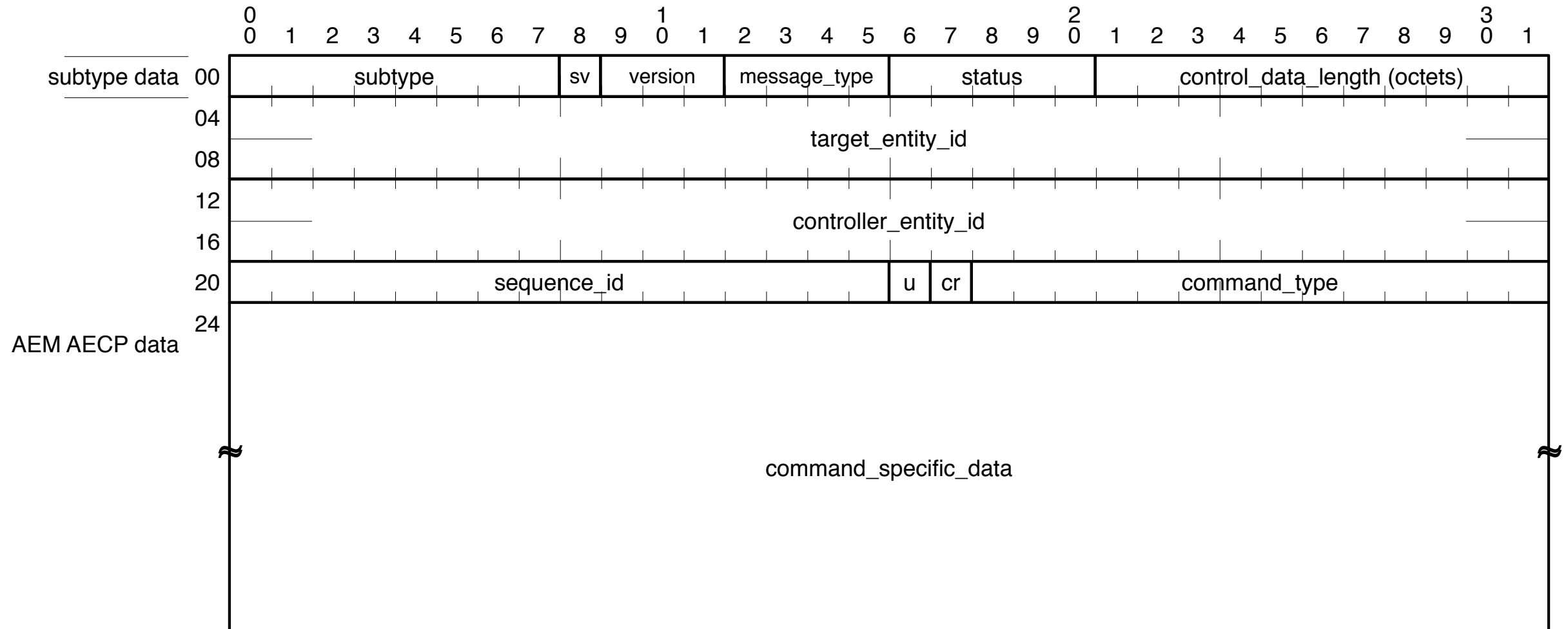# IEEE 1722.1REV - AECP Changes

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New AECP AEM PDU Diagram

Controller Request

- cr bit indicates that this is a request to the AVDECC Controller to perform an action to set the appropriate value or setting on the Entity.

    - e.g. front panel knob for setting the sample rate sends a SET_SAMPLING_RATE controller request so that the Controller can take the correct action to perform the sample rate change (stop all the streams, change all of the sampling rate of the AUDIO_UNITs of the AVDECC Talkers and AVDECC Listeners, change the stream formats of the sources and sinks and start all of the streams again)

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.

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.

TSN_INTERFACE Descriptor

- New descriptor which is mutually exclusive with the AVB_INTERFACE descriptor.

- Serves same purpose as AVB_INTERFACE descriptor but allows multiple gPTP domains to be used on an interface.

- Interchangeable with usage of AVB_INTERFACE in 1722.1-2013

TSN_INTERFACE Descriptor

Offset	Length	Name	Description
0	2	descriptor_type	The type of the descriptor. Always set to TSN_INTERFACE.
2	2	descriptor_index	The index of the descriptor. This is the index of the interface.
4	64	object_name	64-octet UTF-8 string containing an interface name.
68	2	localized_description	The localized string reference pointing to the localized interface name. See 7.3.6
70	6	mac_address	The MAC address of the interface.
76	2	interface_flags	The flags describing the features of the interface.

TSN_INTERFACE Descriptor

Offset	Length	Name	Description
78	2	port_number	The gPTP port number of the interface.
80	2	gptp_domains_offset	The offset to the gptp_domains field (88)
82	2	number_of_gptp_domains	The number of values in the gptp_domains field. N
84	2	number_of_controls	The number of Controls within this Interface.
86	2	base_control	The index of the first CONTROL descriptor.
88	2*N	gptp_domains	The descriptor indexes of the GPTP_DOMAIN descriptors that this interface supports

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) but using this requires the use of TSN_INTERFACE rather than AVB_INTERFACE descriptors.

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. This is the index of the domain.
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.

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.

ACQUIRE_ENTITY Command

- When sending a response, the Entity also sends an unsolicited response to the registered Controllers.

- Add state machine for handling of the ACQUIRE_ENTITY command in the Entity.

ENTITY_AVAILABLE Response

- **Response will include**

  - 32-bit flags field

    - Flags for validity of following fields

  - 64-bit acquired_controller_id

    - Returns EntityID of the controller that has the entity acquired (if any)

  - 64-bit locked_controller_id

    - Returns EntityID of the controller that has the entity locked (if any)

GET_AVB_INFO Response

- AVTP_DOWN

  - Bit: 0

  - Field: 0x80

  - The link on the interface is not capable of transmitting and receiving AVTPDUs.

    - This is link down rather than link up so that it is backwards compatible with 1722.1-2013 based Entities.

GET_AS_PATH Command

- Use part of the reserved field to indicate which domain to fetch the path of.

GET_PATH_LATENCY Command

- Targeted at Clusters (AUDIO_CLUSTER, VIDEO_CLUSTER or SENSOR_CLUSTER)

- Reports the value as defined by the path_latency field of the descriptor

- Sent as an unsolicited response when the value changes (e.g. a signal selector in the path is changed to a shorter or longer path)

SET/GET_SAMPLING_RATE_RANGE

- New command targeted at VIDEO_CLUSTER for changing the current sampling rate range in use.

SET/GET_MULTIPLE_CONTROLS

- New command that sets or gets the values of multiple controls in the same command