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 will specify the use of IEEE 1588 concepts in the context of IEEE Stds 802.1D and 802.1Q with particular reference to meeting the synchronization requirements for time sensitive applications across Bridged and Virtual Bridged Local Area Networks

- It specifies the protocol and procedures used to ensure maintenance of synchronized time during normal operation and following addition, removal, or failure of network components and network reconfiguration.

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 will enable bridged LANs to transport time-sensitive applications and meet the respective jitter, wander, and time synchronization requirements for those applications. Its primary purpose is to provide timing information at each network element where a time-sensitive application may be mapped or demapped.

- 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.

PAR Purpose (14)

- 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.

- The synchronization of the grandmaster 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 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 will be delivered at the network egress with acceptable jitter and wander. In addition, applications that involve multiple streams delivered to different locations may require that the delivery be synchronized in time. Finally, some applications may require knowledge of time of day.

- To facilitate the widespread use of bridged LANs for these applications, synchronization information is one of the components needed (among other things) at each network element where a time-sensitive application is 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 the most demanding applications in a residential environment to be met.

PAR Reason (15)

- This standard will use relevant aspects of other standards that transport synchronization using time stamps, such as IEEE 1588 and NTP, but will provide additional specifications because the existing standards are insufficient to guarantee synchronization performance