INTERNATIONAL TELECOMMUNICATION UNION

**TELECOMMUNICATION STANDARDIZATION SECTOR**

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**SG15-LS102**

**STUDY GROUP 15**

**Original: English**

**Question(s):** 10/15 Geneva, 29 January – 9 February, 2018

**Ref.: SG15-TD144/PLEN-Annex C**

**Source:** ITU-T Study Group 15

**Title:** LS/r to MEF Forum liaison on MEF 10.4 work on one-way frame delay (reply to MEF-LS114)

## LIAISON STATEMENT

**For action to:** MEF

**For comment to:**

**For information to:** IEEE 802.1, ITU-T Q17/12, CPRI Cooperation

**Approval:** ITU-T SG 15 meeting (9 February 2018)

**Deadline:** 4 September 2018

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Dear colleagues,

Thank you for your liaison entitled "MEF Forum Work on MEF 10.4" and introducing your proposed MEF 10.4 clarification of the following MEF 10.3 one-way frame delay description:

> **8.8.1 One-way Frame Delay Performance for an EVC**
>
> The One-way Frame Delay for an egress Service Frame at a given UNI in the EVC is defined as the time elapsed from the transmission at the ingress UNI of the first bit of the corresponding ingress Service Frame until the reception of the last bit of the Service Frame at the given UNI. Recall that the Service Frame consists of the first bit of the Destination Address through the last bit of the Frame Check Sequence. This delay definition is illustrated in Figure 9.

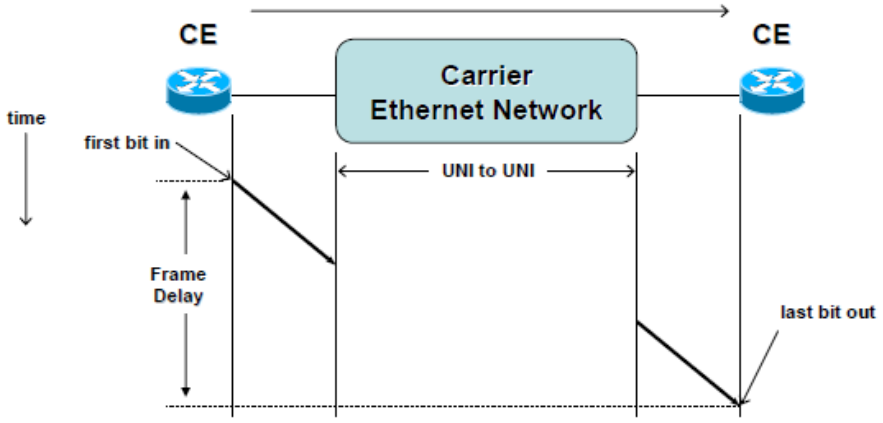


**Figure 9 - Frame Delay for Service Frame**

Note that this definition of Frame Delay for a Service Frame is the one-way delay that includes the delays encountered as a result of transmission of the Service Frame across the ingress and egress UNIs as well as that introduced by the CEN.

Based on this liaison and on its clarification that "MEF does not specify whether the UNI is at one end or the other of the Ethernet cable", we are considering amending Recommendation ITU-T G.8013/Y.1731 in October 2018 with the following modifications:

- **Frame delay**

  Frame delay can be expressed as a one-way delay for a frame, where one-way frame delay is defined as the time elapsed ~~since~~ from the start of transmission of the first bit of the frame ~~by~~ at a source ~~node~~ reference point until the reception of the last bit of the same frame ~~by~~ at the destination ~~node~~ reference point. When a two-way delay is measured, a loopback is performed at the frame's destination ~~node~~ reference point and the frame is received at the original source ~~node~~ reference point.

Regarding your proposed text, we observe that:

- Contrary to the Y.1731 text above that uses only two points in time to describe one-way frame delay, the proposed MEF 10.4 content uses two then four points in time apparently for no other reason than to clarify the text below Figure 9/MEF 10.3;
- The terms $UNI_1$ and $UNI_2$ are mentioned in the text preceding Figure 16 but are not used in this Figure; and
- Your sentence "The definition of One-way Frame Delay for a Service Frame is the one-way delay that includes the delays encountered as a result of transmission of the Service Frame across the ingress UNI ($t_1 - t_0$) and egress UNI ($t_3 - t_2$) as well as that introduced by the CEN ($t_2 - t_1$)" could be understood as implying that the CEN does not include the ingress UNI or egress UNI.

In view of the above but also to ensure reasonable alignment and avoid any confusion, we would suggest simplifying your proposed MEF 10.4 content as follows:

**9.9.1.5 One-way Frame Delay**

The One-way Frame Delay for a Service Frame that ingresses at $UNI_1$ and results in a Service Frame that egresses at $UNI_2$ is defined as the time elapsed from the reception by the CEN of the first bit of the

Ingress Service Frame at the ingress UNI until the transmission by the CEN of the last bit of the first corresponding Egress Service Frame at the egress UNI. If the Service Frame is erroneously duplicated in the Operator CEN and multiple copies delivered to UNI2, the delay is based on the first such copy delivered. This definition is illustrated in Figure 16.

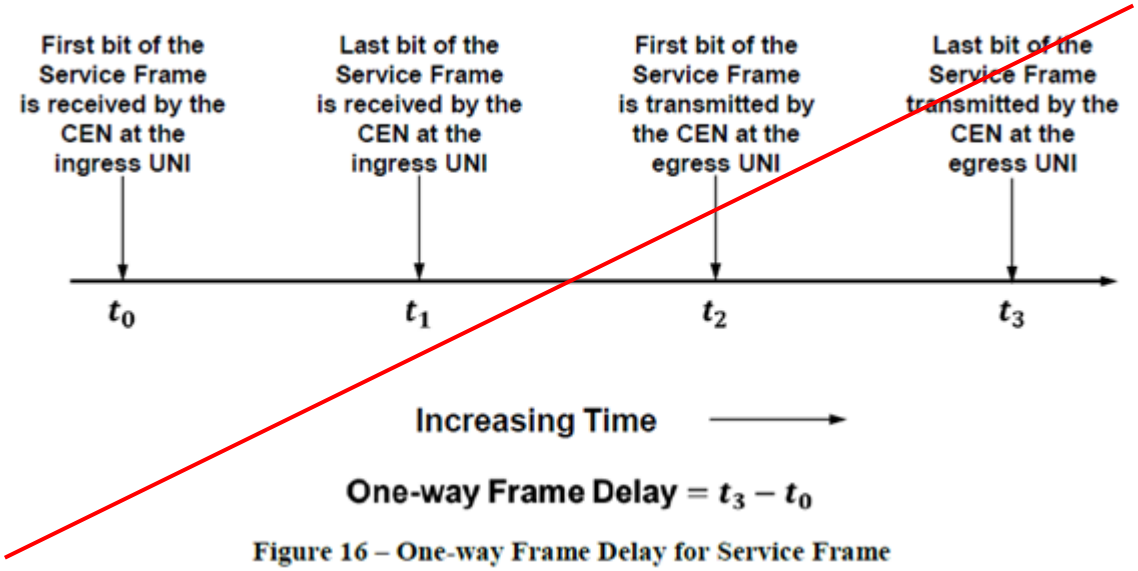


Figure 16 – One-way Frame Delay for Service Frame

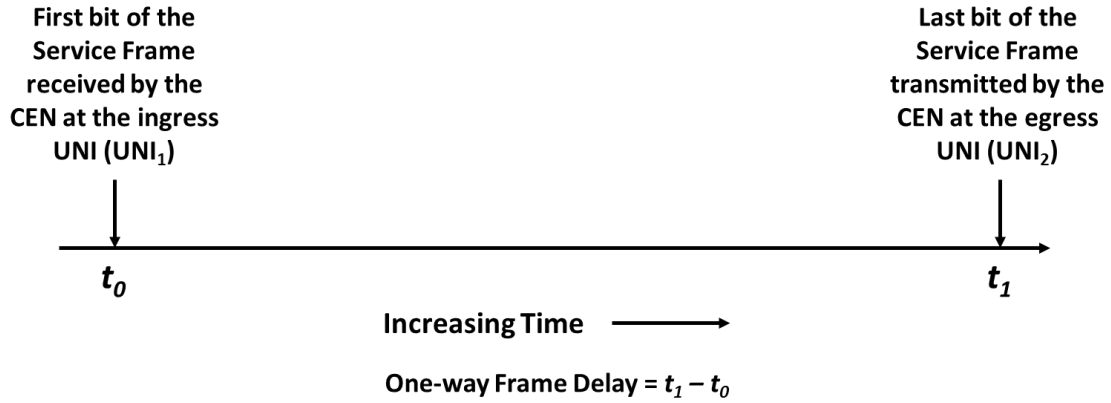


**Figure 16 – One-way Frame Delay for Service Frame**

The definition of One-way Frame Delay for a Service Frame is the one-way delay that includes the delays encountered as a result of transmission of the Service Frame across the CEN, i.e., from the ingress UNI (~~$t_1 - t_0$~~UNI1) ~~and~~ to the egress UNI (~~$t_3 - t_2$~~UNI2)~~, as well as that introduced by the CEN ($t_2 - t_1$)~~. Note that the One-way Frame Delay does not include delays on the SE side of the UNI, e.g., propagation across a cable attaching an SE router to the UNI is not included.

We look forward to continued collaboration between our organizations.

ITU-T Q10/15 meets next 8-19 October 2018 in Geneva, Switzerland.