IEEE 802.3da SPMD TF - 802.3da & Precision Time Protocol: 802.3da & Precision Time Protocol

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Background

- Approved Objective 5
  - "Support optional Time Synchronization Service Interface (TSSI)."
- 802.3cg
  - I made the following presentations related to 10SPE and Precision Time Protocol(PTP)
    - 802.3cg support for PTP/1588/802.1AS - https://www.ieee802.org/3/cg/public/adhoc/jones_3cg_01_070319.pdf
    - Comments 90 & 91: Half-Duplex and Precision Time Protocol - https://www.ieee802.org/3/cg/public/July2019/jones_3cg_02a_0719.pdf
  - These were in support of comments #90 and #91 against 802.3cg D3.1.
  - These comments were rejected with the following reason:
    - "REJECT. The comment is out of scope of the recirculation, bringing new text, unrelated to changed text into the draft on the recirculation."
- 802.3da
  - I propose we make the changes proposed in comments #90 and #91 against 802.3cg D3.1

802.3cg D3.1 comments #90 & #91

CommentID	CommenterName	Clause	Subclause	Page	Line	CommentType	Comment	SuggestedRemedy	Response	CommentStatus	ResponseStatus	Topic
90	Jones, Peter	0	90.1	0	0	TR	802.3cg should support the TSSI. I don't believe that the TF discussed the pros/cons of supporting PTP or decided not to support PTP on 10BASE-T1S half-duplex point to point or multidrop. A significant portion of the applications for 10BASE-T1S will need precision time support.	Replace "The TSSI is defined for the full-duplex mode of operation only." with "The TSSI is defined for the full-duplex mode of operation, as well as clause 147 half-duplex point-to-point and multidrop." Add the following paragraph to the end of 90.4.3.1.1 Semantics "When using the half-duplex mode of operation, multiple TS_TZ indications may be produced for a single MA_DATA.request as a result of collisions on the media. The TimeSync Client should always use the last indication corresponding to a given MA_DATA.request."	PROPOSED REJECT. TFTD The CRG disagrees with the commenter. The comment is out of scope of the recirculation, bringing new text, unrelated to changed text into the draft on the recirculation. This change would introduce new functionality into the draft beyond the existing text or approved project objectives.	D	W	TSSI
91	Jones, Peter	148	148.4.2	235	10	TR	802.3cg should support the TSSI. I don't believe that the TF discussed the pros/cons of supporting PTP or decided not to support PTP on 10BASE-T1S half-duplex point to point or multidrop. A significant portion of the applications for 10BASE-T1S will need precision time support.	Modify "Figure 148-2--PLCA functions within the Reconciliation Sublayer (RS)" to add TS_TX.indication, TS_RX.indication, SFD DETECT TX and SFD DETECT RX as shown in D2.0 Figure 148-3. Insert the following paragraph before "148.4.3 Mapping of MII signals to PLS service primitives and PLCA functions" "Operation with TSSI When TSSI support is also specified in the actual RS, the SFD detection of transmitted frames shall be detected after the PLCA variable delay line, as shown in Figure 148-2. This ensures the network latency measurement is not affected by the synchronization latency added by PLCA. No special attention is required for SFD detection of received frames."	PROPOSED REJECT. Discuss with comment r01-90. TFTD The CRG disagrees with the commenter. The comment is out of scope of the recirculation, bringing new text, unrelated to changed text into the draft on the recirculation. This change would introduce new functionality into the draft beyond the existing text or approved project objectives.	X	W	TSSI

Comment #90 Suggested Remedy - *Updated*

Replace "The TSSI is defined for the full-duplex mode of operation only." with "The TSSI is defined for the full-duplex mode of operation*, as well as clause 147 half-duplex point-to-point and multidrop.*"

Add the following paragraph to the end of 90.4.3.1.1 Semantics

"When using the half-duplex mode of operation, multiple TS_TX indications may be produced for a single MA_DATA.request as a result of collisions on the media.

90. Ethernet support for time synchronization protocols

90.1 Introduction

This clause specifies the optional Time Synchronization Service Interface (TSSI). The TSSI can be used to support protocols that require knowledge of packet egress and ingress time.

The TSSI is defined for the full-duplex mode of operation only***, as well as clause 147 half-duplex***. It supports MAC operation at various data rates. The MII (Clause 22), GMII (Clause 35), XGMII (Clause 46), 25GMII (Clause 106), XLGMII (Clause 81), GMII (Clause 81), 200GMII (Clause 117), and 400GMII (Clause 117) specifications are all compatible with the gRS sublayer defined in 90.5.

90.4.3.1.1 Semantics

The semantics of the primitive are as follows:

TS_TX.indication(SFD, MM)

The SFD parameter can take only one possible value, DETECTED. When asserted (SFD = DETECTED), the TimeSync Client is notified that a valid SFD was detected by the gRS sublayer TS_SFD_Detect_TX function (see 90.5.1) in the xMII transmit signals.

The MM parameter is mandatory when the MAC Merge sublayer (see Clause 99) is instantiated. The MM parameter, when present, can take one of two possible values, i.e., PMAC or EMAC. The value EMAC indicates the SMD-E (SFD) value has been detected at the xMII. The value PMAC indicates that an SMD-S value has been detected at the xMII (see Table 99–1). The MM parameter is not provided when MAC Merge sublayer is not instantiated.

When using the half-duplex mode of operation, multiple TS_TX indications may be produced for a single MA_DATA.request as a result of collisions on the media.

Comment #91 Suggested Remedy - *Updated*

Modify "Figure 148-2--PLCA functions within the Reconciliation Sublayer (RS)" to add *TS_TX.indication, TS_RX.indication, SFD DETECT TX* and *SFD DETECT RX* as shown in 802.3cg 2019 D2.0 Figure 148-2.

Insert the following subclause before "148.4.2 Mapping of MII signals to PLS service primitives and PLCA functions"

Operation with TSSI
When TSSI is supported, transmit SFD detection occurs after the PLCA variable delay line, as shown in Figure 148-2.
Clause 90 defines TS_TX.indication (90.4.3.1) and TS_RX.indication (90.4.3.2). Clause 90 also defines TS_SFD_Detect_TX (90.5.1) and TS_SFD_Detect_RX(90.5.2), these are shown in Figure 148-2 as SFD DETECT TX and SFD DETECT RX respectively.

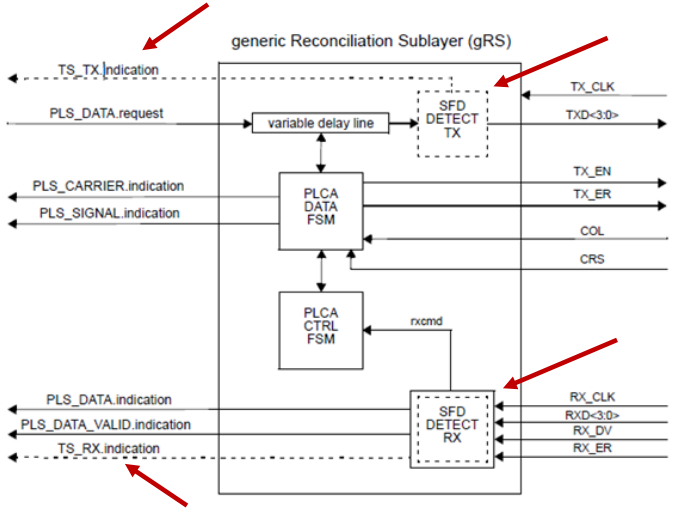


Figure 148–2—PLCA functions within the Reconciliation Sublayer (RS)

148.4.2.1 Operation with TSSI

When TSSI is supported, transmit SFD detection occurs after the PLCA variable delay line, as shown in Figure 148-2.

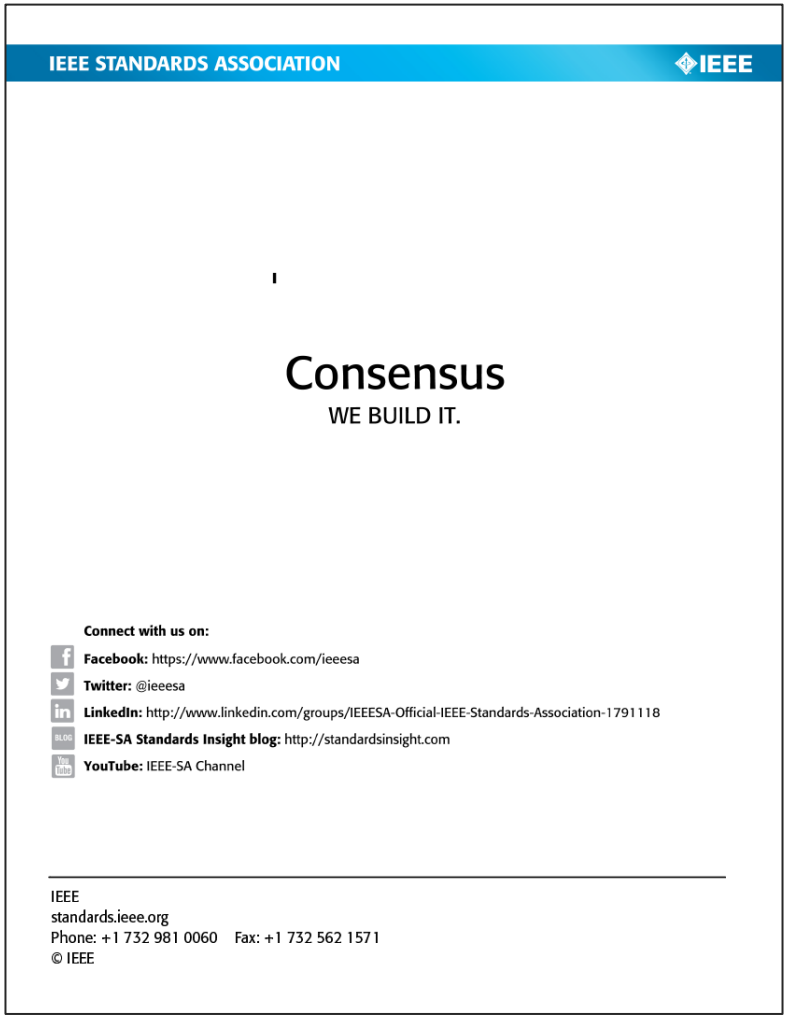
Clause 90 defines TS_TX.indication (90.4.3.1) and TS_RX.indication (90.4.3.2). Clause 90 also defines TS_SFD_Detect_TX (90.5.1) and TS_SFD_Detect_RX(90.5.2), these are shown in Figure 148-2 as SFD DETECT TX and SFD DETECT RX respectively.

148.4.3 Mapping of MII signals to PLS service primitives and PLCA functions

The RS maps the signals provided at the MII to the PLS service primitives defined in Clause 6 via the PLCA state diagrams, variables, and functions (see 148.4.5 and 148.4.6). The PLS service primitives provided by the RS behave in exactly the same manner as defined in Clause 6.

Other items

- RS is in scope for “Physical Layer” projects
  - Clause 90 defines “an extension to the Reconciliation Sublayers specified elsewhere in this standard
- PICS - Don’t need PICS for TSSI with 10BASE-T1S.
  - TSSI only mentioned in Clause 1 and clause 90.
  - If you have TSSI, clause 90 PICS is provided.
  - None of the other RS’s include TSSI in their PICS. RS’s checked:
    - 22 - Media Independent Interface (MII), 35 - Gigabit Media Independent Interface (GMII), 46- 10 Gigabit Media Independent Interface (XGMII),
    - 65,66 - 1000BASE-X, 76. 10G-EPON, 81- 40/100 Gb/ (XLGMII and CGMII)
    - 101 – EPoC, 106 - 25GMII, 117- 200GMII and 400GMII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