P802.1ASds: Merging clause 19 into clause 11, and beyond

Johannes Specht [Self]

Jointly developed with Alon Regev [Keysight]

Introduction

- This slide set provides a comprehensive proposal for merging clause 19 of P802.1ASds into clause 11. The topic has been brought to discussion in item b) of comment #49 against draft 1.0 of P802.1ASds (https://www.ieee802.org/1/files/private/asds-drafts/d1/802-1ASds-d1-1-dis-v00.pdf). To the author‘s understanding, it could not be implemented based in the information provided in that comment. Therefore, this contribution provides the detailed information.
- Motivation:
  - Most sublauses of clause 19 in P802.1ASds contain pointers into clause 11 subclauses without further definitions in clause 19.
  - Clause 11 is already changed by P802.1ASds.
  - The authors believe that the proposed merge enhances readibility and eases future maintainence of the base standard.
- Underlying documents:
  - [ASds]: P802.1ASds/D1.2
  - [ASRev]: P802.1AS-2020 Rev./D1.3

Upfront

- „FDE“ should be used to refer to non-HDE reading of clause 11, for symmetry across acronyms.
- Several subclauses of clause 11 already apply to both, FDE and HDE. That can be fixed easily, and is fixed by this contribution for certain instances.
- EPON should be mentioned in clause 11, with reference to clause 13.
- Merging EPON (clause 13) into clause 11 is not subject of this proposal.

Overview of clause 19

Overview of clause 19 sub clauses [ASds]

Subclause	Summary
19.1 Overview	*separate slide*
19.2 State machines for HDE links	Primarily pointers to 11.2.xx. Details on *separate slide*
19.3 Message attributes	Only one pointer to 11.3.
19.4 Message formats	Pointer into 11.4, one HDE-specific exception for 11.4.2.4 (domainNumber).
19.5 Protocol timing characterization	Pointers only, one HDE-specific exception in 19.5.2.2 for configuring useMgtSettableLogPdelayReqInterval to TRUE
19.6 Control of computation of neighborRateRatio	Pointer into 11.6 only
19.7 Control of computation of meanLinkDelay	Pointer into 11.7 only
19.8 HDE links settings and configuration	HDE-specific definition of intended configuration parameters: - externalPortConfiguration to TRUE - gptpCapableStateMachinesEnabled to FALSE - neighborGptpCapable to TRUE (per 10.4.1) - useMgtSettableLogSyncInterval to TRUE - useMgtSettableLogAnnounceInterval to TRUE - useMgtSettableLogGptpCapableMessageInterval to TRUE

19.1: Overview [ASds]

Subclause	Summary
19.1.1 General	Sentence: „This clause specifies the media-dependent layer that provides synchronized time across links using the IEEE Std 802.3 Clause 4 MAC operating in half-duplex mode”
19.1.1.1 Half-duplex Ethernet (HDE) characteristics	• Distinction when to look into clause 11 and when into clause 19, based on the actual operational mode of the MAC. • An example (Figure 19-1 and in the end of the last paragraph) • Use of term „neighbor“ • Definition of TT&TR port roles in HDE
19.1.1.2 Overview of the major differences and restrictions of using HDE links	Differences to clause 11: • only timeReceivers are peer delay initiators (ref. to 19.1.2) • always external port configuration only (ref. to 19.8) Non-qualified features: • One-step (ref. to 19.1.2 and 19.2.16) • CMLDS (ref. To 19.2.17) • Use of signaling messages (ref. to 19.8) • Hot standby (ref. to 19.8)
19.1.2 Propagation delay measurement over HDE links	• Item a): Repetition of item a) in 19.1.1.2 • Item b): Effective repetition of item a) in 19.1.1.2 • Items c) and d): The resulting configuration proposals for pdelayReqSendDisabled and pdelayRespSendDisabled
19.1.3 Transport of time-synchronization information	No one-step/two step only [cmp. Item c) in 19.1.1.2], constant FALSE for oneStepReceive, oneStepTransmit and oneStepTxOper
19.1.4 Model of operation	1st paragraph: Re-use of Figure 11-3 and clause 11 references from clause 19 2nd paragraph: Pointers to 8.4.3 and 11.3.2.1 and repetition 3rd paragraph: re-use of 11.2 via 19.2

19.2: Sub-clauses with more than pointers [ASds]

Subclause	Summary
19.2.2 Determination of asCapable and asCapableAcrossDomains	Pointer to 11.2.2 NOTE for asCapableAcrossDomains on full-duplex and HDE
19.2.16 OneStepTxOperSetting state machine	Sentence: „This state machine is not used for HDE links”.
19.2.17 Common Mean Link Delay Service (CMLDS)	• Disqualification of CMLDS for HDE links • Introduction of transport-specific peer-to-peer delay mechanism for domains on HDE links. • Multiple TimeTransmitter ports on an HDE link = different gPTP domains • Explanation why CMLDS cannot be used for HDE links.
19.2.18 Common Mean Link Delay Service (CMLDS) global variables	Sentence: „The Common Mean Link Delay Service (CMLDS) global variables are not used for HDE links.”
19.2.21 LinkDelayIntervalSetting state machine	Sentence: “This state machine is not used for HDE links.”

Preview and Specific Instructions

Previews and specific instructions

Merge of clause 19 into …

- … a new subclause of 7.3 „Examples“ (from 19.1)
- … clause 11

➔ https://www.ieee802.org/1/files/private/asds-drafts/d1/ds-specht-regev-cl-7-3-and-11-0725-v01.pdf

Specific instructions for use of „FDE“

- Clause 10, 12, 14, 19, A, F, MIB and YANG

➔ https://www.ieee802.org/1/files/private/asds-drafts/d1/ds-specht-regev-fde-0725-v01.pdf