

802.3 Maintenance Request 1301

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Introduction

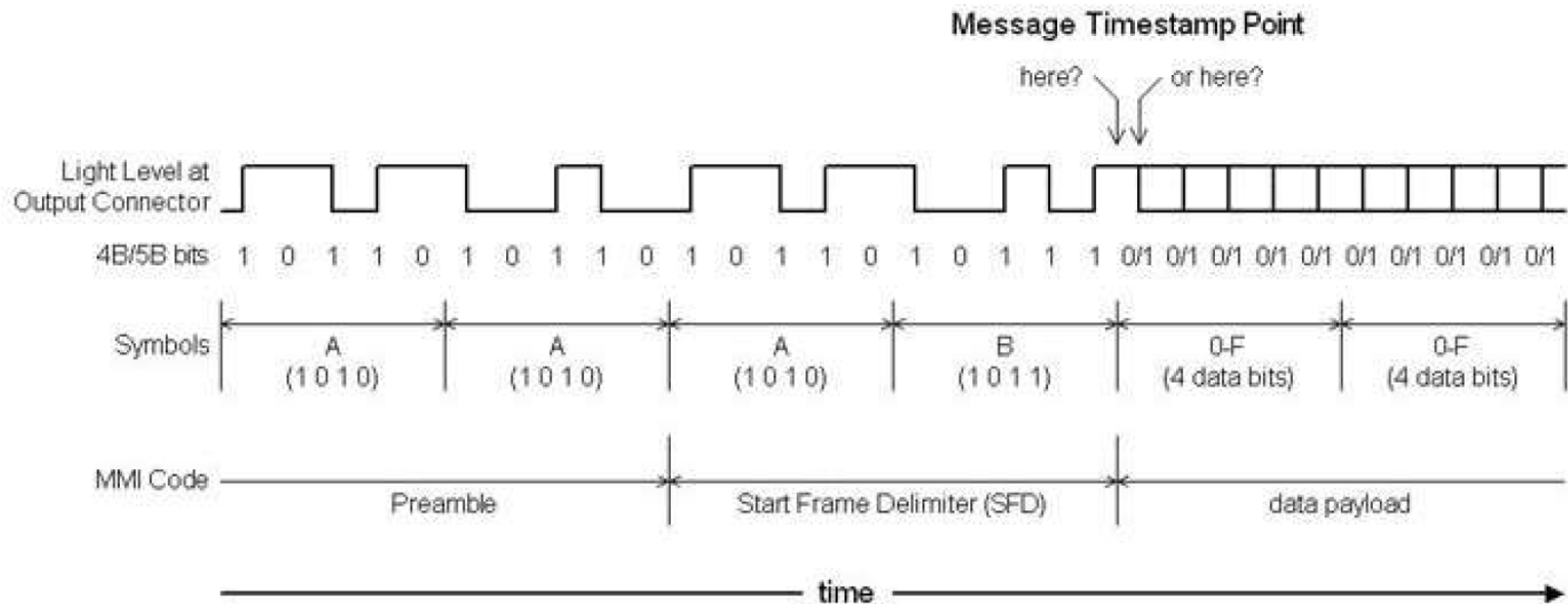
- This presentation provides background and proposed text for 802.3 Maintenance Request #1301
 - http://ieee802.org/3/maint/requests/maint_1301.pdf
 - On page 1 line 25, "100BASE-T" is a mistake... this should be "100BASE-FX"

Background: IEEE Std 1588 (1 of 2)

- IEEE Std 1588-2008 (and 802.1AS) states
 - When: "the message timestamp point for an event message shall be the beginning of the first symbol after the Start of Frame (SOF) delimiter"
 - Where: "the timestamp shall be the time at which the message timestamp point passes the reference plane marking the boundary between PTP node and the network"
- Since 1588 applies to any medium, this text avoids terminology specific to a single PHY standard
- In today's 802.3 hardware implementations, the 1588 message timestamp point is
 - When: Beginning of the first data symbol after SFD
 - Where: Reference plane at boundary between MDI and medium

Background: IEEE Std 1588 (2 of 2)

- Request for clarification from 1588 implementer
 - For 802.3 PHYs that use NRZI (e.g. 100BASE-FX)...



- Rejected as out-of-scope for 1588 revision in work
 - Suggestion: Right arrow

Background: IEEE Std 802.3 (1 of 3)

- Clause 90 : Ethernet support for time synchronization protocols
 - "90.2 Overview: The goal of this clause is to provide an accurate indication of the transmission and reception initiation times of all packets, as required to support various time synchronization protocols, e.g. IEEE Std 1588-2008 [B46], and IEEE Std 802.1AS [B43]."
- 802.3 Maintenance request #1301 requests clarification of the NRZI question in 802.3
 - If so, clause 90 is the appropriate location

Background: IEEE Std 802.3 (2 of 3)

- Issue #1 : Different timestamp points
 - "90.7 Data delay measurement: The transmit path is measured from the input of the beginning of the SFD at the xMII to its presentation by the PHY to the MDI."
 - Helpful when 1588 timestamping is implemented above the PHY
 - Where (reference plane) is same in 1588 and 802.3 (Figure 90-3)
 - When is different: 90.7 is beginning of SFD (1588 is after SFD)
- Recommendation: Clarify the difference with a NOTE in 90.7

Background: IEEE Std 802.3 (3 of 3)

- Issue #2 : Delay constraints
 - "24.6 Delay constraints: The reference point for all MDI measurements is the 50% point of the mid-cell transition corresponding to the reference code-bit, as measured at the MDI. Although 100BASE-TX output is scrambled, it is assumed that these measurements are made via apparatuses that appropriately account for this."
 - Recommendation: In NOTE for NRZI, reference 24.6

Proposed Text for Issue #1

In IEEE Std 802.3-2015,
subclause "90.7 Data delay measurement",
insert the following NOTE after NOTE 2, re-numbering as appropriate:

"NOTE 3 - IEEE Std 1588 and IEEE Std 802.1AS specify the message timestamp point as the beginning of the first symbol after the SFD. The data delay measurement of 90.7 specifies the measurement point as the beginning of the SFD. In order to use the data delay measurement for adjustment of the IEEE Std 1588 or IEEE Std 802.1AS timestamp, the implementation must account for the difference in measurement points (i.e. add length of the SFD to the data delay measurement)."

Proposed Text for NRZI (Issue #2)

In IEEE Std 802.3-2015,
subclause "90.7 Data delay measurement",
insert the following NOTE after NOTE 3, re-numbering as appropriate:

"NOTE 4 - For a Physical Layer that presents NRZI encoding (1.4.286) at the MDI, such as 100BASE-FX, the beginning of a symbol is represented by the point at which a polarity transition would occur for the first bit. For logical ZERO, since the polarity transition is absent, this point must be inferred from the previous polarity transition for logical ONE. As specified in 24.6, the measurement point for the polarity transition occurs at the 50% point of the cell for the bit."

Thank You