This document is an individual contribution to the Time-Sensitive Networking Task 1Group of the IEEE 802.1 working group, by Georg Janker, and is intended to further the progress of project P802.1DG.
It is not an official draft of the Task or Working Group

Text Proposal for section 6:

In-vehicle network topology: 10BASE-T1S sub networks

6. Automotive In-Vehicle Networks
6.1 Introduction

Insert the following definitions to this chapter 6.1, and renumber the definitions as appropriate

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6.1.3 Automotive 10BASE-T1S

6.1.3.1 Automotive 10BASE-T1S topology considerations

The most common usage in automotive of 10BASE-T1S is as follows.

10BASE-T1S shall be used as sub-part of an in-vehicle network, meaning there is always a relay or gateway to the rest of the in-vehicle communication. 10BASE-T1S is usually used as ending tree. There is only one connection from the 10BASE-T1S network to the rest of the network.

All nodes within the 10BASE-T1S network are connected via multidrop topology. The behavior of automotive 10BASE-T1S networks can therefore be discussed as a network without PTP Relay Instance ([AS] 7.2.1 b), but connected to a relay instance to other speed grades to establish connection to other networks.

10. Synchronized Time

Insert the following definitions to this chapter 10, and renumber the definitions as appropriate

10.2 Synchronized Time on 10BASE-T1S networks.

6.1.3 General

Since 10BASE-T1S is a multidrop network, it has to be considered as point to multipoint communication. This leads to new restrictions when using 802.1AS upon this topology:

a) All 10BASE-T1S nodes shall use a single gPTP domain.
b) BMCA shall not be used for 10BASE-T1S networks.
c) The clock master for all network nodes is located in the relay or gateway which is connecting the 10BASE-T1S network to the rest of the in-vehicle communication.

6.1.3 Delay measurement

Following statements are related to [AS] 7.3.2.Delay measurement.

The node which carries the clock master:

a) shall not perform Delay measurement as initiator

b) shall act as Delay measurement responder for all other nodes.

All slave nodes:

c) shall perform Delay measurement as initiator
d) shall not act as Delay measurement responder
e) shall drop all received Pdelay_Resp and Pdelay_resp_Follow_Up messages which have sourcePortIdentify values which do not fit to the sourcePortIdentify value sent with the corresponding Pdelay_Req message.

[editor's note:

Link asymmetry shall not be estimated as a factor which has influence on the needed accuracy in automotive 10BASE-T1S networks. We might have to clarify this in conjunction with IEEE802.3cg WG members. Nevertheless, this can be a valid restriction

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