

Proposed Text for New 802.1AS Informative Annex that Describes the Included PTP Profile

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IEEE 802.1 AVB TG
2010.04.22

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Introduction

- ❑ IEEE 802.1AS includes a PTP profile
 - However, there is no explicit description of this profile in the document
- ❑ Attached is a proposed new informative annex that describes the PTP profile contained in IEEE 802.1AS
- ❑ The format of the Annex, and included information, follows subclause 19.3 (PTP Profiles) and Annex J (Default PTP Profiles) of IEEE 1588TM-2008.
- ❑ This material is submitted as part of the proposed remedy for a sponsor ballot comment for IEEE P802.1AS submitted by the author.

Annex G (informative)

PTP profile included in this standard

The specification in this standard of time transport over a full-duplex, point-to-point link includes a PTP profile. The information contained in a PTP profile is described in 19.3 of IEEE Std 1588TM-2008. This annex summarizes the PTP profile for transport of timing over full-duplex, point-to-point links. This PTP profile is also used in the transport of timing over CSN for the case where a CSN network clock reference is not present (see Annex E). This PTP profile is not used in the transport of timing over IEEE 802.11 links and IEEE 802.3 EPON links; both these transports use native timing mechanisms to assist in the time transport.

G.1 Identification

The identification values for this PTP profile (see 19.3.3 of IEEE Std 1588TM-2008) are:

PTP Profile:

IEEE Std 802.1ASTM-201x PTP profile for transport of timing over full-duplex, point-to-point links
Version 1.0

Profile identifier: 00-80-C2-00-01-00

This profile is specified by the IEEE 802.1 Working Group of the IEEE 802 LAN/MAN Standards Committee.

A copy may be obtained by ordering IEEE Std 802.1ASTM-201x from the IEEE Standards Organization <http://standards.ieee.org>.

<<201x will be replaced by the actual year of publication of IEEE 802.1AS when it is published.>>

<<The inclusion of the above information is specified in 19.3.3 of IEEE Std 1588TM-2008. This subclause of IEEE 1588 specifies that the profile identifier is an EUI-48 whose OUI portion is owned by the organization specifying the profile; therefore, the IEEE 802.1 OUI has been used. The final 3 octets of the EUI-48 contain the version number and revision number, in that order; however, 19.3.3 of IEEE Std 1588TM-2008 does not specify how the version number and revision number are distributed among these octets. (Note that profile version refers to the particular profile specified by the organization that owns the OUI; it does not refer to different versions of the same profile (these would be different revisions)). The distribution above, with octets 4 and 5 representing the revision number and octet 6 representing the revision number, was copied from the default profiles in IEEE 1588, Annex J; a different distribution could be used here if desired. Finally, note that the profile identifier is not actually used in the protocol; it simply identifies the profile in this document.>>

<<If the above is accepted, a registry of IEEE 802.1 PTP profiles will be created (in the form of an Excel spreadsheet) and supplied to the 802.1 Chair. The numbering convention for the profile identifier (i.e., distribution of the version and revision numbers in the last 3 octets) will be included in the spreadsheet.>>

G.2 PTP attribute values

The ranges and default values for time-aware system attributes covered by this profile are:

- a) The domain number is 0 (see 8.1)
- b) The default logAnnounceInterval (see 10.6.2.2) is 0. The value 127 is supported.
- c) The default logSyncInterval (see 11.5.2.3) is -3. The value 127 is supported.
- d) The default logPdelayReqInterval (see 11.5.2.2) is 0. The value 127 is supported.

- e) The default announceReceiptTimeout (see 10.6.3.2) is 2.
- f) The default values of priority1, for different media, are specified in 8.6.2.1, Table 8-2. The value of priority1 for a time-aware system that is not grandmaster-capable is 255.
- g) The default value of priority2 is 248 (see 8.6.2.5).
- h) The default observation interval for offsetScaledLogVariance is equal to the default sync interval, i.e., 0.125 s (see 8.6.2.4).

G.3 PTP options

- a) The best master clock algorithm is the alternate BMCA specified in 10.3.

NOTE - This BMCA is similar, but not identical, to the default BMCA described in IEEE Std 1588TM-2008. The main differences are (1) Announce information from a potential best master is used immediately, i.e., there is no notion of foreign master qualification, (2) a port whose port role is determined by the BMCA to be MasterPort has its port role changed to MasterPort immediately, i.e., there is no 'PreMasterPortRole'.

- b) The management mechanism is the mechanism specified in Clauses 14 and 15.
- c) The path delay mechanism is the peer delay mechanism (see Clause 11).
- d) The transport mechanism is full-duplex, point-to-point, and uses attribute values described in Annex F of IEEE Std 1588TM-2008 for IEEE Std 802.3TM-2008/Ethernet. Specifically, the address, Ethertype, and subtype are specified in 11.3.4, 11.3.5, and 11.3.6.
- e) A time-aware system that contains one PortSync and one MD entity is an ordinary clock. A time-aware system that contains more than one PortSync and more than one MD entity is a boundary clock. All time-aware systems are two-step clocks.
- f) Each port of a time-aware system measures the frequency offset of its neighbor, at the other end of the attached link, relative to itself (see Clause 11). The frequency offset, relative to the grandmaster, is accumulated in a standard organization TLV that is attached to the Follow_Up message (see 11.4.4.3). The standard organization TLV also carries information on grandmaster traceability and phase and frequency change due to the most recent grandmaster change. The physical adjustment of the frequency of the LocalClock entity (i.e., physical syntonization) is allowed but not required.
- g) The path trace feature of 16.2 of IEEE Std 1588TM-2008 is used (see 10.5.3.2.8)/
- h) A standard organization TLV is defined that allows a port of a time-aware system to request that its neighbor slow down or speed up the rate at which it sends Sync/Follow_Up, peer delay, and/or Announce messages (see 10.5.4.3)
- i) The acceptable master table feature of IEEE Std 1588TM-2008 is used with IEEE 802.3 EPON links to ensure that the OLT is master and ONUs are slaves.

NOTE - This feature is used with EPON links, and therefore could be considered to be outside the PTP profile (because EPON links are part of the PTP profile). It is included here because it is one of the optional features described in IEEE Std 1588TM-2008.

- j) Except for (g) and (i) above, the optional features of Clauses 16 and 17 of IEEE Std 1588TM-2008 are not used.
- k) The experimental security protocol of Annex K of IEEE Std 1588TM-2008 is not used.
- l) The cumulative frequency scale factor of Annex L of IEEE Std 1588TM-2008 is not used, but cumulative frequency offset relative to the grandmaster is accumulated in a TLV, and is encoded in the same way as the cumulative frequency scale factor in Annex L of IEEE Std 1588TM-2008.

G.4 LocalClock and time-aware system performance requirements

The LocalClock performance requirements are as specified in B.1. The time-aware system performance requirements are as specified in B.2.