IEEE P1722.1REV - AEM Descriptor Changes

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STREAM_INPUT and STREAM_OUTPUT Descriptors

- Add capability flags for different streaming types (AVTP Native [0x22f0], AVTP over UDP v4 and AVTP over UDP v6)

- Add reference to TIMING descriptor

STREAM_INPUT and STREAM_OUTPUT Descriptor

Offset	Length	Name	Description
82	2	formats_offset	The offset from the start of the descriptor for the first octet of the formats. This field is 134 for this version of AEM.
132	2	timing	The TIMING descriptor index which represents the source of gPTP time for the stream.
134	8*N	formats	Array of Stream formats of the supported formats, as defined in 7.3.2.

Stream Flags additions

- SUPPORTS_AVTP_UDPV4

  - Bit: 5

  - Field: 0x0400

  - Supports streaming using AVTP over UDP/IPv4 (1722-2016 Annex J).

- SUPPORTS_AVTP_UDPV6

  - Bit: 4

  - Field: 0x0800

  - Supports streaming using AVTP over UDP/IPv6 (1722-2016 Annex J).

Stream Flags additions

- **NO_SUPPORT_AVTP_NATIVE**

  - Bit: 3

  - Field: 0x1000

  - Does not support streaming with native (L2, Ethertype 0x22f0) AVTPDUs. Note this needs to be a negated logic check to be backwards compatible with 1722.1-2013 devices

- **TIMING_FIELD_VALID**

  - Bit: 2

  - Field: 0x2000

  - timing field contains a valid TIMING descriptor index

AVB_INTERFACE Descriptor

- Add support for multiple gPTP domains to be used on an interface

- Add capability flags for identifying ability to listen to itself

AVB_INTERFACE Descriptor

Offset	Length	Name	Description
98	2	number_of_controls	The number of Controls within this Interface.
100	2	base_control	The index of the first CONTROL descriptor.
102	2	gptp_domains_offset	The offset to the gptp_domains field (106)
104	2	number_of_gptp_domains	The number of values in the gptp_domains field. N
106	2*N	gptp_domains	The descriptor indices of the GPTP_DOMAIN descriptors that

AVB_INTERFACE Flags additions

- CAN_LISTEN_TO_SELF

  - Bit: 12

  - Field: 0x0008

  - A Listener stream sink can listen to a Talker stream source on the same AVB_INTERFACE.

- CAN_LISTEN_TO_OTHER_SELF

  - Bit: 11

  - Field: 0x0010

  - A Listener stream sink can listen to a Talker stream source on another AVB_INTERFACE on the same Entity.

AUDIO_CLUSTER Descriptor

- Adding support for AES3.

AUDIO_CLUSTER Descriptor

Offset	Length	Name	Description
87	1	aes3_data_type_reference	When format is IEC_60958, contains the data type for the AES3 data, see 1722-2016 7.4.5
88	2	aes3_data_type	When format is IEC_60958, contains the data type for the AES3 data, see 1722-2016 7.4.4

VIDEO_CLUSTER Descriptor

- Adding support for sampling rate ranges for dynamic frame rate content.

- Shall use one of the sampling rates or sampling rate ranges but not both.

- Fields currently at offset 121 move to offset 133

VIDEO_CLUSTER Descriptor

Offset	Length	Name	Description
121	8	current_sampling_rate_range	The currently set sampling rate range.
129	2	supported_sampling_rate_ranges_offset	The offset from the start of the descriptor for the first octet of the supported_sampling_rate_ranges field. This field is 133 + 4*F + 4*R + 2*A + 4*S +2*C for this version of AEM.
131	2	supported_sampling_rate_ranges_count	The number of sampling rate ranges in the supported_sampling_rate_ranges field. The value of this field is referred to as B.
~	8*B	supported_sampling_rate_ranges	The list of supported sampling rate ranges.

GPTP_DOMAIN Descriptor

- Describes a gPTP domain and is a container for the controls of the domain and target for commands

- Top level object in a CONFIGURATION (it crosses multiple interfaces). AVB_INTERFACE descriptor points to 0 or more of these depending on how many gPTP domains it supports.

- gPTP Domain 0 is still also represented in the AVB_INTERFACE descriptor for backwards compatibility

GPTP_DOMAIN Descriptor

Offset	Length	Name	Description
0	2	descriptor_type	The type of the descriptor. Always set to GPTP_DOMAIN.
2	2	descriptor_index	The index of the descriptor.
4	64	object_name	64-octet UTF-8 string containing an domain name.
68	2	localized_description	The localized string reference pointing to the localized domain name. See 7.3.6
70	8	clock_identity	The gPTP ClockIdentity of the domain.

GPTP_DOMAIN Descriptor

Offset	Length	Name	Description
78	2	domain_number	The gPTP Domain Number
80	2	number_of_controls	The number of Controls within this gPTP Domain.
82	2	base_control	The index of the first CONTROL descriptor.

TIMING Descriptor

- Describes which gPTP domain is providing the timing for the avtp_timestamp field in the media stream or other object utilizing gPTP time

- Describes which algorithm is used

  - Single (only one gPTP domain is used for timing)

  - Fallback (ordered fallback in case domains aren't available)

  - Combined (multiple gPTP domains are merged to determine a common sense of time)

TIMING Descriptor

Offset	Length	Name	Description
0	2	descriptor_type	The type of the descriptor. Always set to TIMING.
2	2	descriptor_index	The index of the descriptor.
4	64	object_name	64-octet UTF-8 string containing an domain name.
68	2	localized_description	The localized string reference pointing to the localized domain name. See 7.3.6
70	2	algorithm	Which algorithm is used.

TIMING Descriptor

Offset	Length	Name	Description
72	2	gptp_domains_offset	The offset to the gptp_domains field (76)
74	2	number_of_gptp_domains	The number of values in the gptp_domains field. N
76	2*N	gptp_domains	The descriptor indices of the GPTP_DOMAIN descriptors

VENDOR Descriptor

- Add a generic descriptor that can be used for vendor specific purposes.

- Must be a child of a CONFIGURATION

- I'm still not decided as to if this is a good idea or not

VENDOR Descriptor

Offset	Length	Name	Description
0	2	descriptor_type	The type of the descriptor. Always set to VENDOR.
2	2	descriptor_index	The index of the descriptor.
4	64	object_name	64-octet UTF-8 string containing an domain name.
68	2	localized_description	The localized string reference pointing to the localized domain name. See 7.3.6.

VENDOR Descriptor

Offset	Length	Name	Description
70	8	vendor_id	An EUI-64 that defines the contents of the descriptor
78	2	vendor_data_offset	The offset to the vendor_data field (82)
80	2	vendor_data_length	The length in octets of the vendor_data field. *V*
82	V	vendor_data	The vendor defined contents of the descriptor. Maximum length of (508 - vendor_data_offset) octets