Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks

Draft PAR

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Title (4)

Draft: IEEE Standard for Local and Metropolitan Area Networks – Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks

PAR Scope (13)

- 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. 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 Stds 802.1D and 802.1Q.

- 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.

PAR Scope (13)

Is the completion of this document contingent upon the completion of another document?

- This standard is not contingent on the completion of any other documents

PAR Purpose (14)

- This standard enables stations attached to bridged LANs to meet the respective jitter, wander, and time synchronization requirements for time-sensitive applications.

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PAR Reason (15)

- The use of current IEEE 802 technologies for time sensitive applications, such as high quality audio/video streaming, does not assure that the applications can present data with acceptable jitter, wander, and deviation in time. This includes applications that involve multiple streams delivered to multiple endpoints.
- To facilitate the widespread use of bridged LANs 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.
  - The synchronization information provided to each network element will allow the jitter, wander, and time synchronization requirements of demanding applications, such as in a residential environment, to be met.

PAR Reason (15)

- Existing time synchronization standards, IEEE Std. 1588-2002 and RFC 1305 (NTP), because they operate at layer 3, impose unacceptable operational complexity and implementation costs on a developer of residential AV equipment. This standard will leverage the work of the IEEE 1588 WG to develop the additional specifications needed to address these requirements.

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- The application mapping can use this timing information to determine and record when particular information is mapped. The recorded information can then be used at the demapper, relative to the timing information there, to determine when to present the demapped information to the application layer.
  - This process requires that the timing information at the mapper and demapper be synchronized.
- The manner in which the application uses the timing information at the mapper and demapper is not part of this standard; rather, this standard covers the synchronization of the timing information at the mapper and demapper.