IEEE 802.3de Time Sync for Pt-to-Pt SPE: Summary of half-duplex issues and potential changes needed

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Background: Half-Duplex and Preemption

- Previous material
  - Half duplex and Preemption - April 28, 2021
    - https://www.ieee802.org/3/SPEP2P/public/jones_3spep2p_01_04282021.pdf
  - Study Group confirmed minutes - July 21, 2021
    - https://www.ieee802.org/3/SPEP2P/public/Unconfirmed%20Minutes_SPE-P2P_0721.pdf
  - 802.3de Proposed Baseline - October 12, 2021
    - https://www.ieee802.org/3/de/public/zimmerman_3de_01a_2021_10_12.pdf

Comments from D2.0

CommentID	CommenterName	CommenterCo	Clause	Subclause	Page	Line	CommentType	Comment	SuggestedRemedy	Response	CommentStatus
58	Kabra, Lokesh	Synopsys Inc	99	99	14		T	I am not sure whether the effect of collisions & retransmissions of fragments is considered in Receive Processing state diagram; For example, in Figure 99-6, in state P_RECEIVE_DATA, if the incoming continuation fragment is terminated due to collision (!RX_MCRC_OK & !rRxDx), the state transitions to FRAME_COMPLETE. When the remote station retransmits the continuation fragment, it will be declared as a BAD_FRAG; Is this intended?	Receive Processing to be updated for handling of collisions/retransmission of fragments in half-duplex mode	REJECT. (from comment i-59) Insert Editor's note at P14 L18: Editor's Note (to be resolved prior to close of WG ballot) - Issues have been raised with regards to the need for additional changes in Transmit and Receive Processing for 10BASE-T1S point-to-point half duplex (other half-duplex PHYs being out of project scope). See comments i-58 and i-59 for more detail. Comments do not provide sufficient detail to resolve. Presentations and further comments to with specific changes to resolve issues are solicited.	R
59	Kabra, Lokesh	Synopsys Inc	99	99	14		T	Similarly, impact of ollisions/retransmission of fragments in not fully considered/explained in Transmit Processing. For example, if collision occurs during transmission of preemptable fragment, then Transmit processing remains in PREEMPTABLE_TX state because pTxCplt = FALSE. In such a case, express packet will remain in queue and gets delayed until teh retransmission of the fragment is compete after the random back-off. Is this intended?	Transmit Processing to be updated for handling of collisions/retransmission of fragments in half-duplex mode	REJECT. Insert Editor's note at P14 L18: Editor's Note (to be resolved prior to close of WG ballot) - Issues have been raised with regards to the need for additional changes in Transmit and Receive Processing for 10BASE-T1S point-to-point half duplex (other half-duplex PHYs being out of project scope). See comments i-58 and i-59 for more detail. Comments do not provide sufficient detail to resolve. Presentations and further comments to with specific changes to resolve issues are solicited.	R

Offline discussion on comments

- eMAC collision/backoff when pMAC is ready to transmit gives unexpected results
  - Random backoff behavior – eMAC backs off but pMAC immediately transmits
    - **Additional collisions or unexpected priority given to pMAC**
  - Preemptable fragment transmitted before express frame
  - -> Block pMAC when eMAC is in backoff
  - -> (or, live with it… the eMAC will preempt if pMAC has the media still busy)

Offline discussion on comments (cont.)

- Late collisions when pMAC transmitting continuation fragment

  -> Hold on to the media between when eMAC finishes transmitting and pMAC resumes non-first fragment.

  -> Carrier extension in the RESUME_WAIT state

  -> Could use COMMIT

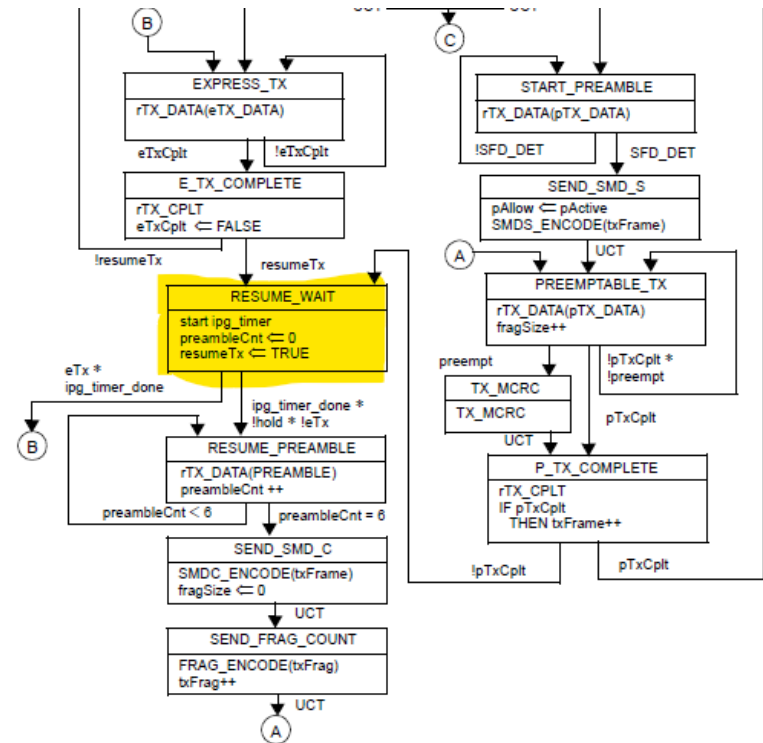 -> Need to specify way to signal it – CI 22 primitives are insufficient

Figure 99–5—Transmit Processing state diagram

Offline discussion on comments (cont.)

- eMAC blocked from transmitting when pMAC is active by PLS_CARRIER.indication

    -> Don't send PLS_CARRIER.indication to eMAC when pMAC is transmitting

What next?

- Offline discussions continuing, reach out if you want to contribute

- If we find a set of reasonable changes
  - Presentations to group
  - Comments against next draft

- If not
  - submit comments against next draft to remove 10BASE-T1S half duplex preemption support

Consensus
WE BUILD IT.