Cl **00** *SC* **0** *P* **1** *L* **1** # 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* **U**

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 indiciation 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** *P* **1** *L* **1** # 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* **U**

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 indiciation 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** *P* **1** *L* **1** # 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* **U**

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** *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 rewritting 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* **U**

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 indiciation 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.

Cl **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 comparision 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* **U**

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** *P* **1** *L* **1** # 224

Carlson, Steven HSD, Bosch, Ethernovia

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 quanitifable 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 synchonization 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* **U**

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.

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* **U**

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* **45.2.1.146** *P* **22** *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* **U**

ACCEPT IN PRINCIPLE.

See comment #238

Cl **45** *SC* **45.2.1.146** *P* **22** *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* **U**

ACCEPT IN PRINCIPLE.

See comment #238

Cl **45** *SC* **45.2.2.20** *P* **26** *L* **22** # 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* **U**

ACCEPT IN PRINCIPLE.

See comment #238

Cl **45** *SC* **45.2.3.66** *P* **30** *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* **U**

ACCEPT IN PRINCIPLE.

See comment #238

Cl **45** *SC* **45.2.4.28** *P* **34** *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* **U**

ACCEPT IN PRINCIPLE.

See comment #238

Cl **45** *SC* **45.2.5.28** *P* **38** *L* **7** # 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* **U**

ACCEPT IN PRINCIPLE.

See comment #238

Cl **45** *SC* **45.2.6.14** *P* **41** *L* **32** # 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* **U**

ACCEPT IN PRINCIPLE.

See comment #238

Cl **48** *SC* **48.2.4.30** *P* **38** *L* **37** # 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* **U**

ACCEPT IN PRINCIPLE.

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

Cl **90** *SC* **90.4.4.1.2** *P* **49** *L* **11** # 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* **U**

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.

Cl **90** *SC* **90.5.1** *P* **50** *L* **35** # 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 Deliminter 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 Cl90 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 Deliminter 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.

Cl **90** *SC* **90.7** *P* **53** *L* **32** # 170

Slavick, Jeff Broadcom

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

Why not provide a method to inform the remote end on which point you're timestamping?

SuggestedRemedy

Add a method (via LLDP?) to pass the state of the Message TimeStamp Point (3.1813.13) to the far end so it can tell how if any compensation in time should be made to it’s calculation of the delay.

Response *Response Status* **U**

REJECT.

This is a new feature and was not brought to the consideration at the TF review stage.

Cl **90** *SC* **90.7** *P* **55** *L* **21** # 175

Slavick, Jeff Broadcom

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

A PCS layer that is separted 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 seperated 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 **90A** *SC* **90A** *P* **62** *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* **U**

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.