IEEE 1722a Assumptions

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Green Text = Agreed to at a Face 2 Face (was Blue or Red)

Black Text = Not Decided

Changes Marked with Red from last version

Subtype Assignment

- New subtypes
  - 0x02 AVTP Audio Format
  - 0x03 AVTP Video Format
  - 0x04 Control Streams (Automotive/TSCS)
  - 0x7a AVDECC Discovery
  - 0x7b AVDECC Enumeration and Control
  - 0x7c AVDECC Connection Management
  - 0x7d Media Clock Negotiation
- Divide the subtype table between C and D to clarify that these are different subtype domains
- May need a new type for arbitrary clocking stream

Mac Address Assignment

- MCN needs MAC address (91:E0:F0:00:FF:01)
- 1722.1 has requested a block of 16k MAC addresses to by assigned by 1722a from the 1722 OUI (91:E0:F0:01:00:00 – 91:E0:F0:01:FF:FF)

Changes to current standard

- Redefine gateway info to only be valid for 61883 formats
- Gateway info field to be replaced by a protocol specific field that can be used in new protocols
- GV bit to also be redefined to be available for use in new protocol types or reserved where not used
- Update reference to 802.1AS-2011
- Update reference to 802.1Qav
- Update reference to 802.1Q-2005
- Update other references???

Doc errors in current standard

- Page 16 “Max gPTP) Skew Time” -> “Max gPTP Skew Time)”
- Figure 5.4 “Timing Uncertainty” misunderstanding
  - The "AVTP max timing uncertainty" is an unfortunate name. Really it should have been called "max sample delivery time" or some such … it's supposed to be the worst case time between taking the sample and delivering it to the 1722 ingress time reference plane. THIS NEEDS TO BE CONSTANT … so "uncertainty" was a really poor term … it just meant "we don't know how to standardize this". Note the phrase "It is the Talker's responsibility to know the Timing Uncertainty of its own design …"; that's an indication of requirement for certainty in the "Timing Uncertainty”.
- Support for alternate SYT intervals for 61883-6 support for SR Classes other than SR Class A

AVTP Audio Format

- Support PCM audio
  - Support more channels
  - Simpler data parsing
- Event Markers
- Link Protection field to indicate encryption
  - Encryption will be indicated by the new Version 1 security header

AVTP Audio Format LPCM Format

- Timestamp in every packet
  - Always the presentation time of the first sample
- Supported formats
  - 32 bit float (IEEE 754)
  - 32 bit integer
  - 24 bit integer, packed
  - 16 bit integer, packed
  - Interleaved only for all formats
- All packets in a single stream are the same size (i.e. Each frame contains the same number of samples)
  - All frames including the final stream frame must contain valid sample data
  - Any extra sample data that does not fill up a complete frame should be dropped

AVTP Video

- Support new native AVTP formats
  - Pro Video Formats as per 1722a-rsilfvast-pro_video_formats_v3_22-Oct-2012
  - Support RAW sensor data (no one is claiming a desire for this, will be dropped if no further interest)
    - IIDC formats currently support this functionality.
- Support RTP Payload formats
  - Support MJPEG (RFC 2435)
  - Support MJPEG2000 (RFC 5372)
  - Support H.264 (RFC 6184)
- Event Markers
  - Proposal to increase the number to >2
  - SOF/EOF Markers used in RTP and other formats (We don't know what this means???)
- Encryption is part of Version 1 Header
- HDCP is available for use in PES with no further work in 1722a

Media Clock Negotiation

- Media clock management is proposed to change to new method
- Frequency multipliers to match 1722.1
  - 1.001, 1/1.001, 24/25, 25/24
- Clock Quality field(s) to be added between priority1 and priority2
  - Media Clock variance should be determined by PTPDEV (16 bit field)
  - gptp_clock_period field related to gPTP interval typically 8ns or 40ns (8 bit field)
- Required Crystal GUID to be added for informational purposes to MCN Advertise packet

MCN notes from 11/5/12 call

- MCN HRid field is blocking new field
- Possible new fields
  - Priority Code Point
  - VlanID
  - Traffic Class
  - Destination MAC ID
- Automatic Priority adjustment to avoid thrashing
  - If active SRP reservation then higher priority
  - When all SRP reservations leave return to prior priority
  - Should we add an active reservations field that is included in the election?
- Format type field (Can we steal something from 1722.1 for this? See clause 7.3.2) 64-bits
- Need to define MCN_ADVERTISE_INTERVAL
- Do we want a MCN_QUERY that simply forces a quick response, for quicker startup?

- New Feature
  - Defined Media Clock stream type that uses less bandwidth by not including any media

Media Clock Stream

- Need to define an optimized media clock stream frame format
- Common format for Audio and Video
- Support for multiple packet rates (Class A,B,C,D possibly other.
- Audio clocks based on word clock
- Video clocks based on TBD

Real Time Format Change (the HDMI problem)

- Include markers to indicate change
  - Prechange indication??
  - Format identifier??
  - Formats are prenegotiated
  - One bit could set to indicate a change is coming and then reset to indicate the change is here
- Required in AVTP audio/video formats
- Add bits to 61883 base formats
- Could this be used by the 802.1 multitalker problem??
- This feature relies on HDCP and so we should put this on hold until we solve the HDCP Problem

Diagnostics

- Diagnostic Counter to be included with 1722a
  - List included in current draft

1722/1722a PICS

- 1722/1722a only (no PICS will be derived from IEC 61883 specific standards)
- Need PICS for AVTP audio/video
- Need PICS for MCN

DTCP/HDCP

- Only support for HDCP IIA can possibly be included in this standard.
  - Everything else requires approval by DTLA
  - HDCP will be indicated in the PES
- 1722a will not work with the DTLA to get approval
- HDCP IIA APM protocol moved into 1722.1

Control Streams

- Automotive base format
  - Flexray Protocol
  - CAN Protocol
  - LIN Protocol
- TSCS Protocol (Time Sensitive Control Stream)
- We will not be defining FlexRay synchronization

Security with minimal latency

- Informative Annex
- MacSec – per link encryption
- 802.1X – per LAN authentication
- How do I secure a live performance?
  - Class A Stream latency
- Need a volunteer or this will be dropped

Synchronization bits

- Need Synchronization Marker bits
- Currently M0 and M1
- Do we need more bits? Maybe 4 bits
- M0 used for format change
- M1 used to synchronize external events
- Can we add these same bits to the 61883 streaming formats? No

Version 1 Format

- New format to support security header
  - See koftinoff_1722a-V1b.pdf
  - Packet signing
    - ECC
  - Encryption
    - AES-GCM encryption
    - ECC
  - Make use of IEEE 1363a

Other items?

- We have been contacted by IEC100 (IEC 61883 group) for a formal liaison
- New draft of 61883-6 that is coming. Do we want support it?

Goals

- Next draft before Feb 1 F2F 2012
  - Update Automotive Control Streams – Dave
  - Update TSCS – Jeff
  - Update AAF – Ashley/Jeff
  - Media Clock Streams Formats – Aaron
  - Add Pro Video Formats – Aaron
  - Remove MCN until final decision is made
- Later draft
  - Header Version 1 draft – Dave/Jeff
    - Update all diagrams, including all in 1722
    - Pending technical closure
  - MCN State Machine (deferred until final mechanism defined)
  - Media Clock and Streams Best Practices Annex
  - AVTP formats and MCN PICS
  - Updates to Figure 5.4