

IEC / IEEE 60802 - IA profile

Timescale reference for planning frame
transmission

-To be discussed-

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Basic scope

Interoperability of planning needs a common understanding of the timescale, the reference point and the injection time of a frame

Thus, this needs to be clearly stated to ensure interoperability

Principle

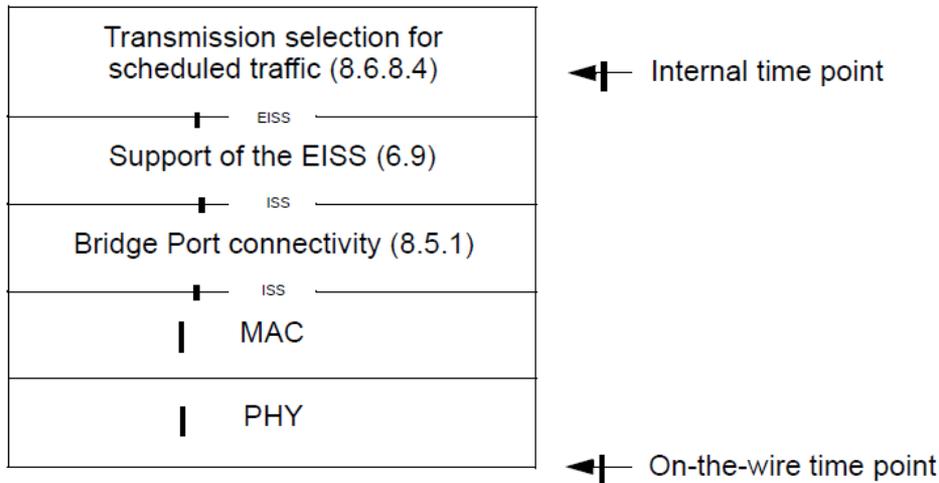


Figure 12-6—Representation of times for scheduled traffic

Timescale used for planning has its reference point “on-the-wire” independent from the usage of scheduled traffic. Thus, if a frame needs to be transmitted at the begin of the network cycle, its SFD shall be seen “on-the-wire” at this time.

Definitions

What is the point in a frame which shall be visible on-the-wire at time zero for a given network cycle?

-> Expected definition: First bit of SFD

Are internal times out of scope for TSN IA profile?

-> Expected definition: Yes

What reference point will all planning use?

-> Expected definition: on-the-wire together with first bit of SFD

Network access - Delay variation

The path from queue to MDI will have defined delay and jitter. Thus, it seems to be a fair assumption that the expected point in time for frame transmission will need to cope with a jitter.

This jitter should only have a positive – being to late – effect on the frame transmission. Additionally the jitter value needs to be limited to e.g. 0 - 500ns as an input for the planning.

Assumption: All subsequent frames are transmitted keeping the Inter Frame Gap.

Delay variation bridge

Bridge delay is defined MDI to MDI and thus may vary for different data rates and different port pairs.

Assumption:

- All possible values of a node are available
- At least maximum values are available

Conclusion

The author of this contribution suggests to include such a definition either into IEEE802.1Q or the TSN IA profile.

Thank you

Questions?