P802.1DGei

Type of Project: Amendment to IEEE Standard 802.1DG-2025
Project Request Type: Initiation / Amendment
PAR Request Date:
PAR Approval Date:
PAR Expiration Date:
PAR Status: Draft
Root Project: 802.1DG-2025

1.1 Project Number: P802.1DGei
1.2 Type of Document: Standard
1.3 Life Cycle: Full Use

2.1 Project Title: IEEE Standard for Local and metropolitan area networks - Time-Sensitive Networking Profile for Automotive In-Vehicle Ethernet Communications Amendment:Time Synchronization Profile

3.1 Working Group: Higher Layer LAN Protocols Working Group(C/LAN/MAN/802.1 WG)
3.1.1 Contact Information for Working Group Chair:
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3.2.1 Contact Information for Standards Committee Chair:
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4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot: Jul 2029
4.3 Projected Completion Date for Submittal to RevCom: Jul 2030

5.1 Approximate number of people expected to be actively involved in the development of this project: 25
5.2.a Scope of the complete standard: This standard specifies profiles for bounded latency automotive in-vehicle bridged IEEE 802.3 Ethernet networks based on IEEE 802.1 Time-Sensitive Networking (TSN) standards.
5.2.b Scope of the project: This amendment selects IEEE 802.1AS time synchronization features to be supported and provides further details including configuration constraints and guidelines for these IEEE 802.1AS time synchronization features.

5.3 Is the completion of this standard contingent upon the completion of another standard? No
5.4 Purpose: This standard provides profiles for designers and implementers of automotive IEEE 802.3 Ethernet networks that support a wide range of in-vehicle applications.
5.5 Need for the Project: IEEE Std 802.1DG currently allows multiple time synchronization mechanisms, including IEEE Std 802.1AS, IEEE Std 1588 profiles, and other domain-specific solutions.
While this flexibility supported early deployments, it introduces risks to interoperability and consistent system behavior in multi-vendor automotive Ethernet.
Systems using different synchronization mechanisms, or different interpretations of those mechanisms, may not achieve consistent time alignment, leading to increased integration and validation effort in time-sensitive applications.
Automotive Ethernet requires deterministic and reliable time synchronization across complex systems with long product lifecycles.

In such environments, the absence of a clearly defined common baseline
increases validation effort, complicates system integration,
and may lead to vendor-specific or non-interoperable solutions.
Establishing a common baseline based on IEEE Std 802.1AS is needed to:
- Ensure interoperable implementations across vendors
- Provide consistent, deterministic time synchronization behavior
- Reduce integration and validation complexity
- Avoid fragmentation of synchronization approaches
- Support long-term stability of the automotive Ethernet ecosystem.

5.6 Stakeholders for the Standard: Manufacturers, suppliers, and users of automotive Ethernet equipment and components, including:
- Automotive manufacturers
- Tier-1 suppliers
- Semiconductor vendors
- Network equipment vendors
- Tool and test vendors

6.1 Intellectual Property

6.1.1 Is the Standards Committee aware of any copyright permissions needed for this project? No

6.1.2 Is the Standards Committee aware of possible registration activity related to this project? No

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7.1 Are there other standards or projects with a similar scope? No

7.2 Is it the intent to develop this document jointly with another organization? No

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8.1 Additional Explanatory Notes: * 5.2.b IEEE Std 802.1AS IEEE Standard for Local and Metropolitan Area Networks--Timing and Synchronization for Time-Sensitive Applications
* 5.5 IEEE Std 1588 IEEE Standard for a Precision Clock Synchronization Protocol for Networked Measurement and Control Systems