Media Timing with multiple gPTP domains

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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