Interpretation Number: 4-11/04
Topic: Type 10PASS-TS and type 2BASE-TL PCS
Relevant Clause: 61
Classification: Unambiguous

Interpretation Request

I have some questions regarding the latest issue of the EFM standard, IEEE Std 802.3ah-2004. Please consider the list below:

Question 1: Minimum Fragment Size:

Can the last fragment of a Ethernet frame be smaller than 64 Bytes?

> If not, what is the padding mechanism and the mechanism to strip off the extra padding at the receiver?
> If it can, then the 64B/65B Transmit state machine (p. 364 Fig 61.18) is not equipped to handle a case where a fragment is shorter than 64 Bytes.

There is nothing specific in any subclause, the only reference how to handle the last fragment are with respect to multiples-of-four: 61.2.2.6 PME Aggregation transmit function restrictions (page 354):

> "c) The fragment size, not including PAF header, shall be a multiple of 4 octets except for the last fragment of a data frame."

Interpretation for IEEE Std 802.3ah-2004

The standard states in subclause 61.2.2.3 Item b) that the PME Aggregation transmit functions uses an algorithm that selects the number of octets to transmit on that PME for every fragment such that this number shall not be less than minFragmentSize.

Interpretation Number: 4-11/04 – Question 2
Topic: Type 10PASS-TS and type 2BASE-TL PCS
Relevant Clause: 61
Classification: Not a request for interpretation

Interpretation Request

Question 2: PCS TC_link_state handling:

With respect to: 61.2.1.1 MAC-PHY Rate Matching functions

> "If the PAF is disabled or not present, transmit frames shall not be forwarded to the TC sublayer unless TC_link_state is true for the whole frame. If the PAF is enabled, transmit fragments shall not be forwarded from the PAF to a TC sublayer unless the TC_link_state value of that TC sublayer instance is true for the whole fragment.
>
> NOTE?This implies that in the absence of an active PAF, frames being transmitted over the MII when TC_link_state becomes true are never forwarded to the TC sublayer. A frame being transmitted over the MII when TC_link_state becomes false is aborted."

When the PCS receives a TC_link_state = false from the TPS-TC receiver layer, it is supposed to drop the frame towards the TX direction (i.e., towards the TPS-TC sublayer). Why is that? And, what is sent out towards the MAC I/F?

Interpretation for IEEE Std 802.3ah-2004

This request is being returned to you because the questions asked do not constitute a request for interpretation but instead a request for consultation. Generally, an interpretation request is submitted when the wording of a specific clause or portion of a standard is ambiguous or incomplete. The request should state the two or more possible interpretations or the lack of completeness of the text. While you referred to subclause 61.2.1.1, you have not indicated any problem with the text.

Interpretation Number: 4-11/04 – Question 3
Topic: Type 10PASS-TS and type 2BASE-TL PCS
Relevant Clause: 61
Classification: Unambiguous

Interpretation Request

Question 3: Y-Byte issue:

In Fig 61-18, the states SYNC_IDLE, UPDATE_K, IDLE: it is implied by transmitZ(k, loop) that the Y-BYTE is only sent when the local 64B/65B receiver is not synchronized as indicated by TC_synchronized = FALSE. If TC_link_state is FALSE, but TC_synchronized is TRUE (implying that the remote receiver is out-of-sync) then only idle codewords are sent.

This is in direct conflict with the following paragraph, which makes sending of the Y-BYTE only dependent on TC_link_state: Which one is correct?

> 61.3.3.1 TC encapsulation and coding (the paragraph before table 61.11)
> "No new fragment shall be transmitted when TC_link_state = FALSE (TC_link_state is defined in 61.3.3.7).
> If a fragment is being transmitted when TC_link_state becomes false, the End of Frame codeword completing the fragment shall not contain an S symbol after the end of the fragment. If an Idle codeword is being transmitted when TC_link_state becomes false, it shall be completed with Z symbols only. After the completed End of Frame or Idle codeword, only Out-of-Sync Idle codewords shall be transmitted until TC_link_state becomes true again."

Interpretation for IEEE Std 802.3ah-2004

The standard states in paragraph 7 of subclause 1.2.1 ‘The state diagrams contain the authoritative statement of the functions they depict; when apparent conflicts between descriptive text and state diagrams arise, the state diagrams are to take precedence.’.

The paragraph referenced is being referred to the sponsor for possible action at the next revision.

Interpretation Number: 4-11/04 – Question 4
Topic: Type 10PASS-TS and type 2BASE-TL PCS
Relevant Clause: 61
Classification: Not a request for interpretation

Interpretation Request

Question 4: Sync word TC_coding Error handling:

With respect to:

> 61.3.3.1 TC encapsulation and coding:
> "When any of the following events occur, signal TC_coding_error shall be asserted:
> a) An incorrect octet is received when a Sync Octet is expected."

According to the 64B/65B receiver synchronization FSM, there can be multiple wrong synchwords before the receiver is deemed out-of-sync. What's the rationale for asserting TC_coding_error (and therefore RX_ER) on the gamma I/F, which will lead to the whole frame being dropped?

Interpretation for IEEE Std 802.3ah-2004

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