

HARMAN

Media Clock Streams

Version 2

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Requirements

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- **Provide a mechanism for supplying media clock timing information with minimal bandwidth usage**
 - **Supports all audio and video clock rates**
 - **No “null data” needs to be sent**
 - **Transmission rate is not fixed**
 - i.e. packets do not need to be transmitted at same speed as class A streams

How do I know I want it?

- **We need a way to easily know if a particular media clock stream is one we want to recover from.**
- **Provide nominal frequency**
 - Option 1: The `clock_frequency` and `clock_multiplier` fields of MCN could be used to specify an exact nominal frequency.
 - ~~– Option 2: A `nominal_sample_rate` field similar to that of AVTP Audio could be used. Provides quicker decision, but limits available frequencies even if we add more than what's in AVTP Audio.~~
- **Clock Domain**
 - Use the `domain_id` field (like in MCN) to differentiate by clock domain
- **Stream ID**
 - Needed to differentiate from potential other media clock streams of the same frequency.

- **Use avtp_timestamp**

- Same as the timestamp used for AVTP audio or 61883-6, etc.
- Based on 802.1AS time
- Doesn't matter if presentation time is added as long as all packets use the same method

- ~~“Edge” bit(s)?~~

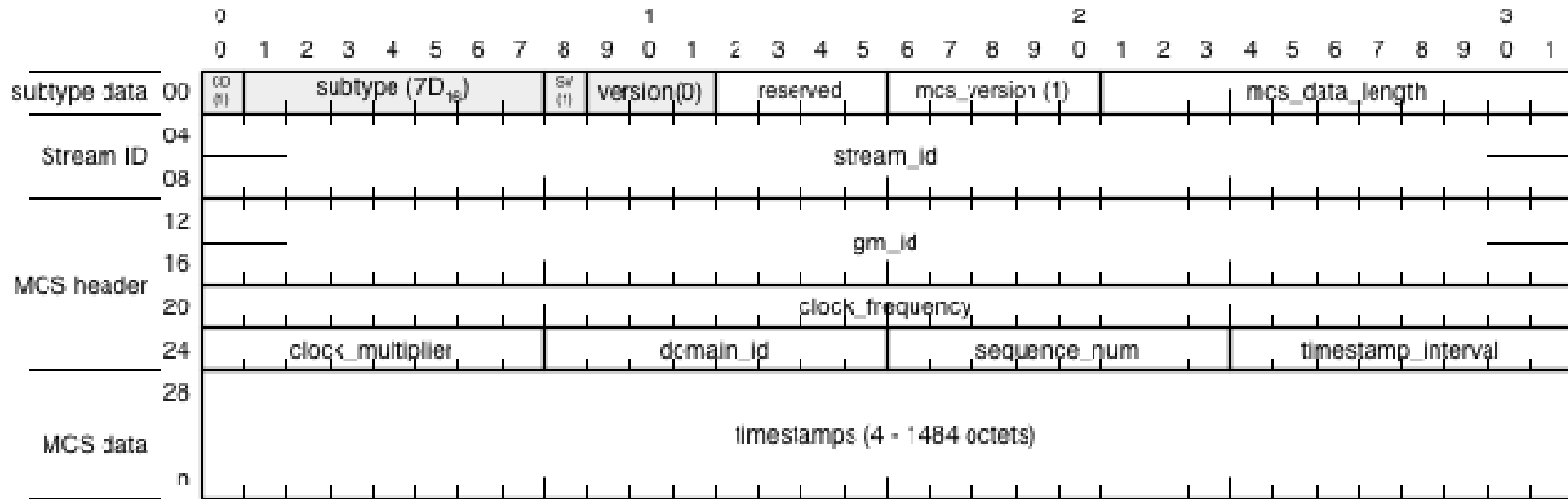
- ~~– It would be nice to have one or two bits that indicate if the timestamped sample was sampled on the positive or negative (or both?) edge of the media clock.~~
 - ~~• Useful for phase alignment~~

Bandwidth Reduction

- **Create timestamp_interval field to hold number of samples between timestamp packets**
 - Media clock period = $(ts_2 - ts_1) / \text{timestamp_interval}$
- **Use sequence number so missed packets are easily noticed and don't influence frequency calculation/averaging.**
- **Reduce the amount of packets sent**
 - Send multiple timestamps per packet. A listener may choose to only use a subset.

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- **Best effort 1722 control packet**
 - Should some kind of higher priority be used so that they are sent before normal best effort?
 - **Where in the document should media clock streams go?**
 - Replace MCN in Annex D?
 - Control Stream?
 - Somewhere else?
 - **How should versioning work? Backward compatible or not?**
 - **Should we keep base_clock_GUID from MCN?**
 - Useful for knowing about related clocks
 - **Does rate of transmission need to be in the packets?**
 - **Can the rate change during transmission?**

Example Packet Format



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WHERE SOUND MATTERS

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