
61883-over-AVB

Project Status

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61883-over-AVB Study Group

- Study Group approved at quarterly IEEE MSC meeting - January 8, 2007
- Study Group has 6 months to submit PAR
- Approved PAR will trigger formation of Working Group
- WG's charter is to write standard detailing use of 61883 as AVB Transport Protocol

Study Group info

- To subscribe to the 61883-over-AVB Study Group reflector, send an email to ListServ@ieee.org containing the text:

subscribe avbtp

in the body of the message.

- The weekly 61883-over-AVB phone conference call will be held Monday, Jan 22 at 9 a.m. PST.

Primary Dial-In	1 (866) 888-5021
Alternate Dial-In	1 (630) 693-2119
Enter Passcode	8451103#

IEC 61883 Standards

- IEC 61883 - Consumer Audio/video Equipment -Digital Interface
 - Part 1: General
 - Part 2: SD-DVCR data transmission
 - Part 3: HD-DVCR data transmission (unused)
 - Part 4: MPEG-2-TS data transmission
 - 1394 TA adding MPEG-4 and MP3
 - Part 5: SDL-DVCR data transmission (unused)
 - Part 6: Audio and Music data transmission
 - Part 7: Transmission of ITU-R BO.1294 System B
 - *Part 8: Transmission of ITU-R BT.601 (pending)*
- Overview of IEC 61883 can be found at:
 - http://grouper.ieee.org/groups/802/3/re_study/public/200505/teener_1_0_505.pdf

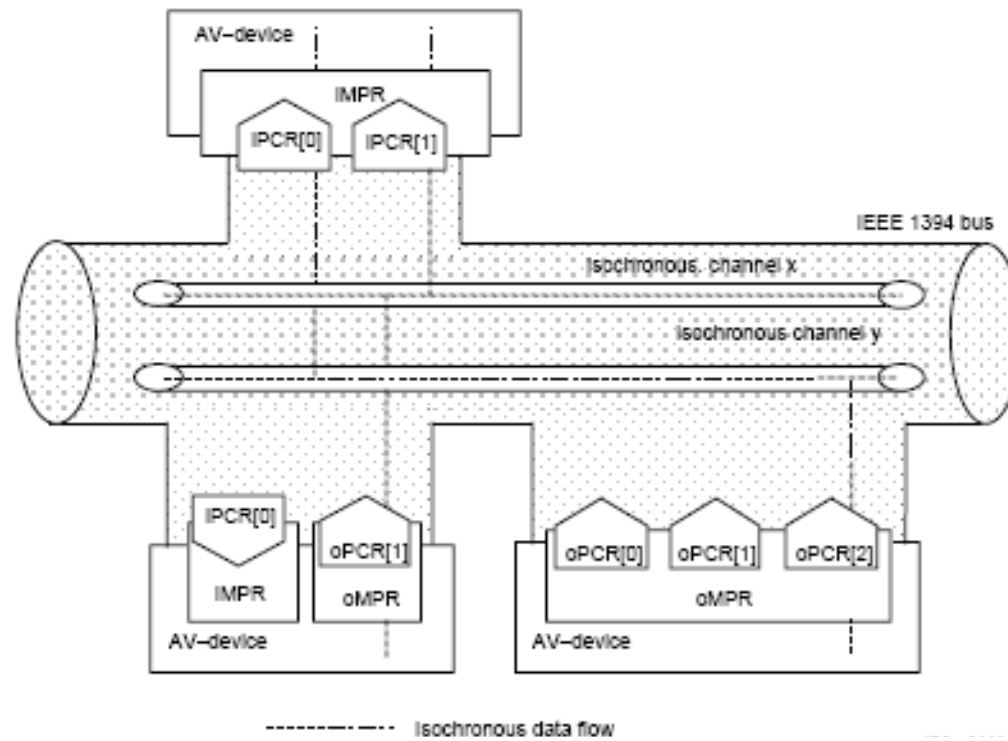
IEC 61883-1

- IEC 61883-1
 - Plug Control Registers
 - Input/Output Plugs & Plug Registers
 - Connection management
 - Initiating, maintaining, and releasing connections
 - Function control protocol
 - Asynchronous control data transmission
 - Common Isochronous Packet (CIP)
 - CIP Headers
 - Payload
 - Source packets
 - Data blocks
 - Time Stamps

Plug registers

- Output “plugs” feed input “plugs” based on connection management procedure - CMP
- Plugs are controlled by special purpose CSRs known as plug registers
- Plug control registers
 - iPCR/oPCR – 1 per isochronous stream
- Master plug registers
 - iMPR/oMPR – 1 each per device

Plug registers



Connection management procedures

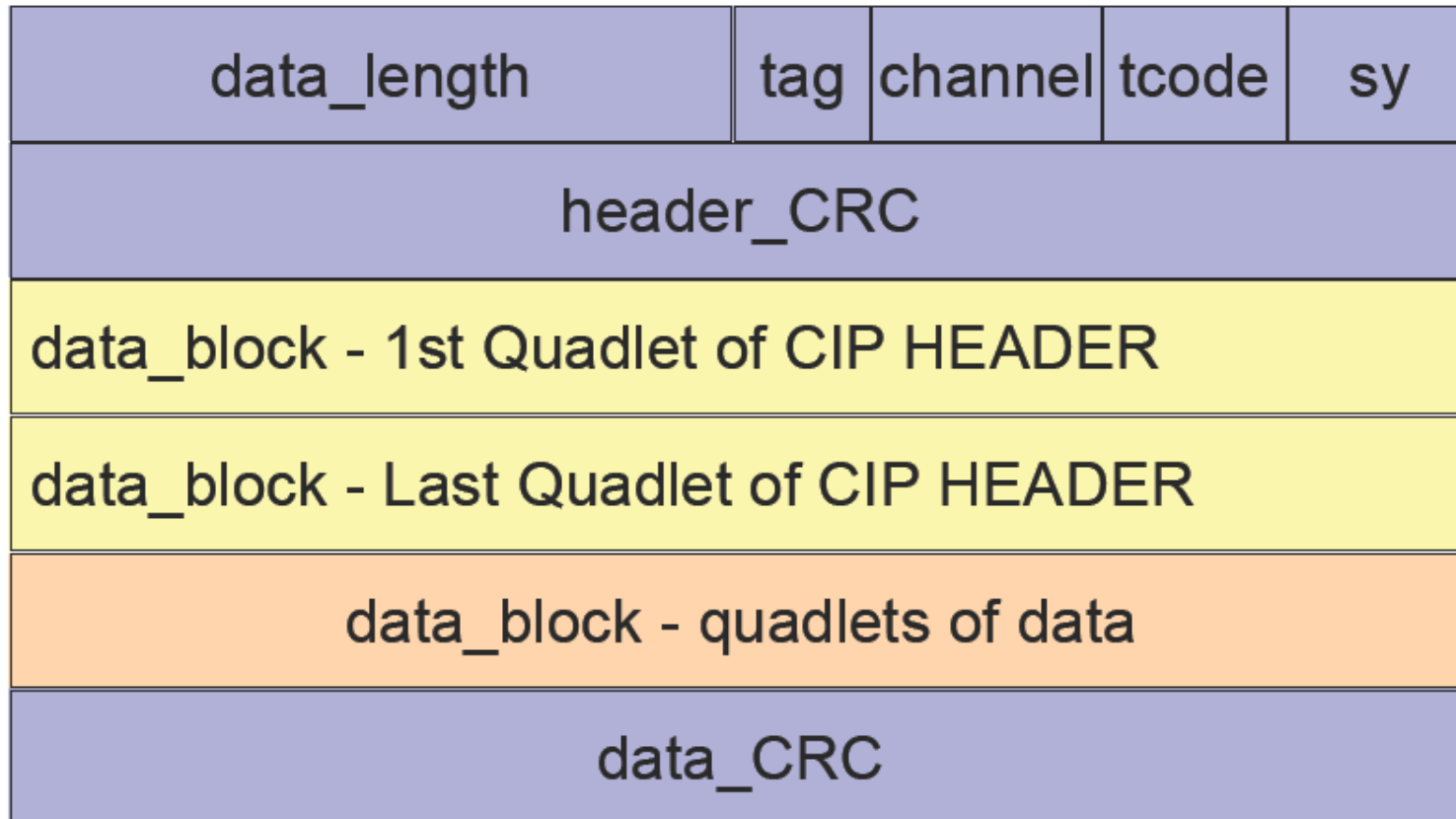
- Establishing, Overlaying, Breaking connections
 - Increments/decrements connection counters in PCR's
- Connection types:
 - Point-to-point
 - Broadcast-out
 - Broadcast-in
 - Protected/Uprotected

Function control protocol - FCP

- Defines procedures for transmitting asynchronous control data over IEEE1394
- FCP command frames are sent from controllers to targets
- FCP response frames are sent from targets to controllers

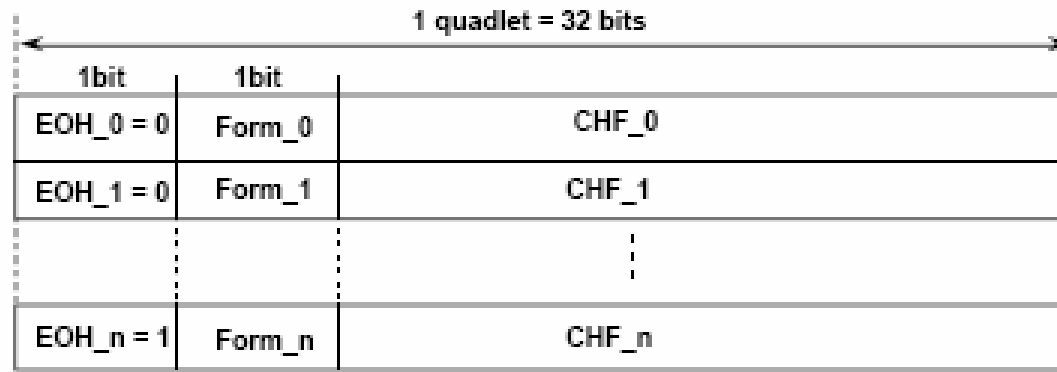
Not what we want to replicate...

Common Isochronous Packet (CIP)



* From http://grouper.ieee.org/groups/802/3/re_study/public/200505/teener_1_0505.pdf
by Michael Johas Teener

CIP Header



- EOH_n (End of CIP header): means last quadlet of a CIP header
 - 0 = Another quadlet will follow
 - 1 = Last quadlet of CIP header
- Form_n: in combination with EOH shows additional structure of CHF_n
- CHF_n (CIP header field: CIP header field of nth quadlet)

Additional CIP Header formats

- Two quadlet CIP header
 - Defines data block sizes and counts
- CIP header with SYT field
 - CIP fields identical to two-quadlet CIP header
 - 16-bit time stamp SYT field
- CIP header with Source Packet Header (SPH)
 - CIP fields identical to two-quadlet CIP header
 - SPH has 25-bit time stamp SYT field

Source packets

- A source packet is the original media data structure from an application
 - Example: MPEG2-Transport Stream (part 4)
 - Packet length 192 bytes:
 - 4 header bytes
 - 188 data bytes
- IEC 61883 assumes source packets have a fixed length
- There is usually an event time associated with the arrival of the first bit of a source packet

* From http://grouper.ieee.org/groups/802/3/re_study/public/200505/teener_1_0505.pdf
by Michael Johas Teener

Data blocks

- Source packets may be broken into 1,2,4, or 8 data blocks for transmission over IEEE 1394
 - Dummy quadlets may be padded into the last data block of each source packet so that all data blocks are equal size
 - Each isochronous cycle of IEEE 1394 transmits zero or more data blocks
 - If no data blocks are ready for transmit, an “empty packet” is sent
 - The receiver collects the data blocks and recombines them into a source packet

* From http://grouper.ieee.org/groups/802/3/re_study/public/200505/teener_1_0505.pdf
by Michael Johas Teener

Time Stamps

- For IEC 61883 parts 2, 3, and 5 (“DVCR”) a time stamp is transmitted once each video frame period
- For part 4 (MPEG2-TS) the time stamp represents the intended delivery time of the first bit/byte of the transport stream to the transport stream decoder
- For part 6 (Audio and Music) the time stamp represents the delivery time of the first audio or data bit to the application (codec, decoder, transmitter, etc.)

Some issues to be addressed...

- Other standards referenced in IEC 61883
 - IEEE 1212:2001, Standard for a Control and Status Registers (CSR) Architecture for microcomputer buses
 - IEEE 1394:1995, Standard for a High Performance Serial Bus
 - IEEE 1394a:2000, Standard for a High Performance Serial Bus – Amendment 1

Issues (con't.)

- Configuration ROM
- IEEE 1212 CSR registers
- No “Bus Reset” concept in AVB
- FCP not intended for bridged network
- Plug Control Registers Point-to-point
- Unused media formats

Some goals...

- Map IEEE 802.1AS to IEC 61883 SYT
- Homogenous time stamp methodology
- Extensible to additional media formats
 - Parametizable format?
- Map IEEE 802.1AS and IEEE 802.1Qat application service interfaces to 61883