
ETHERNOVIA
VIRTUALIZING VEHICLE COMMUNICATION

IEEE P802.1DG

Outline for Draft 1.4

to be ready for TG Ballot before January 2022 Interim

(start ballot by week of Dec. 20th 2021)

2021-12-21 Status update and Ballot start!

Exclusions for Draft 1.4!

- Wireless links of any sort (cellular, wifi, …)
- Ethernet encapsulation (USB, APIX, …)
- Environmental Specifications (AEC Q100, temp., EMC, EMI, …)
- Layer 1 details
- Link Aggregation
- TPMR specifics
- Smart Charge Communication
- OBD to Tester (ISO 13400) details
- Robo-Taxi specifics
- Profile definitions or requirements

Focus on Information not Requirements

- The new draft will focus on discussions and concepts
- Only descriptive, no normative language will be added
- Lessons-Learned from and parallels with:
  - AVnu
  - IEEE P60802
  - AutoSAR

This is the Editor's first work in FrameMaker, please be understanding ;)
Please mainly comment to change existing text with proposals, the editor is well aware of gaps, text proposals on how to fill them are very welcome!

Outline

- Definitions and Abbreviations
  - Automotive Terminology (NM, UDS, …)
  - Time-Related Terminology (align w/ Autosar)
- Limitations
  - Availability of GPS, cellular, …
  - power consumption
  - accessibility
  - start-up times (FMVSS111)
  - assembly line and repair
- Topologies (judge and justify network sizes)
  - Domain
  - Star
  - Zonal
  - Daisy Chain

ECU model

- the role Middleware
- Safety and Security boundaries
- Switch/Bridge Management
  - VLAN for security
  - Safe Switch management
  - Discussion of Monitoring
- Considerations for Small-ECUs (camera, display, microphone)
- Considerations for Compute-Platforms (hypervisor)
- Power Modes
- Diagnostics Modes
- “Birth Certificate” - protection from fraud or theft
- Start-Up times

Traffic Types

- Detailed description from contribution
- Reduction to ~~3~~ basic types:
  - cyclic/periodic
  - event based
  - reliable data transport

  * Debug Traffic - 6.11.4

needs update based on new text in the draft!

Safety & Security

- Discussion of Differences
- Safety Annex D
  - Discussion of CRC32(-P4)
  - Safety at network layer vs. at application layer
  - discussion on redundancy (CB, 1AS, spanning tree)
- Security Chapter 8
  - Discussion on differences between SecOC, IPsec, TLS, MACsec (start-up, number of keys, multicast, …)
  - Discussion of possible key exchange protocols (IKE, UDS, MKA, …) missing! :(
  - VLANs
  - ACLs and Policing missing! :(
  - Authentication, Authorisation and Privacy
  - Link-up detection (802.1X) benefits and limitations
  - Attack models

Shapers

- Goals of shaping in the automotive context
  - dangers of retransmission
- Discussion of Shapers - configuration effort
  - TAS modes
  - Qci dependencies missing :(
  - 1722 relation
- Discussion of combination of Shapers (CBS+TAS, ATS+TAS)
- Discussion of combination with Pre-Emption (CBS+preemption, ATS+preemption, TAS+preemption)
- Priority vs. WRR or other selection missing :(

Policing missing :(

- Definition
- Strict policing on high-prio and high-BW
- Risks of retransmission

Protocols

- SRP - sub-protocol complexity, security issues
- LLDP - supported TLVs
- DoIP - ISO 13400
- RAP
- Automotive NM
- SOME/IP
- Address Assignment (DHCP, MAAP, P802.1CQ, …)
- DLT, XCP

Configuration

- Central vs. Distributed
- Dynamic vs. Static
  - semi-static (from a list)
  - defined learning
- YANG vs. ARxml
- Discussion of Service-Discovery
- Role of UDS

Error Reporting missing :(

- Metering and counters
- Yang and UDS

Time-Synchronisation

- Discussion of traceability to TAI/UTC (availability)
- Discussion of accuracy (audio, …)
- Discussion of failure modes (e.g. from AVnu profile)
- Discussion of CMLDS in Domains
- Discussion of differences to Autosar
- Supported TLVs and ~~control~~ messages
- Discussion Rate-Ratio from Sync or pDealy (start-up time)

(IEEE1588-2019, subclause 7.2.1, p.72 / 802.1AS-2020, 8.2.1, p.48)

The closing date of this ballot is:
16th January 2022
The PDF file of P802.1DG/D1.4 can be found at:
https://www.ieee802.org/1/files/private/dg-drafts/d1/802-1DG-d1-4.pdf

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