22 L48 # 183

Marris, Arthur Cadence Design Systems  
 Comment Type TR Comment Status A support

No where in the 802.3cx document is there any definition of what "IEEE Std802.3-2018, Clause 90 support" means. You cannot delete the current version of Clause 90 and then add a status bit indicating support for it.

SuggestedRemedy

Rewrite 802.3cx so that it amends Clause 90 rather than replaces it.

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #238

CI 45 SC 45.2.1.146 P23 L7 # 166

Slavick, Jeff Broadcom  
 Comment Type T Comment Status A bucket

Bits 3 and 2 indicate the ability for the sub-layer to provide sub-ns timing information.

SuggestedRemedy

Add the word ability to the end of the names of the following bits:

- 1.1800.3, 1.1800.2
- 2.1800.3, 2.1800.2,
- 3.1800.3, 3.1800.2,
- 4.1800.3, 4.1800.2,
- 5.1800.3, 5.1800.2,
- 6.1800.3, 6.1800.2,

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.147 P23 L46 # 123

Gorshe, Steve Microchip Technology  
 Comment Type E Comment Status A bucket

There are two occurrences of "2-16" in this paragraph and the next paragraph (pp. 24 line 2) where the line breaks on the dash. (pp. 23 lines 46-47, pp. 24 lines 1-2)

SuggestedRemedy

A non-breaking dash should be used

Response Response Status C

ACCEPT.

CI 45 SC 45.2.1.147 P23 L46 # 134

Tse, Richard Microchip Technology  
 Comment Type E Comment Status A bucket

The exponent should be on the same line as its base. Currently, a portion of the exponent, "16", is on the subsequent line.

SuggestedRemedy

Keep the value 2^16 completely on one line.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.2.20 P26 L22 # 202

Grow, Robert RMG Consulting  
 Comment Type ER Comment Status A support

Similar difficult to understand reference to 802.3-2018 as in 45.2.1.146.

SuggestedRemedy

Change consistent with resolution of my comment on page 22, line 34.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comment #238

Cl 45 SC 45.2.3.66 P30 L4 # 239

Law, David HPE

Comment Type TR Comment Status A

The description of register 3.1800.13 as providing the message timestamp point capability doesn't seem correct as the PCS has no knowledge of the message and doesn't provide a timestamp indication, this is sourced from gRS. Instead, I believe that this register indicates if the beginning of the SFD, or the beginning of the first symbol after the SFD, is used to calculate the TX/RX\_num\_unit\_change value that will be passed from the PCS across the xMII to the gRS. For that reason, I imagine this bit is only relevant if the TX/RX\_num\_unit\_change support bit is true. I would also note that multi-bit register descriptions elsewhere in Clause 45 tend to start with a description of the register, then subclauses for each bit (see 45.2.3.13 as an example).

SuggestedRemedy

Suggest that [1] the second and third paragraph (page 29, line 52 - page 30, line 6) of subclause 45.2.3.66 be replaced with:

This register is used to indicate the capability of the PCS to provide transmit and receive path data delay information in support of a TimeSync client. The assignment of bits in the TimeSync PCS capability register is shown in Table 45–235.

45.2.3.66.1 SFD data delay measurement point (3.1800.13)

When read as a one, bit 3.1800.13 indicates that the PCS supports the use of the beginning of the SFD as the data delay measurement point to calculate the TX\_num\_unit\_change and RX\_num\_unit\_change values. When read as a zero, bit 3.1800.13 indicates that the PCS does not supports the use of the beginning of the SFD as the data delay measurement point to calculate the TX\_num\_unit\_change and RX\_num\_unit\_change values. This bit is only valid when the TX/RX\_num\_unit\_change support bit in this register (3.1800.10) is set to 'PCS supports TX/RX\_num\_unit\_change indication capability'.

45.2.3.66.2 First symbol after SFD data delay measurement point (3.1800.12)

When read as a one, bit 3.1800.12 indicates that the PCS supports the use of the beginning of the first symbol after the SFD as the data delay measurement point to calculate the TX\_num\_unit\_change and RX\_num\_unit\_change values. When read as a zero, bit 3.1800.13 indicates that the PCS does not supports the use of the beginning of the first symbol after the SFD as the data delay measurement point to calculate the TX\_num\_unit\_change and RX\_num\_unit\_change values. This bit is only valid when the TX/RX\_num\_unit\_change support bit in this register (3.1800.10) is set to 'PCS supports TX/RX\_num\_unit\_change indication capability'.

[2] In table 45–235:

Change 'Timestamp reference, SFD' to read 'SFD data delay measurement point'  
 Change '0 = PCS does not support message timestamp point at the beginning of the SFD' to read '0 = PCS does not support the beginning of the SFD as the data delay

measurement point'  
 Change '1 = PCS supports message timestamp point at the beginning of the SFD' to read '1 = PCS supports the beginning of the SFD as the data delay measurement point'  
 Change 'Timestamp reference, first symbol after the SFD' to read 'First symbol after SFD data delay measurement point'  
 Change '0 = PCS does not support message timestamp point at the beginning of the first symbol after the SFD' to read '0 = PCS does not support the beginning of the first symbol after the SFD as the data delay measurement point'  
 Change '1 = PCS supports message timestamp point at the beginning of the first symbol after the SFD' to read '1 = PCS supports the beginning of the first symbol after the SFD as the data delay measurement point'

Response ACCEPT. Response Status C

Cl 45 SC 45.2.3.66 P30 L6 # 174

Slavick, Jeff Broadcom

Comment Type TR Comment Status A

Legacy clause 90 will have both bits set low. What does the user assum then?

SuggestedRemedy

Add the following to the end of the second paragraph of 45.2.3.66  
 "When both registers 3.1800.12 and 3.1800.13 are zero the location of the message timestamp point is the beginnig of the SFD.

Response ACCEPT IN PRINCIPLE. Response Status C

Add the proposed text in 45.2.3.66.1 and 45.2.3.66.2 added under comment #239.

## Approved Responses

## IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 45 SC 45.2.3.66 P30 L 8 # 240

Law, David

HPE

Comment Type TR Comment Status A

Subclause 45.2.3.66 says that 'The support for multilane path delay mechanism is reported in register 3.1800.11', however it is not clear what the 'multilane path delay mechanism' is. I would also note that multi-bit register descriptions elsewhere in Clause 45 tend to provide a subclause for each bit, see my other comments on this subclause.

*SuggestedRemedy*

Either change bit 3.1800.11 to be reserved or add a definition of the requirements of the 'multilane path delay mechanism'. If a definition is added it should be of the form:

Suggest that the fourth paragraph of subclause 45.2.3.66 be replaced with:

45.2.3.66.3 Multilane support (3.1800.11)

When read as a one, bit 3.1800.11 indicates that the PCS supports [add description].  
When read as a zero, bit 3.1800.11 indicates that the PCS does not support [add description].

Response Response Status C

ACCEPT IN PRINCIPLE.

Replace the fourth paragraph of subclause 45.2.3.66 with:

45.2.3.66.3 Multilane support (3.1800.11)

When read as a one, bit 3.1800.11 indicates that the PCS supports measurement of multi-PCS lane transmit and receive path data delays using the method described in 90.7 and 90A.4.

When read as a zero, bit 3.1800.11 indicates that the PCS does not support measurement of multi-PCS lane transmit and receive path data delays using the method described in 90.7 and 90A.4.

CI 45 SC 45.2.3.66 P30 L 11 # 203

Grow, Robert

RMG Consulting

Comment Type ER Comment Status A support

Similar difficult to understand reference to 802.3-2018 as in 45.2.1.146.

*SuggestedRemedy*

Change consistent with resolution of my comment on page 22, line 34.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comment #238

CI 45 SC 45.2.3.66 P30 L 11 # 242

Law, David

HPE

Comment Type TR Comment Status A

Multi-bit register descriptions elsewhere in Clause 45 tend to provide a subclause for each bit, see my other comments on this subclause.

*SuggestedRemedy*

Suggest that the fifth paragraph of subclause 45.2.3.66 be replaced with:

45.2.3.66.5 TimeSync fine resolution transmit path data delay (3.1800.3)

When read as a one, bit 3.1800.3 indicates that the PCS supports the sub-ns-resolution fine resolution PCS transmit path data delay registers (3.1809 and 3.1810). When read as a zero, bit 3.1800.3 indicates that the PCS does not support the fine resolution PCS transmit path data delay registers.

45.2.3.66.6 TimeSync fine resolution receive path data delay (3.1800.2)

When read as a one, bit 3.1800.2 indicates that the PCS supports the sub-ns-resolution fine resolution PCS receive path data delay registers (3.1811 and 3.1812). When read as a zero, bit 3.1800.2 indicates that the PCS does not support the fine resolution PCS receive path data delay registers.

45.2.3.66.7 TimeSync transmit path data delay (3.1800.1)

When read as a one, bit 3.1800.1 indicates that the PCS supports the ns-resolution PCS transmit path data delay registers (3.1801 through 3.1804). When read as a zero, bit 3.1800.1 indicates that the PCS does not support the PCS transmit path data delay registers (3.1801 through 3.1804).

45.2.3.66.9 TimeSync receive path data delay (3.1800.0)

When read as a one, bit 3.1800.0 indicates that the PCS supports the ns-resolution PCS receive path data delay registers (3.1805 and 3.1808). When read as a zero, bit 3.1800.0 indicates that the PCS does not support the fine resolution PCS receive path data delay registers (3.1805 and 3.1808).

Response Response Status C

ACCEPT.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

Cl 45 SC 45.2.3.66 P30 L29 # 172

Slavick, Jeff Broadcom  
 Comment Type T Comment Status A bucket

Bits 12 and 13 in register 3.1800 are indicators of support for the two different timestamp reference points

SuggestedRemedy

Add the word "ability" to the name of 3.1800.12 and 3.1800.13

Response Response Status C

ACCEPT IN PRINCIPLE.

Changes per comment + propagate this suggested change to the first paragraph of 90A.2

Cl 45 SC 45.2.3.66 P30 L41 # 241

Law, David HPE  
 Comment Type TR Comment Status A

There doesn't seem to be any description of the TX/RX\_num\_unit\_change support bit in subclause 45.2.3.66. I would also note that multi-bit register descriptions elsewhere in Clause 45 tend to provide a subclause for each bit, see my other comments on this subclause.

SuggestedRemedy

When read as a one, bit 3.1800.10 indicates that the PCS supports the calculation of the optional TX\_num\_unit\_change and RX\_num\_unit\_change values, passed from the PCS across the xMII to the gRS. When read as a zero, bit 3.1800.10 indicates that the PCS does not support the calculation of the optional TX\_num\_unit\_change and RX\_num\_unit\_change values.

Response Response Status C

ACCEPT IN PRINCIPLE.

Insert a new subclause with the text: "When read as a one, bit 3.1800.10 indicates that the PCS supports the calculation of the TX\_num\_unit\_change and RX\_num\_unit\_change values, passed from the PCS across the xMII to the gRS. When read as a zero, bit 3.1800.10 indicates that the PCS does not support the calculation of the TX\_num\_unit\_change and RX\_num\_unit\_change values."

Cl 45 SC 45.2.3.68a P33 L21 # 171

Slavick, Jeff Broadcom  
 Comment Type TR Comment Status A

The DTE XS is also a viable option for interfacing to the RS. So there should be a copy of this configuration register (for setting the MTP) in that register space as well.

SuggestedRemedy

Copy 45.2.3.68a to the appropriate location in 45.2.5

Copy 3.1800.12 and 3.1800.13 into 5.1800 as well along with description text for these bits.

Throughout the ammendment update all references to 45.2.3.68a also include a reference to the new register

Response Response Status C

ACCEPT.

Cl 45 SC 45.2.3.68a P33 L23 # 173

Slavick, Jeff Broadcom  
 Comment Type TR Comment Status A

What if the PCS does not have the ability to configure which location it will use as the MTP?

SuggestedRemedy

Update the text for 45.2.4.68a to read:

The TimeSync PCS configuration register (See Table 45-237a) controls the TimeSync features of the PCS. When both register bits 3.1800.12 and 3.1800.13 are one register bit 3.1813.13 is used to configure the location the PCS will mark as the message timestamp point. If either register bits 3.1800.12 or 3.1800.13 are low, the state of register bit 3.1813.13 is ignored by the PCS.

Response Response Status C

ACCEPT IN PRINCIPLE.

Change the target text as follows:

The TimeSync PCS configuration register (see Table 45-237a) controls the TimeSync feature of the PCS. When both register bits 3.1800.12 and 3.1800.13 are set to one, the register bit 3.1813.13 is used to configure the location the PCS uses as the message timestamp point. If register bits 3.1800.12 or 3.1800.13 are set to zero, the state of register bit 3.1813.13 is ignored by the PCS.

CI 45 SC 45.2.3.68a P33 L 23 # 243

Law, David

HPE

Comment Type TR Comment Status A

Suggest that the register description should be structured as an overview followed by a description of the bit. I also believe that bit 3.1813.13 will only operate if bit 3.1800.12 indicates that TX/RX\_num\_unit\_change is supported and can only be set to a value that corresponds to a capability indicated by bit 3.1800.13 (start of SFD) and 3.1800.12 (start of the first symbol after SFD). The use of terminology Message Timestamp Point doesn't seem correct as the PCS has no knowledge of the message and doesn't provide a timestamp indication. Finally, it should be noted that the use of the beginning of the SFD, or the beginning of the first symbol after the SFD as the data delay measurement point needs consistent configuration of both the gRS and the PCS.

*SuggestedRemedy*

Suggest that subclause 45.2.3.68a be changed to read as follows:

45.2.3.68a TimeSync PCS configuration (Register 3.1813)

This register is used to configure the data delay information provided by the PCS in support of a TimeSync client. The assignment of bits in the TimeSync PCS configuration register is shown in Table 45-237a.

45.2.3.68a.1 Data delay measurement point (3.1813.13)

Bit 3.1813.13 is used to set the data delay measurement point used in the calculation of the optional TX\_num\_unit\_change and RX\_num\_unit\_change values, passed from the PCS across the xMII to the gRS. When this bit is set to 0 the beginning of the SFD is used as the data delay measurement point to calculate the TX\_num\_unit\_change and RX\_num\_unit\_change values. When set to 1 the first symbol after the SFD is used as the data delay measurement point to calculate the TX\_num\_unit\_change and RX\_num\_unit\_change values. Writes to this bit will be ignored if the TX/RX\_num\_unit\_change support bit in register (3.1800) is set to 'PCS does not support TX/RX\_num\_unit\_change indication capability'. Writes to this bit will be also be ignored if they attempt to set the bit to a value that the equivalent capability bits in register (3.1800) indicate is not supported. Note that the use of the beginning of the SFD, or the beginning of the first symbol after the SFD as the data delay measurement point needs consistent configuration in both the gRS and the PCS.

Response Response Status C

ACCEPT.

CI 45 SC 45.2.4.28 P34 L 21 # 204

Grow, Robert

RMG Consulting

Comment Type ER Comment Status A support

Similar difficult to understand reference to 802.3-2018 as in 45.2.1.146.

*SuggestedRemedy*

Change consistent with resolution of my comment on page 22, line 34.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comment #238

CI 45 SC 45.2.4.28 P34 L 31 # 124

Gorshe, Steve

Microchip Technology

Comment Type E Comment Status A support

Table 45-267: Is it confusing to refer to the improved timestamp capability as "IEEE Std 802.3-2018 Clause 90 support" when that could be interpreted to mean the 2018 version as originally published? The text in the paragraph above is clear in that it points to new register 4.1800.14, but the associated table text isn't clear.

*SuggestedRemedy*

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #238

CI 45 SC 45.2.4.28 P38 L 18 # 111

Gorshe, Steve

Microchip Technology

Comment Type E Comment Status A support

Table 45-293: Similar to the previous comment, is it confusing to refer to the improved timestamp capability as "IEEE Std 802.3-2018 Clause 90 support" when that could be interpreted to mean the 2018 version as originally published? The text in the paragraph above is clear in that it points to new register 4.1800.14, but the associated table text isn't clear.

*SuggestedRemedy*

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #238

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 45 SC 45.2.4.30 P36 L 34 # 154  
 Zimmerman, George CME Consulting/ADI, APL Gp, Cisco, CommScope,  
 Comment Type TR Comment Status A missing registers

Since, per the editorial note, there is no link status bit for PHY XS, and that one will be needed, this draft cannot be technically complete without it. - same comment applies for DTE XS in 45.2.5.29, and TS in 45.2.6.15 and 45.2.6.16.

SuggestedRemedy

Add needed bit to the draft, or re-engineer so that it is not needed. Restart WG ballot.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comments #189, #190, #191, and #192 for the fix to the missing register problem.

CI 45 SC 45.2.4.30 P36 L 34 # 189  
 Brett McClellan Marvell  
 Comment Type TR Comment Status A missing registers

This draft is technically incomplete and has known incorrect normative text.  
 "The values contained in these registers are valid when the link is established, as indicated by bit 2 in Register 1.1 (see 45.2.1.2.4)"  
 PMA link status (Bit 2 in Register 1.1) has no relationship to whether the XGXS link is established or whether these delay registers are valid. PMA may indicate link even if PHY XS is in reset or low-power mode. These registers should always be valid when the PHY XS is not in reset or low power.

SuggestedRemedy

change text to: "The values contained in these registers are valid when the PHY XGXS is not in reset or powered down as indicated by bits 15 and 11 in Register 4.0 (see 45.2.4.1)

Response Response Status W

ACCEPT IN PRINCIPLE.

change text to: "The values contained in these registers are valid when the PHY XS is not in reset or powered down as indicated by bits 15 and 11 in Register 4.0 (see 45.2.4.1)"

CI 45 SC 45.2.4.30 P36 L 34 # 232  
 Ran, Adeo Cisco  
 Comment Type TR Comment Status A missing registers

The lack of a link status bit in some sublayers means the condition should be based on other indication. As written, this draft is not technically complete.

If indication cannot be taken from some sublayer (e.g. xMII or RS), then this project can create a specific indication (per-sublayer or global) for usage in devices that support timesync capabilities.

Also for the similar cases on page 39, 42, 43.

SuggestedRemedy

Solve the problem. Delete the editor's notes and remove the red background.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comments #189, #190, #191, and #192 for the fix to the missing register problem.

CI 45 SC 45.2.4.30 P36 L 35 # 127  
 Anslow, Pete Independent  
 Comment Type TR Comment Status A missing registers

The draft contains a number of Editor's notes that state a need for additions that have not been made. With these notes present, this draft is not ready to move to SA ballot, so this is a required comment.  
 Notes are in 45.2.4.30, 45.2.5.29, 45.2.6.15, and 45.2.6.16.

SuggestedRemedy

Resolve the issue outlined in each of these editor's notes and remove them.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comments #189, #190, #191, and #192 for the fix to the missing register problem.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 45 SC 45.2.4.30 P36 L37 # 145  
 Tse, Richard Microchip Technology  
 Comment Type E Comment Status A missing registers  
 Editorial note still needs to be resolved. This seems like a maintenance issue and outside the scope of 802.3cx.  
 SuggestedRemedy  
 Remove editorial note from draft. Refer this issue to the maintenance subgroup.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comments #189, #190, #191, and #192 for the fix to the missing register problem.

CI 45 SC 45.2.5.29 P39 L9 # 146  
 Tse, Richard Microchip Technology  
 Comment Type E Comment Status A missing registers  
 Editorial note still needs to be resolved. This seems like a maintenance issue and outside the scope of 802.3cx.  
 SuggestedRemedy  
 Remove editorial note from draft. Refer this issue to the maintenance subgroup.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comments #189, #190, #191, and #192 for the fix to the missing register problem.

CI 45 SC 45.2.5.28 P38 L7 # 205  
 Grow, Robert RMG Consulting  
 Comment Type ER Comment Status A support  
 Similar difficult to understand reference to 802.3-2018 as in 45.2.1.146.  
 SuggestedRemedy  
 Change consistent with resolution of my comment on page 22, line 34.  
 Response Response Status W  
 ACCEPT IN PRINCIPLE.  
 See comment #238

CI 45 SC 45.2.6.14 P41 L32 # 206  
 Grow, Robert RMG Consulting  
 Comment Type ER Comment Status A support  
 Similar difficult to understand reference to 802.3-2018 as in 45.2.1.146.  
 SuggestedRemedy  
 Change consistent with resolution of my comment on page 22, line 34.  
 Response Response Status W  
 ACCEPT IN PRINCIPLE.  
 See comment #238

CI 45 SC 45.2.5.29 P39 L6 # 190  
 Brett McClellan Marvell  
 Comment Type TR Comment Status A missing registers  
 This draft is technically incomplete and has known incorrect normative text.  
 "The values contained in these registers are valid when the link is established, as indicated by bit 2 in Register 1.1 (see 45.2.1.2.4)"  
 The DTE XGXS transmit has no dependency upon the PMA link status (Bit 2 in Register 1.1) nor on any link status. These registers should always be valid when not in reset or low power.  
 SuggestedRemedy  
 change text to: "The values contained in these registers are valid when the DTE XGXS is not in reset or powered down as indicated by bits 15 and 11 in Register 5.0 (see 45.2.5.1)"  
 Response Response Status W  
 ACCEPT IN PRINCIPLE.  
 change text to: "The values contained in these registers are valid when the DTE XS is not in reset or powered down as indicated by bits 15 and 11 in Register 5.0 (see 45.2.5.1)"

CI 45 SC 45.2.6.14 P41 L41 # 208  
 Grow, Robert RMG Consulting  
 Comment Type ER Comment Status A bucket  
 Typo?  
 SuggestedRemedy  
 Resulting reserved range should be bits 13:4, it looks like the strikethrough 4 was accidentally changed to the letter d.  
 Response Response Status W  
 ACCEPT.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 45 SC 45.2.6.15 P42 L 36 # 191

Brett McClellan Marvell  
 Comment Type TR Comment Status A missing registers

This draft is technically incomplete and has known incorrect normative text.  
 "The values contained in these registers are valid when the link is established, as indicated by bit 2 in Register 1.1 (see 45.2.1.2.4)"  
 The TimeSync TC transmit has no dependency upon the PMA link status (Bit 2 in Register 1.1) nor on any link status. These registers should always be valid when not in reset.

SuggestedRemedy

change text to: "The values contained in these registers are valid when the TimeSync TC is not in reset as indicated by bit 15 in Register 6.0 (see 45.2.6.1.1)"

Response Response Status W

ACCEPT IN PRINCIPLE.

change text to: "The values contained in these registers are valid when the TC is not in reset as indicated by bit 15 in Register 6.0 (see 45.2.6.1.1)"

CI 45 SC 45.2.6.15 P42 L 39 # 147

Tse, Richard Microchip Technology  
 Comment Type E Comment Status A missing registers

Editorial note still needs to be resolved. This seems like a maintenance issue and outside the scope of 802.3cx.

SuggestedRemedy

Remove editorial note from draft. Refer this issue to the maintenance subgroup.

Response Response Status C

ACCEPT IN PRINCIPLE.

See comments #189, #190, #191, and #192 for the fix to the missing register problem.

CI 45 SC 45.2.6.16 P43 L 38 # 192

Brett McClellan Marvell  
 Comment Type E Comment Status A missing registers

This draft is technically incomplete and has known incorrect normative text.  
 "The values contained in these registers are valid when the link is established, as indicated by bit 2 in Register 1.1 (see 45.2.1.2.4)"  
 The TimeSync TC receive has no dependency upon the PMA link status (Bit 2 in Register 1.1) nor on any link status. These registers should always be valid when not in reset.

SuggestedRemedy

change text to: "The values contained in these registers are valid when the TimeSync TC is not in reset as indicated by bit 15 in Register 6.0 (see 45.2.6.1.1)"

Response Response Status C

ACCEPT IN PRINCIPLE.

change text to: "The values contained in these registers are valid when the TC is not in reset as indicated by bit 15 in Register 6.0 (see 45.2.6.1.1)"

CI 45 SC 45.2.6.16 P43 L 41 # 148

Tse, Richard Microchip Technology  
 Comment Type E Comment Status A missing registers

Editorial note still needs to be resolved. This seems like a maintenance issue and outside the scope of 802.3cx.

SuggestedRemedy

Remove editorial note from draft. Refer this issue to the maintenance subgroup.

Response Response Status C

ACCEPT IN PRINCIPLE.

See comments #189, #190, #191, and #192 for the fix to the missing register problem.

## Approved Responses

## IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

Cl 48 SC 48.2.4.30 P38 L37 # 207

Grow, Robert

RMG Consulting

Comment Type TR Comment Status A missing registers

It is good to note a problem, but why doesn't the draft fix the problem? Is this another case where the WG failed to see that the draft was not technically complete when approving WG ballot? Same problem on page 42, line 36 and page 43, line 37.

*SuggestedRemedy*

Define the new bit. After defining, delete this editors note and red highlight here and on page 42, line 36.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comments #189, #190, #191, and #192 for the fix to the missing register problem.

Cl 90 SC 90 P45 L1 # 176

Slavick, Jeff

Broadcom

Comment Type TR Comment Status A delta

The changes that are made to Clause 90 are relatively minor compared to the existing Clause 90 in 802.3dc. Providing a full replacement of the Clause makes it extremely difficult to evaluate how the modifications that are being made affect backwards compability.

*SuggestedRemedy*

Make it so Clause 90 in 802.3cx shows the modifications from the existing Clause 90 that are being made too add in support for high accuracy timing operation.

Response Response Status C

ACCEPT.

See comment #184

Cl 90 SC 90 P45 L1 # 184

Marris, Arthur

Cadence Design Systems

Comment Type TR Comment Status A delta

As said previously it is not acceptable to replace a long standing legacy clause with completely new text. In doing a diff between Clause 90 in 802.3cx with the base standard I see that the new text does not include the amendments made by 802.3cd for 50G operation. It does not include maintenance request 1389 for Figure 90-1.

*SuggestedRemedy*

Rewrite 802.3cx so that it amends Clause 90 rather than replaces it. Also make it amend Clause 90 as described in the 802.3dc revision project.

Response Response Status C

ACCEPT.

Cl 90 SC 90 P45 L1 # 233

Ran, Adee

Cisco

Comment Type TR Comment Status A delta

You cannot replace a whole clause.

This has been attempted in previous projects, notably 802.3bt, which initially attempted to replace clause 33, but eventually added the new clause 145 for definitions that could not be fit into clause 33.

I cannot review this draft and comment on anything without understanding the changes from the base document.

*SuggestedRemedy*

Make the required changes to clause 90 using editorial instructions as in other amendments.

If the additions are substantial, consider adding a new clause, as was done in 802.3bt.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comment #184

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

Cl 90 SC 90.1 P45 L15 # 161  
 Slavick, Jeff Broadcom  
 Comment Type E Comment Status A bucket  
 gRS is first used here  
 SuggestedRemedy  
 Change "gRS sublayer" to be "generic Reconciliation Sublayer (gRS)"  
 Response Response Status C  
 ACCEPT.

Cl 90 SC 90.3 P45 L31 # 245  
 Law, David HPE  
 Comment Type E Comment Status A bucket  
 Starting a subclause 'Per 90.2 ...' seems unusual, and I think we would usually reference another subclause by using 'see 90.2'. In addition, I think the text '... including e.g. ...' is repetitively redundant and either 'including' or 'e.g.' is sufficient. Finally, I don't believe that 90.2 describes capabilities. Instead, it describes goals.  
 SuggestedRemedy  
 Suggest that subclause 90.3 be changed to read:  
 The TSSI and data delays registers provide support for time synchronization protocols, e.g., IEEE Std 1588 and IEEE Std 802.1AS. The definition of the TimeSync Client, its capabilities, and its functions, is outside the scope of IEEE Std 802.3.  
 Response Response Status C  
 ACCEPT.

Cl 90 SC 90.4.1.1 P46 L4 # 112  
 Gorshe, Steve Microchip Technology  
 Comment Type E Comment Status A delta  
 Figure 90-1 Should the draft indicate that this figure has been modified by 802.3cx? With no change marks, the reader could miss that unless they had the current clause 90 open for comparison.  
 SuggestedRemedy  
 Perhaps an editor's note to be removed prior to publication?  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #184

Cl 90 SC 90.4.1.2 P46 L51 # 244  
 Law, David HPE  
 Comment Type TR Comment Status A  
 The overview provided by subclause 90.4.1.2 needs to be updated to reflect the addition of the dynamic data delay information (i.e., TX\_num\_unit\_change and RX\_num\_unit\_change) being added by the IEEE P802.3cx project. In addition, the first paragraph of this subclause says that the egress and ingress times can be 'selected' by the TimeSync Client. As the TSSI only indicates an event, there is no 'time' provided by the TSSI, I believe that the egress and ingress times can be 'detected', not 'selected', by the TimeSync Client. Finally, I suggest that it should be made clear that these egress and ingress times are for the xMII.

SuggestedRemedy  
 [1] Suggest that the text '... combined with knowledge of the protocol frames ...' in the first paragraph of subclause 90.4.1.2 be changed to read '... combined with knowledge of the time synchronisation protocol frames ...'.  
 [2] Suggest that the text '... to select the egress and ingress times relevant to the protocol.' in the first paragraph of subclause 90.4.1.2 be changed to read '... to detect the egress and ingress time of packets relevant to the protocol at the xMII.'.  
 [3] Suggest that the second paragraph of subclause 90.4.1.2 be changed to be replaced with the following:

When the TimeSync Client detects a relevant egress time, it may use that egress time at the xMII, along with the TimeSync PHY transmit path data delay, if available, and the PCS dynamic transmit path data delay, if supplied, to calculate the egress time at the MDI. The difference between the maximum and minimum PHY transmit data delay values, if available, may be used by the TimeSync Client to calculate the accuracy of the calculated egress time at the MDI. When the TimeSync Client detects a relevant ingress time, it may use that ingress time at the xMII, along with the TimeSync PHY receive path data delay information, if available, and the PCS dynamic receive path data delay, if supplied, to calculate the ingress time at the MDI. The difference between the maximum and minimum PHY receive data delay values, if available, may be used by the TimeSync Client to calculate the accuracy of the calculated ingress time at the MDI.

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Make changes per suggested remedy with the following updates:  
 - change "detect time" to "capture time"

**Cl 90**    **SC 90.4.2**    **P47**    **L16**    # **113**  
 Gorshe, Steve    Microchip Technology  
*Comment Type*    **E**    *Comment Status*    **A**    *delta*  
 Regardless of whether we add an editor's note to Figure 90-1 suggested in the previous comment, these new sentences that describe the change to the figure should be underlined to indicate that they are new to that sub-clause  
*SuggestedRemedy*  
 Underline new text  
*Response*    *Response Status*    **C**  
 ACCEPT IN PRINCIPLE.  
  
 See comment #184

**Cl 90**    **SC 90.4.3.1.1**    **P47**    **L26**    # **248**  
 Law, David    HPE  
*Comment Type*    **TR**    *Comment Status*    **A**  
 To quote some of the text from subclause 1.2.2.1 'Classification of service primitives', 'The indication primitive is passed from layer N-1 to layer N to indicate an internal layer N-1 event that is significant to layer N.'. It is therefore the time that the TS\_TX.indication primitive or the TS\_RX.indication primitive is passed from the gRS to the TimeSync Client that is significant to the TimeSync Client as that provides the time the beginning of the SFD, or the beginning of the first symbol after the SFD, passed across the xMII. The SFD parameter, which only has one possible value of 'DETECTED', provides no additional information and therefore appears redundant.  
*SuggestedRemedy*  
 [1] In subclause 90.4.3.1.1 delete the text 'SFD, ' from ' TS\_TX.indication(SFD, MM, MTPS)'.  
 [2] Delete the third paragraph (lines 32 - 35) of subclause 90.4.3.1.1.  
 [3] In subclause 90.4.3.2.1 delete the text 'SFD, ' from ' TS\_RX.indication(SFD, MM, MTPS)'.  
 [4] Delete the third paragraph (lines 32 - 35) of subclause 90.4.3.2.1.  
*Response*    *Response Status*    **C**  
 ACCEPT IN PRINCIPLE.  
  
 Changes per comment with the additional changes:  
  
 - Add the following statement "When asserted, the TimeSync Client is notified that a valid message timestamp point (MTP) was detected by the gRS sub-layer TS\_MTP\_Detect\_TX function (see 90.5.1) in the xMII transmit signals." at the end of 90.4.3.1.  
  
 - Add the following statement: "When asserted the TimeSync Client is notified that a valid message timestamp point (MTP) was detected by the gRS sub-layer TS\_MTP\_Detect\_RX function (see 90.5.2) in the xMII receive signals." at the end of 90.4.3.2.

CI 90 SC 90.4.3.1.1 P47 L37 # 247

Law, David HPE

Comment Type TR Comment Status A

It doesn't seem correct to call this parameter 'message timestamp point selection' as the TSSI doesn't have any knowledge of the 'message'. Instead, a TS\_TX.indication and a TS\_RX.indication is issued for every packet that is transmitted or received across the xMII, regardless of the content of the packet, see subclause 90.2. It is the responsibility of the TimeSync Client, based on knowledge of protocols frames, to extract the TS\_TX.indications and TS\_RX.indications of interest, see subclause 90.4.1.2. The MTSP parameter just indicates if the primitive was issued due to the beginning of an SFD, or the beginning of the first symbol after an SFD, being transferred across the xMII. As a result, I suggest that 'packet measurement point (PMP)' is a better name for this parameter.

It also doesn't seem correct to say 'SFD and FIRST\_SYMBOL - see register 3.1813.13 in 45.2.3.68a' with respect to the TS\_TX.indication (page 47, line 37) and TS\_RX.indication (page 48, line 20) primitives as they are generated in the gRS which is 'above' the xMII and therefore doesn't have access to these or any other registers. Instead, I think it needs to be noted here, and elsewhere, that the use of the beginning of an SFD, or the beginning of the first symbol after an SFD as the measurement point needs consistent configuration of the gRS and the PCS.

#### Suggested Remedy

[1] In the second paragraph of subclause 90.4.3.1.1 change the text '... MTPS)' to read '... PMP)'.

[2] Replace the fourth paragraph of subclause 90.4.3.1.1 with:

The packet measurement point (PMP) parameter can take one of two possible values, SFD and FIRST\_SYMBOL. The value SFD indicates that the TS\_RX.indication primitive was issued as the result of the beginning of an SFD being transferred across the transmit path of the xMII. The value FIRST\_SYMBOL indicates that the TS\_TX.indication primitive was issued as the result of the beginning of the first symbol after an SFD being transferred across the transmit path of the xMII. The use of the beginning of the SFD, or the beginning of the first symbol after the SFD, as the measurement point requires consistent configuration of both the gRS and the PCS (see 45.2.3.68a) for correct operation.

[3] In the second paragraph of subclause 90.4.3.2.1 change the text '... MTPS)' to read '... PMP)'.

[4] Replace the fourth paragraph of subclause 90.4.3.2.1 with:

The packet measurement point (PMP) parameter can take one of two possible values, SFD and FIRST\_SYMBOL. The value SFD indicates that the TS\_RX.indication primitive was issued as the result of the beginning of an SFD being transferred across the receive path of the xMII. The value FIRST\_SYMBOL indicates that the TS\_RX.indication primitive was issued as the result of the beginning of the first symbol after an SFD being transferred across the receive path of the xMII. The use of the beginning of an SFD, or the beginning of the first symbol after an SFD as the measurement point has to be configured

consistently in both the gRS and all associated PHY registers for correct operation. The use of the beginning of the SFD, or the beginning of the first symbol after the SFD, as the measurement point requires consistent configuration of both the gRS and the PCS (see 45.2.3.68a) for correct operation.

[5] Change the text 'message timestamp point' to read 'packet measurement point' elsewhere.

Response Response Status C

ACCEPT IN PRINCIPLE.

[1] In the second paragraph of subclause 90.4.3.1.1 change the text '... MTPS)' to read '... DDMP)'.

[2] Replace the fourth paragraph of subclause 90.4.3.1.1 with:

The data delay measurement point (DDMP) parameter can take one of two possible values, SFD and FIRST\_SYMBOL. The value SFD indicates that the TS\_RX.indication primitive was issued as the result of the beginning of an SFD being transferred across the transmit path of the xMII. The value FIRST\_SYMBOL indicates that the TS\_TX.indication primitive was issued as the result of the beginning of the first symbol after an SFD being transferred across the transmit path of the xMII. The use of the beginning of the SFD, or the beginning of the first symbol after the SFD, as the measurement point requires consistent configuration of both the gRS and the PCS (see 45.2.3.68a) for correct operation.

[3] In the second paragraph of subclause 90.4.3.2.1 change the text '... MTPS)' to read '... DDMP)'.

[4] Replace the fourth paragraph of subclause 90.4.3.2.1 with:

The data delay measurement point (DDMP) parameter can take one of two possible values, SFD and FIRST\_SYMBOL. The value SFD indicates that the TS\_RX.indication primitive was issued as the result of the beginning of an SFD being transferred across the receive path of the xMII. The value FIRST\_SYMBOL indicates that the TS\_RX.indication primitive was issued as the result of the beginning of the first symbol after an SFD being transferred across the receive path of the xMII. The use of the beginning of an SFD, or the beginning of the first symbol after an SFD as the measurement point has to be configured consistently in both the gRS and all associated PHY registers for correct operation. The use of the beginning of the SFD, or the beginning of the first symbol after the SFD, as the measurement point requires consistent configuration of both the gRS and the PCS (see 45.2.3.68a) for correct operation.

[5] Change the text 'message timestamp point' to read 'data delay measurement point' elsewhere.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 90 SC 90.4.4 P48 L42 # 114  
 Gorshe, Steve Microchip Technology  
 Comment Type E Comment Status A delta  
 Should the text in new sub-clause 90.4.4 be underlined or otherwise marked (e.g., with a lead-in "Insert new sub-clause 90.4.4" paragraph) to indicate that this is new to 802.3cx?  
 SuggestedRemedy  
 Underline new text  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #184

CI 90 SC 90.4.4 P48 L42 # 162  
 Slavick, Jeff Broadcom  
 Comment Type TR Comment Status A  
 Sub--clause 90.4.4 is new. This should be considered an optional feature to make backwards compliance possible, but required feature for high accuracy measurement.  
 SuggestedRemedy  
 Add the word "optionally" before generated on page 47 line 16  
 Add this setence to 90.4.4 "These signals are optionally provided by the PHY to support high accuracy timestamping."  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Add this sentence into 90.4.4: "These signals are provided by the PHY when the PCS bit 3.1800.10 (see 45.2.3.66.xx) is set to one."  
 45.2.3.66.xx to be replaced with the correct reference once subclause is created.

CI 90 SC 90.4.4.1 P48 L44 # 115  
 Gorshe, Steve Microchip Technology  
 Comment Type E Comment Status R  
 Should the definition of the TX\_num\_unit\_change signal refer to Figure 90-1 where it is illustrated?  
 SuggestedRemedy  
 Response Response Status C  
 REJECT.  
 These are abstract definitions and reference to Figure 90-1 would need to be added in each subclause. Note that these subclauses follow already Figure 90-1, so we introduce first the figure and then details of individual primitives.

CI 90 SC 90.4.4.1 P48 L49 # 209  
 Huber, Tom Nokia  
 Comment Type E Comment Status A bucket  
 Awkward grammar in the first sentence of the second paragraph: "TX\_num\_unit\_change is intended for the use with intra-chip interfaces."  
 SuggestedRemedy  
 Delete "the", so the sentence reads "TX\_num\_unit\_change is intended for use with intra-chip interfaces."  
 Response Response Status C  
 ACCEPT.

CI 90 SC 90.4.4.1 P48 L50 # 177  
 Slavick, Jeff Broadcom  
 Comment Type TR Comment Status A  
 The definition of the service interface is not an appropriate place to insert a "recommendation".  
 SuggestedRemedy  
 Remove the last setence of the 2nd paragraph of 90.4.4.1  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #135

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

Cl 90 SC 90.4.4.1 P48 L50 # 135

Tse, Richard Microchip Technology  
 Comment Type E Comment Status A defer

The last sentence in this paragraph applies only to physical interfaces. However, this is not clear because both physical interfaces and intra-chip interfaces are mentioned earlier in this paragraph..

SuggestedRemedy  
 Change

"TX\_num\_unit\_change is intended for the use with intra-chip interfaces. TX\_num\_unit\_change is not available over physical interfaces such as instantiated xMII or AUI. In order to achieve high accuracy timestamping, it is recommended to avoid AM insertion, CWM insertion, and Idle insertion/removal in sublayers lower than these interfaces."

to

"TX\_num\_unit\_change is intended for the use with intra-chip interfaces. TX\_num\_unit\_change is not available over physical interfaces such as instantiated xMII or AUI. In order to achieve high accuracy timestamping with these physical interfaces, it is recommended to avoid AM insertion, CWM insertion, and Idle insertion/removal in sublayers lower than these interfaces."

Response Response Status C  
 ACCEPT IN PRINCIPLE.

Insert NOTE 6 at the end of 90.7 as follows: "NOTE 6 — When TX\_NUM\_UNIT\_CHANGE and RX\_NUM\_UNIT\_CHANGE are not available (e.g., over physical interfaces such as instantiated xMII or AUI), it is recommended to, when possible, avoid Idle insertion/removal, alignment marker insertion/removal, and/or codeword marker insertion/removal in the sublayers below the xMII/AUI to reduce the number of timestamping accuracy impairments (see Annex 90A)."

Insert sentence at the end of each of these two paragraphs in 90.7 to improve description of TX/RX\_NUM\_UNIT\_CHANGE operation: "The PHY provides its transmit path delay variance information to the TimeSync Client via the PDDPD parameter in the TS\_TX.indication primitive." and "The PHY provides its receive path delay variance information to the TimeSync Client via the PDDPD parameter in the TS\_RX.indication primitive.". Strike the "The dynamic delay variance is reported by the TX\_num\_unit\_change and RX\_num\_unit\_change signals." at the end of the second paragraph.

Cl 90 SC 90.4.4.1 P48 L51 # 149

Lusted, Kent Intel Corporation  
 Comment Type ER Comment Status A

The abbreviation "CWM" is used 30 times within the draft and is not defined anywhere. The IEEE P802.3dc Revision project D2.0 does not have this abbreviation defined either. The abbreviation is assumed by the reader to be Codeword Marker but it is not explicitly defined.

SuggestedRemedy

Add new abbreviation in Clause 1.4 as follows: "CWM Codeword Marker" or change CWM to be "Codeword Marker" throughout the draft.

Response Response Status W  
 ACCEPT IN PRINCIPLE.

Expand the acronym in all locations and use "codeword marker" without capitalization unless at the start of the start of the sentence.

Cl 90 SC 90.4.4.1 P48 L51 # 150

Lusted, Kent Intel Corporation  
 Comment Type ER Comment Status A

The abbreviation "AM" is used 30 times within the draft and is not defined anywhere. The IEEE P802.3dc Revision project D2.0 does not have this abbreviation defined either. The abbreviation is assumed by the reader to be Alignment Marker but it is not explicitly defined.

SuggestedRemedy

Add new abbreviation in Clause 1.4 as follows: "AM Alignment Marker" or change AM to be "Alignment Marker" throughout the draft.

Response Response Status W  
 ACCEPT IN PRINCIPLE.

Expand the acronym in all locations and use "alignment marker" without capitalization unless at the start of the start of the sentence.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

Cl 90 SC 90.4.4.1 P48 L51 # 225  
 Nicholl, Shawn Xilinx  
 Comment Type E Comment Status A bucket  
 This is the first use of the terms "AM" and "CWM" in the clause. Consider to expand the definition to enhance readability.  
 SuggestedRemedy  
 Propose to replace "AM insertion" with "alignment marker (AM) insertion". Propose to replace "CWM insertion" with "codeword marker (CWM) insertion".  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #150

Cl 90 SC 90.4.4.1.1 P49 L4 # 180  
 Slavick, Jeff Broadcom  
 Comment Type TR Comment Status A  
 Tx\_num\_unit\_change is a change relative to what? Min time, the max time, nominal time? Relative to the previous cycle?  
 SuggestedRemedy  
 Add the following sentence to the end of the paragraph "The adjustment value is relative to the average Tx PHY transmit path delay (see 45.2.1.147)."  
 Response Response Status C  
 ACCEPT.

Cl 90 SC 90.4.4.1.1 P49 L4 # 178  
 Slavick, Jeff Broadcom  
 Comment Type TR Comment Status A  
 The second sentence inclusion of why this signal may take a non-zero value is not appropriate here.  
 SuggestedRemedy  
 Change the second sentence from " The value indicates how many units of delay change are to be performed in the Tx PHY (e.g., for AM insertion, CWM insertion, or Idle rate adaptation insertion/removal), where one unit is equivalent to one bit at the xMII." to "The value indicates an adjustment to the transmit path delay in the Tx PHY for this Tx xMII word, where one unit is equivalent to one bit at the xMII."  
 Response Response Status C  
 ACCEPT.

Cl 90 SC 90.4.4.1.2 P49 L10 # 136  
 Tse, Richard Microchip Technology  
 Comment Type E Comment Status A Figure 90-2  
 Figure 90–2 is not referenced anywhere in the draft.  
 SuggestedRemedy  
 Add "See Figure 90–2." after the first sentence in 90.4.4.1.2.  
 Response Response Status C  
 ACCEPT.

Cl 90 SC 90.4.4.1.2 P49 L11 # 179  
 Slavick, Jeff Broadcom  
 Comment Type TR Comment Status R  
 AM insertion, CWM insertion and Idle/insert delete are the typical reasons for a change in delay but not the only one.  
 SuggestedRemedy  
 Change the second sentence from:  
 TX\_num\_unit\_change indicates the change in the Tx PHY's path data delay due to AM insertion, CWM insertion, and/or Idle rate adaptation insertion/removal for the corresponding Tx xMII word.  
 To:  
 TX\_num\_unit\_change indicates the change in the Tx PHY's transmit path data delay for the corresponding Tx xMII word, possible reasons for the adjustment are AM insertion, CWM insertion, and/or Idle rate adaptation insertion/removal.  
 Response Response Status W  
 REJECT.

The intent is to report data delay only due to AM insertion, CWM insertion, and/or Idle rate adaptation insertion/removal at this time. Any future functions causing data delay variation would require an update to TimeSync.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 90 SC 90.4.4.1.3 P49 L 20 # 128  
 Anslow, Pete Independent  
 Comment Type ER Comment Status A Figure 90-2 Figure 90-3  
 According to the IEEE SA Standards Style Manual, figures should be cited in the text.  
 This is not the case for Figure 90-2 and Figure 90-3.  
*SuggestedRemedy*  
 Add text to 90.4.4.1.3 and 90.4.4.2.3 that describes what these two figures show.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #136 and #138 + move figure anchor for references figures to where they are referenced.

CI 90 SC 90.4.4.2 P48 L 50 # 181  
 Slavick, Jeff Broadcom  
 Comment Type TR Comment Status A  
 The definition of the service interface is not an appropriate place to insert a "recommendation".  
*SuggestedRemedy*  
 Remove the last sentence of the 2nd paragraph of 90.4.4.2  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #135.

CI 90 SC 90.4.4.2 P49 L 38 # 137  
 Tse, Richard Microchip Technology  
 Comment Type T Comment Status A  
 The last sentence in this paragraph applies only to physical interfaces. However, this is not clear because both physical interfaces and intra-chip interfaces are mentioned earlier in this paragraph..  
*SuggestedRemedy*  
 Change  
 "RX\_num\_unit\_change is intended for the use with intra-chip interfaces.  
 RX\_num\_unit\_change is not available over physical interfaces such as instantiated xMII or AUI. In order to achieve high accuracy timestamping, it is recommended to avoid AM insertion, CWM insertion, and Idle insertion/removal in sublayers lower than these interfaces."  
 to  
 "RX\_num\_unit\_change is intended for the use with intra-chip interfaces.  
 RX\_num\_unit\_change is not available over physical interfaces such as instantiated xMII or AUI. Thus, in order to achieve high accuracy timestamping with these physical interfaces, it is recommended to avoid AM insertion, CWM insertion, and Idle insertion/removal in sublayers lower than these interfaces."  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #135

CI 90 SC 90.4.4.2.1 P49 L 4 # 160  
 Slavick, Jeff Broadcom  
 Comment Type TR Comment Status A  
 Rx\_num\_unit\_change is a change relative to what? Min time, the max time, nominal time? Relative to the previous cycle?  
*SuggestedRemedy*  
 Add the following sentence to the end of the paragraph "The adjustment value is relative to the average Rx PHY receive path delay (see 45.2.1.148)."  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #249

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 90 SC 90.4.4.2.1 P49 L4 # 158

Slavick, Jeff Broadcom

Comment Type TR Comment Status A

The second sentence inclusion of why this signal may take a non-zero value is not appropriate here.

SuggestedRemedy

Change the second sentence from " The value indicates how many units of delay change were performed in the Rx PHY (e.g., for AM insertion, CWM insertion, or Idle rate adaptation insertion/removal), where one unit is equivalent to one bit at the xMII." to "The value indicates an adjustment to the receive path delay in the Rx PHY for this Rx xMII word, where one unit is equivalent to one bit at the xMII."

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #249

CI 90 SC 90.4.4.2.2 P49 L11 # 159

Slavick, Jeff Broadcom

Comment Type TR Comment Status A

AM insertion, CWM insertion and Idle/insert delete are the typical reasons for a change in delay but not the only one.

SuggestedRemedy

Change the second sentence from:  
RX\_num\_unit\_change indicates the change in the Rx PHY's path data delay due to AM removal, CWM removal, and/or Idle rate adaptation insertion/removal for the corresponding Rx xMII word.

To:  
RX\_num\_unit\_change indicates the change in the Rx PHY's receive path data delay for the corresponding Rx xMII word, possible reasons for the adjustment are AM removal, CWM removal, and/or Idle rate adaptation insertion/removal.

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #249

CI 90 SC 90.4.4.2.2 P49 L51 # 138

Tse, Richard Microchip Technology

Comment Type E Comment Status A Figure 90-3

Figure 90-3 is not referenced anywhere in the draft.

SuggestedRemedy

Add "See Figure 90-3." after the first sentence in 90.4.4.2.2.

Response Response Status C

ACCEPT.

CI 90 SC 90.5 P50 L19 # 116

Gorshe, Steve Microchip Technology

Comment Type E Comment Status A delta

Should the text changes and additions introduced by 802.3cx be underlined throughout clause 90.5

SuggestedRemedy

Underline new text

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #184

CI 90 SC 90.5 P50 L19 # 249

Law, David HPE

Comment Type TR Comment Status A

The additional optional xMII signals being defined to support high accuracy timestamping should be defined in the generic Reconciliation Sublayer (gRS) subclause. In addition, suggest that TX\_num\_unit\_change be changed to TX\_NUM\_UNIT\_CHANGE and RX\_num\_unit\_change be changed to RX\_NUM\_UNIT\_CHANGE to match the other xMII signals, which are all uppercase.

*SuggestedRemedy*

[1] Add the following new text to the end of the second paragraph of subclause 90.5:

In addition, an optional bundle of sixteen logical xMII transmit signals (TX\_NUM\_UNIT\_CHANGE<15:0>) and an optional bundle of sixteen logical xMII receive signals (RX\_NUM\_UNIT\_CHANGE<15:0>) are defined to enable the PHY to provide the gRS dynamic data information to forward to the TimeSync client to support the calculation of high accuracy data delay values.

[2] Add new subclauses 90.5.3 follows (modelled after equivalent text in Clause 81):

90.5.3 TX\_NUM\_UNIT\_CHANGE<15:0>

TX\_NUM\_UNIT\_CHANGE is an optional bundle of sixteen logical signals (TX\_NUM\_UNIT\_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. They are defined as logical signals intended for use with an intra-chip interface, physical instantiation of these signal is not defined. TX\_NUM\_UNIT\_CHANGE<15:0> are sourced by the PHY for each TX\_CLK period in 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 value reports the number of bits of dynamic transmit path data delay the transmit data being transferred from the gRS to the PHY will experience due actions such as alignment marker insertion, codeword marker insertion, and/or Idle rate adaptation insertion/removal. The relationship between the TX\_CLK, TXD and TX\_NUM\_UNIT\_CHANGE is illustrated in figure 90-2 below. To avoid dynamic transmit path data delay that cannot be reported to the TimeSync client, it is recommended to avoid alignment marker insertion, codeword marker insertion, and/or idle rate adaptation insertion/removal in any PHY sublayer other than the PCS.

[3] Move Figure '90-2—Relationship between TXD and TX\_NUM\_UNIT\_CHANGE' to the end of this new subclause.

[4] Add new subclauses 90.5.4 follows:

90.5.3 RX\_NUM\_UNIT\_CHANGE<15:0>

RX\_NUM\_UNIT\_CHANGE is an optional bundle of sixteen logical signals (RX\_NUM\_UNIT\_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. They are defined as logical signals intended for use with an intra-chip interface, physical instantiation of these signal is not defined. RX\_NUM\_UNIT\_CHANGE<15:0> are sourced by the PHY for each RX\_CLK period in which receive data is transferred from the PHY to the gRS and provides a value ranging from -32768 to +32767 in two's complement format. The value reports the number of bits of dynamic receive path data delay the receive data being transferred from the PHY to the gRS has experience due to actions such as alignment marker removal, codeword marker removal, and/or Idle rate adaptation insertion/removal. The relationship between the RX\_CLK, RXD and RX\_NUM\_UNIT\_CHANGE is illustrated in figure 90-2 below. To avoid dynamic receive path data delay that cannot be reported to the TimeSync client, it is recommended to avoid alignment marker removal, codeword marker removal, and/or Idle rate adaptation insertion/removal in any PHY sublayer other than the PCS.

Response Response Status C

ACCEPT IN PRINCIPLE.

Changes per comment and add one extra step as follows

[5] Move Figure '90-3—Relationship between RXD and RX\_NUM\_UNIT\_CHANGE' to the end of this new subclause.

In [2], change "The value reports the number of bits of dynamic transmit path data delay the transmit data being transferred from the gRS to the PHY will experience due actions such as alignment marker insertion, codeword marker insertion, and/or Idle rate adaptation insertion/removal."

to read

"The value reports the number of bits of dynamic transmit path data delay the transmit data being transferred from the gRS to the PHY experiences, relative to the mean PCS transmit path data delay (see 45.2.3.67), due to actions such as alignment marker insertion, codeword marker insertion, and/or Idle rate adaptation insertion/removal."

In [4], change "The value reports the number of bits of dynamic receive path data delay the receive data being transferred from the PHY to the gRS has experience due to actions such as alignment marker removal, codeword marker removal, and/or Idle rate adaptation insertion/removal."

to read

"The value reports the number of bits of dynamic receive path data delay the receive data being transferred from the PHY to the gRS has experienced, relative to the mean PCS receive path data delay (see 45.2.3.68), due to actions such as alignment marker removal, codeword marker removal, and/or Idle rate adaptation insertion/removal.:

CI 90 SC 90.5.1 P50 L35 # 167

Slavick, Jeff Broadcom

Comment Type TR Comment Status R

The service primitive interface supplies the communication path between sub-layers. It does not need to include programming of how the INDICATION is generated, that is done based upon the detect\_function which causes the event to occur. So there is no need to modify 90.4.3.1.1 and 90.4.3.2.1. To provide support of selecting when INDICATION occurs, either coincident with the SFD or the FIRST\_CHAR after the SFD, you just need to manipulate when the detect cause the INDICATION event to occur. So only 90.5.1 and 90.5.2 need to be adjusted to provide text for when the DETECT will cause INDICATION to occur to allow for both options. Note the detect\_function monitors only for Start of Frame Delimiter and then delays (or doesn't) the INDICATION based upon the MDIO config field.

*SuggestedRemedy*

Revert 90.4.3.1.1 and 90.4.3.2.1 to be same as 802.3dc (existing CI90 definition).

Update all references of TS\_MTP\_Detetct\* back to TS\_SDF\_Detect\*

Update the following two sub-clauses to be as follows

90.5.1 TS\_SFD\_Detect\_TX function

The TS\_SFD\_Detect\_TX function observes the xMII transmit signals.

There are two possible points in the message where TS\_SFD\_Detect\_TX will cause TS\_TX.indication to be generated. The selection of which location is used, the beginning of the Start of Frame Delimiter (SFD, see 3.1.1 and 3.2.2, SMD-E and SMD-S, see 99.3.3) or the beginning of the first symbol after the SFD, is based upon the setting of Message Timestamp Point (MTP) (see 45.2.4.68a).

When the MAC Merge sublayer is not instantiated the TS\_SFD\_Detect\_TX function detects the occurrence of the SFD in compliance with the specifications of the given type of instantiated xMII. For each SFD that is detected on the transmit signals of the xMII the TS\_TX.indication service primitive shall be generated (SFD=DETECTED) across the TSSI at the configured MTP.

When the MAC Merge sublayer is instantiated the TS\_SFD\_Detect\_TX function detects the occurrence of the SMD-E and SMD-S in compliance with the specifications of the given type of instantiated xMII. For each SMD-E that is detected on the transmit signals of the xMII the TS\_TX.indication service primitive shall be generated (SFD=DETECTED, MM=EMAC) across the TSSI at the configured MTP.

For each SMD-S that is detected on the transmit signals of the xMII the TS\_TX.indication service primitive shall be generated (SFD=DETECTED, MM=PMAC) across the TSSI at the configured MTP.

90.5.2 TS\_SFD\_Detect\_RX function

The TS\_SFD\_Detect\_RX function observes the xMII receive signals.

There are two possible points in the message where TS\_SFD\_Detect\_RX will cause TS\_RX.indication to be generated. The selection of which location is used, the beginning of the Start of Frame Delimiter (SFD, see 3.1.1 and 3.2.2, SMD-E and SMD-S, see 99.3.3) or the beginning of the first symbol after the SFD, is based upon the setting of Message Timestamp Point (MTP) (see 45.2.4.68a).

When the MAC Merge sublayer is not instantiated the TS\_SFD\_Detect\_RX function detects the occurrence of the SFD in compliance with the specifications of the given type of instantiated xMII. For each SFD that is detected on the receive signals of the xMII the TS\_RX.indication service primitive shall be generated (SFD=DETECTED) across the TSSI at the configured MTP.

When the MAC Merge sublayer is instantiated the TS\_SFD\_Detect\_RX function detects the occurrence of the SMD-E and SMD-S in compliance with the specifications of the given type of instantiated xMII. For each SMD-E that is detected on the receive signals of the xMII the TS\_RX.indication service primitive shall be generated (SFD=DETECTED, MM=EMAC) across the TSSI at the configured MTP.

For each SMD-S that is detected on the receive signals of the xMII the TS\_RX.indication service primitive shall be generated (SFD=DETECTED, MM=PMAC) across the TSSI at the configured MTP.

Response Response Status U

REJECT.

It is true that the DETECT function in 90.5.1 and 90.5.2 will convey to the TX/RX.indication primitive when the MTP event occurs. However, the following is not true: "Note the detect\_function monitors only for Start of Frame Delimiter and then delays (or doesn't) the INDICATION based upon the MDIO config field". The gRS cannot do this adjustment from the SFD because the delay to the symbol-after-SFD isn't always a constant number. The DETECT function needs to detect the symbol after SFD.

The validity of the Mac Merge parameter depends on the selected MTP. It is only valid if the beginning of the SFD is selected as the MTP. The only way to convey this is to include the MTPS parameter along with the MM parameter in the TX/RX.indication primitive.

No changes to the draft needed.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 90 SC 90.5.1 P50 L37 # 139  
 Tse, Richard Microchip Technology  
 Comment Type E Comment Status A bucket  
 A comma is missing after "i.e., TS\_TX.indication".  
 SuggestedRemedy  
 Change  
 "The service primitive across the TSSI, i.e., TS\_TX.indication shall be generated..."  
 to  
 "The service primitive across the TSSI, i.e., TS\_TX.indication, shall be generated..."  
 Response Response Status C  
 ACCEPT.

CI 90 SC 90.5.2 P51 L13 # 117  
 Gorshe, Steve Microchip Technology  
 Comment Type E Comment Status A delta  
 Similar to the comment on Figure 90-1, should there be an indication that this figure is modified by 802.3cx?  
 SuggestedRemedy  
 Add editorial note to indicate the change to the figure  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #184

CI 90 SC 90.6 P51 L43 # 118  
 Gorshe, Steve Microchip Technology  
 Comment Type E Comment Status A delta  
 Should the text changes and additions introduced by 802.3cx be underlined throughout clause 90.6  
 SuggestedRemedy  
 Underline new text  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #184

CI 90 SC 90.6 P52 L15 # 119  
 Gorshe, Steve Microchip Technology  
 Comment Type E Comment Status A delta  
 Table 90-1: Here again, it seems best to underline the new registers that have been added by 802.3cx  
 SuggestedRemedy  
 Underline new text  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 See comment #184

CI 90 SC 90.6 P52 L37 # 155  
 Zimmerman, George CME Consulting/ADI, APL Gp, Cisco, CommScope,  
 Comment Type E Comment Status A bucket  
 Table 90-1 ends abruptly and continues on the next page, without a (continued) header as well.  
 SuggestedRemedy  
 Fix issue causing Table 90-1 to end abruptly, and put a continuation flag if it goes over a page break  
 Response Response Status C  
 ACCEPT.

CI 90 SC 90.6 P53 L1 # 109  
 Hajduczenia, Marek Charter Communications  
 Comment Type E Comment Status A bucket  
 Missing "(continued)" at the end of Table 90-1 caption  
 SuggestedRemedy  
 Per comment  
 Response Response Status C  
 ACCEPT.



Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

Cl 90 SC 90.7 P54 L12 # 164  
 Slavick, Jeff Broadcom  
 Comment Type T Comment Status R  
 The reporting of the dynamic delay difference should be dependent upon supporting high accuracy mode of operation.  
 SuggestedRemedy  
 Change the sentence "The dynamic delay variance is reported by the TX\_num\_unit\_change and RX\_num\_unit\_change signals." to be:  
 "For a PHY that supports high accuracy timestamping mode of operation the dynamic delay variance is reported by the TX\_num\_unit\_change and RX\_num\_unit\_change signals."  
 Response Response Status C  
 REJECT.  
 TF believes this sentence is not necessary and might cause arguments because high accuracy timing could be achieved even without these features (e.g., nanosecond resolution might be high-enough accuracy, path delay variations might not exist in the PHY).  
 No changes to draft needed.

Cl 90 SC 90.7 P54 L25 # 140  
 Tse, Richard Microchip Technology  
 Comment Type E Comment Status A bucket  
 Add an "a" before "TimeSync Client".  
 SuggestedRemedy  
 Change  
 "Transmit skew is expected to be minimized, ideally to zero, representing an ideal case for the accuracy of TimeSync Client."  
 to  
 "Transmit skew is expected to be minimized, ideally to zero, representing an ideal case for the accuracy of a TimeSync Client."  
 Response Response Status C  
 ACCEPT.

Cl 90 SC 90.7 P55 L21 # 175  
 Slavick, Jeff Broadcom  
 Comment Type TR Comment Status R  
 A PCS layer that is separated from the RS by an XS should be discouraged from doing any sort of rate compensation or shifting of the AM/CWM locations.  
 SuggestedRemedy  
 Add another note talking about how a PCS separated by an XS from the RS needs to not modify the AM/CWM locations or do any rate compensation to minimize any time accuracy error.  
 Response Response Status U  
 REJECT.  
 No specific text was proposed.

Cl 90 SC 90.8.2.2 P56 L35 # 129  
 Anslow, Pete Independent  
 Comment Type E Comment Status A bucket  
 "IEEE Std 802.3-2018" should be "IEEE Std 802.3dd-202x" in two places.  
 SuggestedRemedy  
 Change "IEEE Std 802.3-2018" to "IEEE Std 802.3dd-202x" in two places, where 202x is the PICS\_year variable set to 202x.  
 Response Response Status C  
 ACCEPT IN PRINCIPLE.  
 Change "IEEE Std 802.3-2018" to "IEEE Std 802.3cx-202x" in two places, where 202x is the PICS\_year variable set to 202x.

Cl 90 SC 90.A.3 P62 L26 # 226  
 Nicholl, Shawn Xilinx  
 Comment Type T Comment Status A 50G  
 50G is missing from the table.  
 SuggestedRemedy  
 Propose to add a new row after 40G with values:  
 50G, 0.16, 1.28, 5.12, 3.84  
 Response Response Status C  
 ACCEPT.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 90A SC 90A P61 L 22 # 234

Ran, Adee Cisco  
 Comment Type E Comment Status R

Long and cumbersome statement starting in "Thus, implementation flexibility permitted by this standard " up to "might not satisfy high accuracy timing requirements".

Also, text should not be judgemental. The definitions of the in-force clause 90 provide timestamping in nanosecond resolution with some tolerance due to possible interpretations. This was sufficient for a long time, and does not constitute an impairment (implementations fully compliant with the specifications could not have done any better), even if accuracy can be improved.

SuggestedRemedy

Rephrase this sentence and avoid using the verb "impair" and related words.

Make it refer to implementations that do not support the additions in this project (preferably identifiable by some variable that can be read by management and/or relevant PICS items).

Response Response Status C

REJECT.

The statements are objective - it is undeniably true that the timestamps could be impaired. It is also undeniably true that these impairments might lead to the inability to satisfy high accuracy applications. It is not possible for 802.3 to identify implementations that do not support 802.3cx. Individual investigations need to be done on each implementation to determine what is or is not compliant.

No change to draft needed.

CI 90A SC 90A P62 L 39 # 235

Ran, Adee Cisco  
 Comment Type TR Comment Status A

Table footnote g applies to 1G, 2.5G, and 5G, which do not have any FEC function, and to 200G and 400G where the FEC is part of the PCS functions. The footnote does not make sense for these rates.

SuggestedRemedy

Clarify the footnote text or delete it.

Response Response Status W

ACCEPT IN PRINCIPLE.

See comment #144 for 1G FEC.

In note "g", remove the statement "and not to the PCS function".

2.5G and 5G use LDPC(1723,2048) FEC. See subclause 126.1.3.1 of 802.3-2018. 200G and 400G FEC performs the lane distribution. There is no error in the notes or in the table on this matter.

No changes to draft needed.

CI 90A SC 90A.2 P61 L 24 # 143

Tse, Richard Microchip Technology  
 Comment Type E Comment Status A bucket

The name of the "Timestamp reference, first symbol after the SFD" register is not properly matched in this sentence, per the following items.

- The word "the" is misisng before "SFD".
- the acronym "SFD" is not expanded to its full definition in the register name.

Even though this is the first use of the acronym "SFD" in Annex 90A, the register name should be used without modification. The subsequent appearance of "SFD" in Annex 90A, at line 36 of the same page, gives the expanded definition so no further adjustments are needed after this register name is fixed.

SuggestedRemedy

According to Table 45-235, the register name is "Timestamp reference, first symbol after the SFD".

Use this register name, unchanged, in this sentence.

Response Response Status C

ACCEPT.

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

**Cl 90A**    **SC 90A.2**                      **P61**            **L29**            # **211**  
 Huber, Tom                                      Nokia  
*Comment Type*    **E**                      *Comment Status*    **A**                                      *bucket*  
 The first sentence of the second paragraph could be written more clearly.  
*SuggestedRemedy*  
 Change "Timestamping accuracy can be impaired when two TimeSync Clients do not account for a varying physical layer device (PHY) path data delay in the same manner." to "Timestamping accuracy can be impaired when two TimeSync Clients do not account for variation in physical layer device (PHY) path data delay in the same manner."  
*Response*                                      *Response Status*    **C**  
 ACCEPT.

**Cl 90A**    **SC 90A.2**                      **P61**            **L31**            # **186**  
 Marris, Arthur                                      Cadence Design Systems  
*Comment Type*    **T**                      *Comment Status*    **R**  
 I don't understand what CWM insertion/removal is in this context  
*SuggestedRemedy*  
 Please provide a cross reference to where CWM insertion/removal is described in 802.3. Also I suggest a link to Clause 82 for a description of AMs and perhaps a link to Clause 49 and other clauses for idle deletion  
*Response*                                      *Response Status*    **C**  
 REJECT.  
  
 Since TimeSync is optional and may be used with a variety of PMDs defined by 802.3, providing a link to each and every location of PMD would add to editorial burden for maintaining cross references live and up to date. An implementer of the PMD is aware whether CWM insertion/removal is taking place and can tie it together with the potential impact covered in Annex 90A.  
  
 No changes to draft needed.

**Cl 90A**    **SC 90A.2**                      **P62**            **L27**            # **185**  
 Marris, Arthur                                      Cadence Design Systems  
*Comment Type*    **TR**                      *Comment Status*    **A**                                      *50G*  
 50G Ethernet rate is missing  
*SuggestedRemedy*  
 Insert a row for 50G into Table 90A-1  
*Response*                                      *Response Status*    **C**  
 ACCEPT IN PRINCIPLE.  
  
 See comment #226

**Cl 90A**    **SC 90A.3**                      **P61**            **L46**            # **236**  
 Ran, Adee    Cisco  
*Comment Type*    **E**                      *Comment Status*    **A**                                      *bucket*  
 "Implementations compliant to this version of the standard " - which version is it?  
  
 It is uncommon to refer to "this version" as future versions may change things without necessarily updating such text. Also, references to specific past versions is seldom used and should be avoided. This has been done only in some clauses to refer to corrections that have been done at some point; see for example NOTE 2 in annex J.1.  
*SuggestedRemedy*  
 Reword all text that refers to "this version" or specific versions to avoid the problem in the comment.  
*Response*                                      *Response Status*    **C**  
 ACCEPT IN PRINCIPLE.  
  
 Reword the text "Implementations compliant to this version of the standard" to "Compliant implementations"

## Approved Responses

## IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

CI 90A SC 90A.3 P61 L46 # 237

Ran, Adee Cisco

Comment Type T Comment Status A

Compliance with the standard cannot depend on the version or date. Specifically, this amendment cannot turn currently compliant implementations into non-compliant.

It can, however, define new requirements for compliance with a new feature, that new implementations can adhere to.

*SuggestedRemedy*

Change the text to avoid the suggestion that compliance is with a specific revision. Clearly define the new feature and the requirements that implementations should comply with for supporting it.

Response Response Status C

ACCEPT IN PRINCIPLE.

See comment #238, on page 62, line 42, remove "by the original specification, IEEE Std 802.3-2018"

CI 90A SC 90A.3 P62 L19 # 144

Tse, Richard Microchip Technology

Comment Type T Comment Status A

Superscripted cross-reference "f" is for "10GBase T" and, thus, should be on the row for 10G instead of on the row for 1G.

Also, the superscripted cross-reference "g" should be moved from the row for 1G to the row for 10G. This cross-reference belongs to 10GBase-T and not to 1GBase-X because:  
 -10GBase-T has FEC. Per Figure 55-6 for 10GBase-T, the xGMII is transformed into 4 lanes of LDPC(1723,2048).encoded signals  
 -1GBase-X does not have FEC

*SuggestedRemedy*

On the 1G row and in the PCS Lane Distribution/Merging column:  
 -change "N/A" superscripted cross-references from "d, f, g" to "d"

On the 10G row and in the PCS Lane Distribution/Merging column:  
 -change "N/A" superscripted cross-references from "d" to "d, f, g"

Because the rate corresponding to "d", 10GBase-R does not have FEC and, thus, should not be associated with "g", the first sentence of the description for cross-reference "g" should be changed to the following:

"For the rates with forward error correction (FEC), the lane distribution/merging operation belongs only to the FEC function and not to the PCS function."

Response Response Status C

ACCEPT.

CI 90A SC 90A.3 P62 L36 # 157

Zimmerman, George CME Consulting/ADI, APL Gp, Cisco, CommScope,

Comment Type E Comment Status A bucket

1000BASE-X, 10GBASE-R, 1000BASE-T, 10GBASE-XS, and 10GBASE-T. The BASE is all caps.

*SuggestedRemedy*

change "BASE" to all caps in notes d, e, and f

Response Response Status C

ACCEPT.

CI 90A SC 90A.3 P62 L45 # 168

Slavick, Jeff Broadcom

Comment Type TR Comment Status A

Devices built compliant to the existing Clause 90 must still be considered compliant to the standard. So you need to quantify what features have been added to the Clause 90 that improve the accuracy of the timestamping feature which will reduce the error to just a single byte.

*SuggestedRemedy*

Change:

Implementations compliant to this version of the standard only suffer a timestamp accuracy impairment of one byte time between the two message timestamp point options because:  
 To:

Implementations that support fine resolution path delay (see 45.2.1.146, 45.2.2.20, 45.2.3.66, 45.2.4.28, 45.2.5.28 and 45.2.6.14) and path data delay signaling (see 90.4.4) only suffer a timestamp accuracy impairment of one byte time between the two message timestamp point options because:

Response Response Status C

ACCEPT IN PRINCIPLE.

Change text to read

"Implementations that support fine resolution and high accuracy path delay measurement capabilities (see 45.2.1.146, 45.2.2.20, 45.2.3.66, 45.2.4.28, 45.2.5.28 and 45.2.6.14) and path data delay signaling (see 90.4.4) only suffer a timestamp accuracy impairment of one byte time between the two message timestamp point options because:"

Cl 90A SC 90A.5 P63 L30 # 121  
 Gorshe, Steve Microchip Technology  
 Comment Type E Comment Status A bucket  
 "instantaneous" may be a better word here than "instant" (three places in these paragraphs)  
 SuggestedRemedy  
 Replace words as proposed  
 Response Response Status C  
 ACCEPT.

Cl 94 SC 94.4.4 P48 L43 # 246  
 Law, David HPE  
 Comment Type TR Comment Status A  
 The title of subclause 90.4.4 is 'Path data delay change signals', but rather than signals, I believe that 'TX\_num\_unit\_change' (subclause 90.4.4.1) and 'RX\_num\_unit\_change' (subclause 90.4.4.2) are additional optional parameters to be supplied as part of the TS\_TX.indication and TS\_RX.indication primitives respectively. They are used to indicate the dynamic path data delay that either the beginning of the SFD, or the beginning of the first symbol after the SFD, depending on how the PCS is configured, will experience while transition through the PCS, and therefore needs to be associated with the primitive that is generated when the respective beginning of the SFD, or the beginning of the first symbol after the SFD, crosses the xMII. I suggest that this additional parameter be termed 'PCS Dynamic Data Path Delay (PDDPD)'. It would also be good to provide a description of what a positive and negative value means with regards to the PCS path data delay values.

## SuggestedRemedy

- [1] In subclause 90.4.3.1.1 change the text 'TS\_TX.indication(SFD, MM, MTPS)' to read 'TS\_TX.indication(SFD, MM, MTPS, PDDPD)
- [2] Delete subclause 90.4.4 'Path data delay change signals', subclause 90.4.4.1 'TX\_num\_unit\_change<15:0> signal', subclause 90.4.4.1.1 'Semantics', subclause 90.4.4.1.2 'Condition for generation' and subclause 90.4.4.1.3 'Effect of receipt'.
- [3] Delete the last paragraph (page 47, lines 17 - 19) of subclause 90.4.2 'TSSI'.
- [4] Add a new paragraph to the end of subclause 90.4.3.1.1 'Semantics' that reads:

The PCS Dynamic Data Path Delay (PDDPD) is an optional parameter that supports dynamic transmit path data delay calculation. It provides a value ranging from -32768 to +32767 in two's complement format indicating the number of bits of dynamic transmit path data delay the beginning of the SFD, or the beginning of the first symbol after the SFD (see subclause 45.2.3.68a), of the packet that generated the primitive, will experience in the PCS within the PHY. A positive value represents an addition to the PCS transmit path data delay value defined by the PCS transmit path data delay registers (see 45.2.3.67), a negative value representing a reduction to the PCS transmit path data delay value defined by the PCS transmit path data delay registers. The value is conveyed from the PHY to the gRS by the optional TX\_NUM\_UNIT\_CHANGE<15:0> signals. Note that the use of the beginning of the SFD, or the beginning of the first symbol after the SFD, as the transmit path data delay measurement point needs consistent configuration in the gRS and the PCS.

- [5] Delete subclause 90.4.4.2 'RX\_num\_unit\_change<15:0> signal', subclause 90.4.4.2.1 'Semantics', subclause 90.4.4.2.2 'Condition for generation' and subclause 90.4.4.2.3 'Effect of receipt'.

- [6] Add a new paragraph to the end of subclause 90.4.3.2.1 'Semantics' that reads:

The PCS Dynamic Data Path Delay (PDDPD) is an optional parameter that supports dynamic receive path data delay calculation. It provides a value ranging from -32768 to +32767 in two's complement format indicating the number of bits of dynamic receive path data delay the beginning of the SFD, or the beginning of the first symbol after the SFD (see subclause 45.2.3.68a), of the packet that generated the primitive, will experience in the

Approved Responses

IEEE P802.3cx D2.0 ITSA Task Force Initial Working Group ballot comments

PCS within the PHY. A positive value represents an addition to the PCS receive path data delay value defined by the PCS receive path data delay registers (see 45.2.3.67), a negative value representing a reduction to the PCS receive path data delay value defined by the PCS receive path data delay registers. The value is conveyed from the PHY to the gRS by the optional RX\_NUM\_UNIT\_CHANGE<15:0> signals. Note that the use of the beginning of the SFD, or the beginning of the first symbol after the SFD, as the receive path data delay measurement point needs consistent configuration in the gRS and the PCS.

Response Response Status **C**

ACCEPT IN PRINCIPLE.

Changes per comment, but "will experience" needs to be changed to "experiences".

Cl **A** SC **A** P59 L10 # 110

Hajduczenia, Marek Charter Communications

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

Remove editorial note "[Editor's note (to be removed prior to publication) - any new informative references to be added here.]"

SuggestedRemedy

Per comment

Response Response Status **C**

ACCEPT.

Cl **A** SC **A** P59 L12 # 141

Tse, Richard Microchip Technology

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

The title of IEEE Std 802.1AS-2020 has changed.

SuggestedRemedy

Change the title for IEEE Std 802.1AS-2020 to the following, including the capitalization for "Metropolitan Area Networks"

"IEEE Standard for Local and Metropolitan Area Networks—Timing and Synchronization for Time-Sensitive Applications"

Response Response Status **C**

ACCEPT.

Cl **A** SC **A** P59 L15 # 142

Tse, Richard Microchip Technology

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

The wrong cross reference number is given for IEEE Std 1588.

SuggestedRemedy

Change "[B41]" to "[B43]" for IEEE Std 1588

Response Response Status **C**

ACCEPT.

Cl **A** SC **A** P59 L15 # 210

Huber, Tom Nokia

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

The reference for IEEE 1588 should be [B43]

SuggestedRemedy

Change [B41] to [B43]

Response Response Status **C**

ACCEPT.

Cl **Particip** SC **Participants** P8 L13 # 132

Tse, Richard Microchip Technology

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

The title for Steve Gorshe is incomplete

SuggestedRemedy

Change "ITSA Force Chair" to "ITSA Task Force Chair"

Response Response Status **C**

ACCEPT.