



DLT Protocol Update Proposal

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Outline

- Introduction
- Maintainer Change
- DLT on Non Linux Platforms
- DLT Protocol
- Summary

Introduction

- Advanced Driver Information Technology (ADIT)
 - Joint Venture between BOSCH and DENSO
 - Platform development for In-Vehicle Infotainment Systems
- Saya Sugiura
 - Joined ADIT in 2017
 - Working on development of Debug and Monitoring tools to be used in IVI systems
 - Includes DLT development
 - Maintainer of GENIVI dlt-daemon since March 2019



BOSCH

ADIT

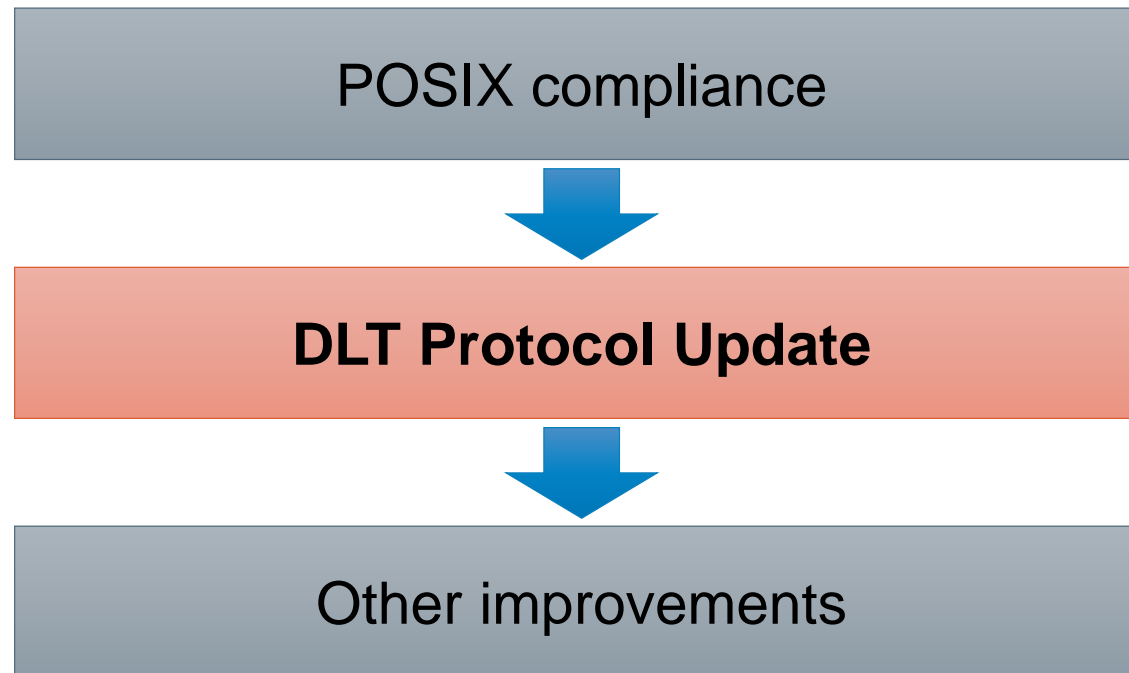
DENSO

Maintainer Change

- ADIT maintains GENIVI dlt-daemon from 2015
 - We will continue to maintain!
- Contact person
 - Saya Sugiura (ssugiura@jp.adit-jv.com)
 - Quynh Le Hoang Ngoc (Quynh.LeHoangNgoc@vn.bosch.com)

DLT on Non Linux Platforms

- How to run DLT on Non Linux Platforms and how to fulfill various use cases?



ADIT is taking a role to drive these activities!

POSIX Compliance

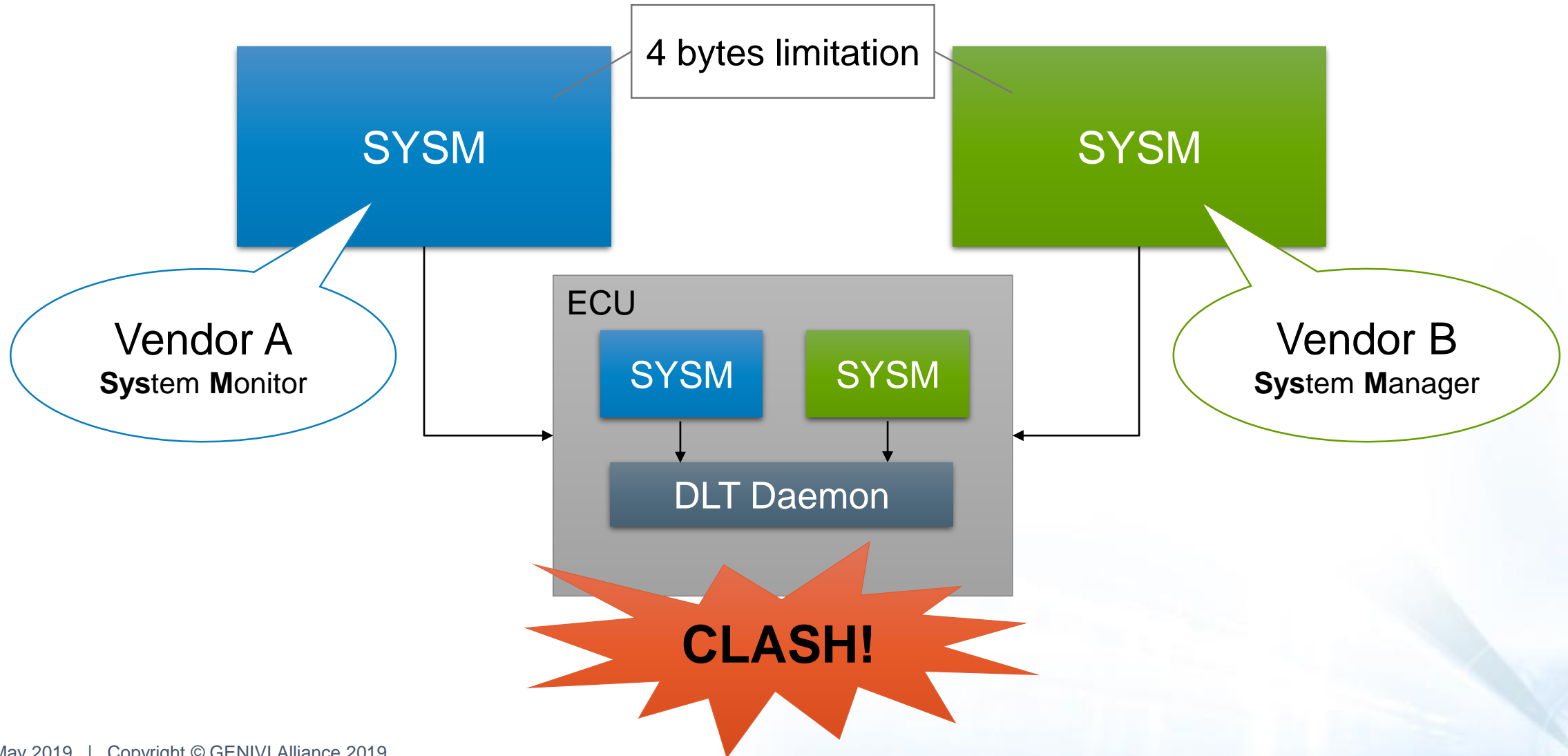
- Done in 2.18 and 2.18.1 version
- Remove Linux specific design and implementation
 - IPC between DLT user application and DLT Daemon
 - Both FIFO (default) and Unix socket are supported for Linux Platform
 - Unix socket is supported for Non Linux Platforms
 - How to switch IPC? – Change by cmake option: DLT_IPC
 - System calls
 - Follow POSIX.1-2017
 - e.g. epoll to poll, hash table to list, etc.
 - Others
 - DLT API usage in forked process etc.

DLT Protocol Update

- GENIVI DLT is based on the protocol in AUTOSAR standard 4.0
- There are several opinions about the current protocol



Drawback of Current Protocol



Protocol Update Proposal

- Limitation of Application and Context Identifiers
 - Sometimes name clashes
 - It could be confusing if the IDs from different ECUs are the same
 - Solutions
 - Extend the upper limitation
 - Provides the possibility to specify prefixes for ID within standardized components
 - Breaks backward compatibility, increases the payload
 - 4 bytes as identifier numbers
 - Send another log message to map the application and context names, or add new control message
 - Able to recover the name, reserve specific range

Protocol Update Proposal

- Control messages
 - New control messages should be added
 - e.g. Set all log level, set all trace status, offline logstorage, passive node connect, etc.
- Timestamp mechanism
 - Is current mechanism suitable where several ECUs are integrated?
- Bit and byte order
 - Byte order can be mixed within a single message
 - Bit order sometimes gets reversed in a single byte

Technical Consideration Points

- Backwards compatibility
 - Components with different protocol version should be able to interoperate
 - Use cases must be described and collected
 - Need to determine all compatibility between DLT library, daemon, and client
- Security
 - Is there any demand?
 - Encrypting log messages
 - Cryptographically authenticating senders of log messages
- Safety
 - Is there any demand?
 - Logging from ASIL certified component

Other Improvements

- Several proposal from AUTOSAR
 - Standardized log level
 - Already defined in documentation in GENIVI, but not part of AUTOSAR specification
 - Network bandwidth and load balancing
 - Add possibility to adjust upper limit of bandwidth while running – Is there any request from GENIVI?
 - Initial log level
 - Specify/recommend an initial (boot time) log level

Summary



- There are some drawbacks within current protocol specification which hinder a broader usage
- To introduce new protocol, we have some technical points we should consider
- Next steps
 - May 2019: Collect feedback
 - Jun 2019: Final agreement on the improvement proposal
 - Nov 2019: AUTOSAR specification updated
 - Mar 2020: GENIVI implementation finalized

Requests are welcome!



Thank you!

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