

HARMAN

Media Clock Negotiation (MCN)

IEEE 1722 telecon 1/3/11

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New Items

- **Fractional Clock Frequencies**
- **Common Base Clock Identifier**
- **Clock Quality**
- **Clock Age**
- **Human Readable Clock Identifier**

Fractional Clock Frequencies

- **MCN currently represents frequency in hertz**
- **Current range 1 Hz – 2^{32} Hz (4294.96 MHz)**
- **Is there a need to represent clocks outside this range?**
- **Is there a need to represent clocks in fractional hertz?**
- **SMPTE 247M and 296M specify video sample rate as F_s/M**
 - 1080p59.94 used $F_s=148.5$ $M=1.001$
 - results in approximately 148351648.35Hz, commonly referred to as 148.35MHz

Common Base Clock Identifier

- **Define a way to identify that 2 clock have the same base clock**
- **Clocks with a common base must be multiples**
 - **48,96,192**
 - **44.1, 88.2, 176.4**
- **Add a field to the Advertise with a Base StreamID**
- **The Base StreamID identifies the clock these various clocks are synchronous with.**
- **Problems**
 - All clocks are not Advertised only election winning clocks
 - User would have to configure these sets of clocks to win
 - If the user has to configure it anyway, what is the point

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- **Surveyed dedicated word clocks**
 - Apogee Big Ben
 - ART SyncGen
 - Black Lion Audio MicroClock
 - **Only common specification given is jitter**
 - **Advertised jitter on dedicated word clocks is in pico seconds**
 - **Jitter of the original source is likely to be overwhelmed by the additional jitter from AVB.**
 - **802.1AS defines clockClass and clockAccuracy, these are not really applicable to our needs.**
 - **What can we define that is meaningful?**

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- **Clocks become elected Primary should become higher priority to avoid thrash.**
 - **New field added to the Advertise that is internal priority**
 - **Internal priority can change at any time**
 - **Internal priority is raised when**
 - Clock is elected Primary
 - Clock has an active Listener
 - Once internal priority is raised it remains at the new priority until it loses an election
 - **Internal priority is reset to default when the clock loses an election.**

Human Readable Clock Identifier

- **In multi-vendor network it would be useful to show what is the current media clock**
- **This has nothing to do with the actual election**
- **This is just a convenience to the user to inform/confirm that the desired media clock has been elected**
- **The actual text should be designed to be useful to the user to easily identify the source. Text should include make, model and unique id.**
- **Example**
 - “dbx SC 00:01:23:45:67:89”
 - “dbx SC HiQnet node 34”

MCN Packet Fields



- mcn_version
- mcn_data_length
- stream_id
- gm_id
- clock frequency
- domain_id
- priority

