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.