



Media Timing with multiple gPTP domains

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AVTP Timestamps

- The `avtp_timestamp` field of the media stream contains the gPTP representation of the media clock edge
- BUT... when there are multiple gPTP domains which one is used for that timestamp?

The problem

- Up until IEEE P802.1AS-REV gPTP has only supported one domain, there is no ambiguity in which domain is used for generating the timestamps that are used within the media
- With addition of multiple domains in gPTP we need a way to identify which domain(s) is/are being used to timestamp the media

Multiple Domains

- At least 3 ways to be able to use gPTP domains
 - Single
 - Each media source/sink only ever uses one gPTP domain
 - Fallback
 - Each media source/sink uses one gPTP domain at a time and falls back through a list in case of errors or unavailability
 - Combined
 - A single concept of time is generated by combining multiple gPTP domains through some mechanism

Existing Devices

- Existing devices (or devices made to 1722.1-2013) are assumed to always use gPTP domain 0 for the timestamping since that is all that existed
 - New devices with only a single gPTP domain can also make this assumption

A solution

- When there are multiple gPTP domains supported we need to
 - Identify what type of timing model is used (single, fallback or combined)
 - Identify what gPTP domains can be used for timing information
 - Identify which gPTP domain (if applicable) is the currently active one for timestamping on a per stream basis

Proposal

- Add a new descriptor, TIMING descriptor which identifies what algorithm is used, what are the options for that algorithm
- Add a new AECp command/response/unsolicited response which identifies which gPTP domain is active for that timing source