

P802.1ASec

Type of Project: Amendment to IEEE Standard 802.1AS-2020

Project Request Type: Initiation / Amendment

PAR Request Date:

PAR Approval Date:

PAR Expiration Date:

PAR Status: Draft

Root Project: 802.1AS-2020

1.1 Project Number: P802.1ASec

1.2 Type of Document: Standard

1.3 Life Cycle: Full Use

2.1 Project Title: IEEE Standard for Local and Metropolitan Area Networks--Timing and Synchronization for Time-Sensitive Applications Amendment: Fault-Tolerant Timing

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 Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee(C/LAN/MAN)

3.2.1 Contact Information for Standards Committee Chair:

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3.2.2 Contact Information for Standards Committee Vice Chair:

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3.2.3 Contact Information for Standards Representative:

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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 2025

4.3 Projected Completion Date for Submittal to RevCom: Mar 2026

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, processes, procedures, functions, mechanisms, and managed objects to enable fault-tolerant timing by increasing the availability of and adding integrity to the time. This is achieved using two or more generalized Precision Time Protocol (gPTP) domains, multiple time distribution paths, the local oscillator clock, and a trustworthy-time selection function with individual processes for times that have interdependencies and times that do not have interdependencies.

Alternate:

This amendment specifies protocols, processes, procedures, functions, mechanisms, and managed objects for fault-tolerant timing, including:

- A function that transforms the synchronized times of two or more generalized Precision Time Protocol (gPTP) domains into one fault-tolerant synchronized time for use by applications;

- Mechanisms that determine whether two or more gPTP domains have any interdependencies;

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: Fault-tolerant timing is needed in some applications that use time synchronization (e.g., aerospace onboard networks) to provide reliable and trustworthy time to vital time-sensitive applications.

5.6 Stakeholders for the Standard: Developers, manufacturers, distributors, or users of time-sensitive applications, components, and equipment.

6.1 Intellectual Property

6.1.2 Is the Standards Committee aware of possible registration activity related to this project?

~~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

8.1 Additional Explanatory Notes: #5.2:

IEEE Std 802.1Q, IEEE Standard for Local and metropolitan area networks - Bridges and Bridged Networks
IEEE Std 1588, IEEE Standard for a Precision Clock Synchronization Protocol for Network Measurement and Control Systems

UTC - Coordinated Universal Time

TAI - International Atomic Time