

Timing and Synchronization for Time-Sensitive Applications in Bridged Local Area Networks Version 2

Draft PAR

January 10, 2010

**This is an initial draft, based on the ideas
contained in slides 5 and 6 of
<http://www.ieee802.org/1/files/public/docs2010/avb-pannell-gen2-assumptions-1110-v2.pdf>. Revisions
to the current document are expected.**

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 amendment to IEEE Std 802.1AS – 2011 specifies enhancements, new features, and performance improvements
- The enhancements include:
 - Support for link aggregation (IEEE 802.1X)
 - Support for new media types, with corresponding media-dependent layers, e.g., IEEE 1901, WiFi Direct, and other IEEE 802 media
 - Interoperability with one-step clocks (but no specifications for one-step clocks)
 - Support of two-step clocks with immediate Follow_Up
 - Support of redundant paths
 - Detection of devices that are not 802.1AS capable (e.g., buffered repeaters) for media other than full-duplex IEEE 802.3
 - Incorporation of interfaces specified in IEEE 802.3bf into the IEEE 802.3 full-duplex media dependent layer model

PAR Scope (13)

- The performance improvements include:
 - Improved ability to detect circulating Announce messages when the loop is large enough that it will not be detected by the current path trace feature
 - Improved performance for networks that contain long daisy chains of time-aware systems
- The new features include:
 - Carrying information on alternate time scales (e.g., local time for a respective time zone)
 - Security
 - Transport of gPTP over a layer 3 router
 - Interoperability with NTP
 - Automatic measurement of link delay asymmetry
 - Transport of information to help assess the synchronization performance of a time-aware system

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 amendment allows IEEE 802.1AS to be used:

- with a greater number of network media types and a greater variety of network configurations, and
- more effectively with existing and new media types and network configurations

PAR Reason (15)

- When development of IEEE 802.1AS – 2011 began, the main focus was on audio/video (A/V) applications
 - The initial focus was on full-duplex IEEE 802.3 media, and IEEE 802.11, IEEE 802.3 EPON, and Coordinated Shared Network media were added.
- While IEEE 802.1AS – 2011 allows effective transport of synchronization over gPTP networks that contain the above media to support A/V applications, the enhancements, new features, and performance improvements described in the scope will allow it to be used more effectively for a greater variety of applications, and with a greater variety of network media and configurations.