P802.1ASxy

Submitter Email: janos.farkas@ericsson.com
Type of Project: Amendment to IEEE Standard 802.1AS-2020
PAR Request Date: 24-Jan-2020
PAR Approval Date:
PAR Expiration Date:
Status: Unapproved PAR, PAR for an Amendment to an existing IEEE Standard

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

2.1 Title: Standard for Local and Metropolitan Area Networks - Timing and Synchronization for Time-Sensitive Applications Amendment: Hot Standby

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3.1 Working Group: Higher Layer LAN Protocols Working Group (C/LM/WG802.1)
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3.2 Sponsoring Society and Committee: IEEE Computer Society/LAN/MAN Standards Committee (C/LM)
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4.1 Type of Ballot: Individual
4.2 Expected Date of submission of draft to the IEEE-SA for Initial Sponsor Ballot: 01/2022
4.3 Projected Completion Date for Submittal to RevCom
Note: Usual minimum time between initial sponsor ballot and submission to Revcom is 6 months.: 10/2022

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 the protocol and procedures used to ensure that the synchronization requirements are met for time-sensitive applications, such as audio and video, across bridged and virtual bridged local area networks consisting of local area network (LAN) media where the transmission delays are fixed and symmetrical; for example, IEEE 802.3 full-duplex links. 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 specifications where applicable in the context of IEEE Std 802.1D-2004 and IEEE Std 802.1Q-2005.1 Synchronization to an externally provided timing signal (e.g., a recognized timing standard such as UTC or TAI) is not part of this standard but is not precluded.

5.2.b. Scope of the project: This amendment specifies procedures and managed objects for hot standby, including:
- Function that transforms two domains into one synchronized time for use by applications.
- Function that transforms one domain into two domains.
- Mechanisms that determine whether a domain has sufficient quality to be used for hot standby.
- The IEEE Std 802.1AS externalPortConfiguration variable is true for all hot standby domains.
- Support for the arbitrary timescale (abbreviated as "ARB" in IEEE Std 802.1AS).
- Change published text for hot standby to align with new features.

5.3 **Is the completion of this standard dependent upon the completion of another standard:** No

5.4 **Purpose:** When the Best Master Clock Algorithm (BMCA) of IEEE Std 802.1AS is used (i.e., externalPortConfiguration variable false), the BMCA acts to mitigate hardware and/or software failures that occur in the network. Due to disadvantages of the BMCA, some applications (e.g. industrial automation, automotive) disable the BMCA (i.e., externalPortConfiguration variable true). When a single domain is used without the BMCA, a hardware and/or software failure can result in loss of time synchronization. This amendment specifies hot standby operation in order to mitigate hardware and/or software failures in a network that does not use the BMCA. Using hot standby techniques, multiple domains operate simultaneously, such that a failure of one domain does not result in a loss of time synchronization.

5.5 **Need for the Project:** Hot standby is needed in certain applications that use time synchronization. Specification of hot standby is needed for IEEE P60802 - Time-Sensitive Networking Profile for Industrial Automation. Since the scope of IEEE P60802 is a profile (i.e., "selection of features, options, configurations, defaults, protocols, and procedures"), specifications for the hot standby feature are needed in IEEE Std 802.1AS, which is referenced normatively by IEEE P60802.

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

Intellectual Property
6.1.a. Is the Sponsor aware of any copyright permissions needed for this project?: No
6.1.b. Is the Sponsor aware of possible registration activity related to this project?: No
If yes please explain:

7.1 Are there other standards or projects with a similar scope?: No
7.2 Joint Development
Is it the intent to develop this document jointly with another organization?: No

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8.1 Additional Explanatory Notes:

#5.5 See subclause 1.2 of http://www.ieee802.org/1/files/public/docs2018/60802-industrial-requirements-1218-v12.pdf