P802.1ASdm

Type of Project: Amendment to IEEE Standard 802.1AS-2020
Project Request Type: Modify / Amendment
PAR Request Date:
PAR Approval Date:
PAR Expiration Date:
PAR Status: Draft
Root PAR: P802.1ASdm
Root PAR Approved on: 02 Jun 2020
Root Project: 802.1AS-2020

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

2.1 Project Title: Standard for Local and Metropolitan Area Networks - Timing and Synchronization for Time-Sensitive Applications
Amendment: Hot Standby and Clock Drift Error Reduction
Change to Title: Standard for Local and Metropolitan Area Networks - Timing and Synchronization for Time-Sensitive ApplicationsAmendment: Hot Standby and Clock Drift Error Reduction

3.1 Working Group: Higher Layer LAN Protocols Working Group(C/LM/802.1 WG)
3.1.1 Contact Information for Working Group Chair:
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3.2 Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee(C/LM)
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: Nov 2023
Change to Expected Date of submission of draft to the IEEE SA for Initial Standards Committee Ballot: ~~Jan~~ Nov ~~2022~~ 2023
4.3 Projected Completion Date for Submittal to RevCom: Jul 2024
Change to Projected Completion Date for Submittal to RevCom: ~~Oct~~ Jul ~~2022~~ 2024

5.1 Approximate number of people expected to be actively involved in the development of this project: 30
5.2.a Scope of the complete standard: This standard specifies protocols, procedures, and managed objects used to ensure that the synchronization requirements are met for time-sensitive applications, such as audio, video, and time-sensitive control, across networks, for example, IEEE 802 and similar media. This includes the maintenance of synchronized time during normal operation and following addition, removal, or failure of network components and network reconfiguration. It specifies the use of IEEE 1588(TM) specifications where applicable in the context of IEEE Std 802.1Q(TM)-2018. Synchronization to an externally provided timing signal [e.g., a recognized timing standard such as Coordinated Universal Time (UTC) or International Atomic Time (TAI)] is not part of this standard but is not precluded.
5.2.b Scope of the project: This amendment specifies protocols, procedures, and managed objects for hot standby without use of the Best Master Clock Algorithm (BMCA), for time-aware systems, including:
- A function that transforms the synchronized times of two generalized Precision Time Protocol (gPTP)

domains into one synchronized time for use by applications;
- A function that directs the synchronized time of one gPTP domain into a different gPTP domain; and
- Mechanisms that determine whether a gPTP domain has sufficient quality to be used for hot standby.
This amendment specifies a Type-Length-Value (TLV) that allows more accurate Neighbor Rate Ratio calculation and more accurate tracking of clock frequency drift.
This amendment also addresses errors and omissions in the description of existing functionality.
Change to scope of the project: This amendment specifies protocols, procedures, and managed objects for hot standby without use of the Best Master Clock Algorithm (BMCA), for time-aware systems, including:
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5.3 Is the completion of this standard contingent upon the completion of another standard? No
5.4 Purpose: This standard enables systems to meet the respective jitter, wander, and time-synchronization requirements for time-sensitive applications, including those that involve multiple streams delivered to multiple end stations. To facilitate the widespread use of packet networks for these applications, synchronization information is one of the components needed at each network element where time-sensitive application data are mapped or demapped or a time-sensitive function is performed. This standard leverages the work of the IEEE 1588 Working Group by developing the additional specifications needed to address these requirements.
5.5 Need for the Project: Hot standby is needed in some applications that use time synchronization (e.g., industrial automation and automotive in-vehicle networks). A TLV is needed by IEC/IEEE 60802 TSN Profile for Industrial Automation to achieve the requirement of 1µs time synchronisation accuracy over 64 network hops while using existing silicon and low-cost crystal oscillators, i.e., not, for example, temperature compensated crystal oscillators.
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5.6 Stakeholders for the Standard: Developers, manufacturers, distributors, or users of time-sensitive applications, components, and equipment.

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? Yes

Explanation: The Simple Network Management Protocol (SNMP) MIB will be assigned an Object Identifier (OID) based on the IEEE Registration Authority (RA) OID tutorial and IEEE Std 802. The YANG Data Model will be assigned a Uniform Resource Name (URN) based on the IEEE RA URN tutorial and IEEE Std 802d.

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.a IEEE Std 1588-2008 - IEEE Standard for a Precision Clock Synchronization Protocol for Networked Measurement and Control Systems
IEEE Std 802.1Q-2018 - IEEE Standard for Local and Metropolitan Area Networks—Bridges and Bridged Networks
#6.1.b RA OID tutorial: http://standards.ieee.org/develop/regauth/tut/oid.pdf
IEEE Std 802 IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture
#6.1.2 RA OID tutorial: http://standards.ieee.org/develop/regauth/tut/oid.pdf
IEEE Std 802 IEEE Standard for Local and Metropolitan Area Networks: Overview and Architecture
IEEE RA URN tutorial: http://standards.ieee.org/develop/regauth/tut/ieeeurn.pdf