Table 7.128—LOCK_ENTITY Flags

Bit	Field Value	Name	Description
31	0000001 ₁₆	UNLOCK	Unlock the AVDECC Entity.
0 to 30		—	Reserved for future use.

The **locked_id** field is set to zero (0) for a command, and is set to the Entity ID of the AVDECC Controller that is holding the lock in a response.

The **descriptor_type** and **descriptor_index** are set to the type and index of the descriptor and its children that are being locked. If the UNLOCK flag is set, then the **descriptor_type** and **descriptor_index** are values that were previously used with the LOCK command to be acquired.

7.4.2.2 Restrictions

If the AVDECC Entity has been acquired with the ACQUIRE_ENTITY command, then the AVDECC Entity responds with an ENTITY_ACQUIRED status response to any other Controller.

The LOCK_ENTITY command may be protected by authentication. If this is the case, then Entity responds with a NOT_AUTHENTICATED status response to an unauthenticated AVDECC Controller.

7.4.3 ENTITY_AVAILABLE Command

The ENTITY_AVAILABLE command is used by any Entity to determine if another AVDECC Entity is still alive.

7.4.3.1 Command and Response Format

The ENTITY_AVAILABLE command and response uses the base AEM AECPDU as defined in Figure 9.2.

The **command_type** field is set to ENTITY_AVAILABLE.

The command_specific_data field is zero length.

7.4.4 CONTROLLER_AVAILABLE Command

The CONTROLLER_AVAILABLE command is used by an AVDECC Entity to determine if an AVDECC Controller is still alive.

7.4.4.1 Command and Response Format

The CONTROLLER_AVAILABLE command and response uses the base AEM AECPDU as defined in Figure 9.2.

The **command_type** field is set to CONTROLLER_AVAILABLE.

The command_specific_data field is zero length.

169

7.4.5 READ_DESCRIPTOR Command

The READ_DESCRIPTOR command is used to read a descriptor from an AVDECC Entity. Reading a descriptor can be performed by any AVDECC Controller even when the AVDECC Entity is locked or acquired, as the act of reading the descriptor does not affect the AVDECC Entity state.

7.4.5.1 Command Format

The READ_DESCRIPTOR command AECPDU format is shown in Figure 7.36.





The command_type field is set to READ_DESCRIPTOR.

The **configuration_index** field is set to the Configuration from which the descriptor is to be read. For the ENTITY or CONFIGURATION descriptors, this field is ignored on receipt and set to zero (0) on transmit.

The descriptor_type and descriptor_index fields are set to the type and index of the descriptor to be read.

7.4.5.2 Response Format

The READ_DESCRIPTOR response AECPDU format is shown in Figure 7.37.







The **command_type** field is set to READ_DESCRIPTOR.

The **configuration_index** field is set the Configuration from which the descriptor was read. For the ENTITY or CONFIGURATION descriptors, this field is ignored on receipt and set to zero (0) on transmit.

On success, the **descriptor** field is set to the contents of the descriptor as defined in 7.2.

On failure, the **descriptor** field is four octets in length, and contains the descriptor_type and descriptor_index. These are in the same location as in the command frame.

7.4.5.3 Restrictions

The READ_DESCRIPTOR command may be protected by authentication. If this is the case, then the AVDECC Entity responds with a NOT_AUTHENTICATED status response to an unauthenticated AVDECC Controller.

7.4.6 WRITE_DESCRIPTOR Command

The WRITE_DESCRIPTOR command is used to update an AVDECC Entity's descriptor. An AVDECC Entity does not have to support writing of a descriptor. If the AVDECC Entity is locked or acquired, then writing a descriptor can only be performed by the AVDECC Controller which has the lock or acquisition.

Since writing a descriptor is a potentially disruptive change, following a successful write the AVDECC Entity sets the doTerminate state machine variable of the ADP advertising state machines to TRUE (see 6.2.2). The AVDECC Entity shall then restart the ADP advertising state machine.

To allow for multiple descriptors to be written so that the AVDECC Entity is not left in an invalid state, the AVDECC Controller shall lock the AVDECC Entity before writing the first descriptor, and unlock after writing the last. The AVDECC Entity shall then only set the doTerminate state machine variable of the ADP advertising state machine to TRUE after the lock has been released.

On success, this command also sends an unsolicited notification.

7.4.6.1 Command and Response Format

The WRITE_DESCRIPTOR Command and Response AECPDU format is shown in Figure 7.38.

171 Copyright © 2013 JEEE All ri

IEEE Std 1722.1-2013 IEEE Standard for Device Discovery, Connection Management, and Control Protocol for IEEE 1722™ Based Devices



Figure 7.38—WRITE_DESCRIPTOR Command and Response Format

The **command_type** field is set to WRITE_DESCRIPTOR.

The **configuration_index** field is set to the Configuration from which the descriptor is to be read. For the AVDECC Entity or CONFIGURATION descriptors, this field is ignored on receipt and set to zero (0) on transmit.

The **descriptor** field is set to the contents of the descriptor as defined in 7.2. The response always contains the current value (i.e., it contains the new value if the command succeeds, or the old value if it fails).

7.4.6.2 Restrictions

The WRITE_DESCRIPTOR command requires that the AVDECC Entity be acquired to prevent multiple Controllers from attempting to write descriptors to the AVDECC Entity.

If the AVDECC Entity is locked or acquired by another AVDECC Controller, then the AVDECC Entity responds with an ENTITY_LOCKED or ENTITY_ACQUIRED status response to the AVDECC Controller.

The WRITE_DESCRIPTOR command may be protected by authentication. If this is the case, then the AVDECC Entity responds with a NOT_AUTHENTICATED status response to an unauthenticated AVDECC Controller.

7.4.7 SET_CONFIGURATION Command

The SET_CONFIGURATION command is used to change the current Configuration of the AVDECC Entity.

On success, this command also sends an unsolicited notification.



7.4.7.1 Command and Response Format

The SET_CONFIGURATION Command and Response share the same AECPDU format as shown in Figure 7.39.



Figure 7.39—SET_CONFIGURATION Command and Response and GET_CONFIGURATION Response Format

The command_type field is set to SET_CONFIGURATION.

The **configuration_index** field is set to descriptor_index of the new Configuration. The response always contains the current value (i.e., it contains the new value if the command succeeds, or the old value if it fails).

7.4.7.2 Restrictions

A Configuration can only be changed when that change will not have an effect on any Active Streams. If Streams are active and changing the Configuration will impact those Streams (e.g., cause a format change or cause the Stream to no longer exist), then the command returns a STREAM_IS_RUNNING status in the response.

If the AVDECC Entity has been locked or acquired by another AVDECC Controller, then the AVDECC Entity responds with an ENTITY_LOCKED or ENTITY_ACQUIRED status response.

The SET_CONFIGURATION command may be protected by authentication. If this is the case, then the AVDECC Entity responds with a NOT_AUTHENTICATED status response to an unauthenticated AVDECC Controller.

7.4.8 GET_CONFIGURATION Command

The GET_CONFIGURATION command is used to get the current Configuration of the AVDECC Entity.

7.4.8.1 Command Format

The GET_CONFIGURATION command uses the base AEM AECPDU as defined in Figure 9.2.

The **command_type** field is set to GET_CONFIGURATION.

The command_specific_data field is zero length.

7.4.8.2 Response Format

The GET CONFIGURATION response uses the AECPDU format as shown in Figure 7.39.

The **command_type** field is set to GET_CONFIGURATION.

The **configuration_index** field is set to descriptor_index of the current Configuration. This is equivalent to the **current_configuration** field in the ENTITY descriptor.

7.4.8.3 Restrictions

The GET_CONFIGURATION command may be protected by authentication. If this is the case, then the AVDECC Entity responds with a NOT_AUTHENTICATED status response to an unauthenticated AVDECC Controller.

7.4.9 SET_STREAM_FORMAT Command

The SET STREAM FORMAT command is used to set the format of a Stream.

The SET_STREAM_FORMAT command acts on a STREAM_INPUT or STREAM_OUTPUT descriptor in the current Configuration. An AVDECC Entity may propagate the format change onto corresponding descriptors in other Configurations, but an AVDECC Controller cannot assume that this will happen.

On success, this command also sends an unsolicited notification.

7.4.9.1 Command and Response Format

The SET_STREAM_FORMAT Command and Response share the same AECPDU format as shown in Figure 7.40.





The **command_type** field is set to SET_STREAM_FORMAT.

The **descriptor_type** and **descriptor_index** fields are set to the descriptor type and index of the Stream for which the stream format is being set. **descriptor_type** is set to either STREAM_INPUT or STREAM_OUTPUT.



The **stream_format** field is set to the new stream format. The response always contains the current value (i.e., it contains the new value if the command succeeds, or the old value if it fails). The layout of **stream_format** is described in 7.3.2.

7.4.9.2 Restrictions

Setting the format of a Stream can only happen on a non-Active Stream. If it is an Active Stream then the AVDECC Entity responds with a STREAM_IS_RUNNING status.

If the AVDECC Entity has been locked or acquired by another AVDECC Controller, then the AVDECC Entity responds with an ENTITY_LOCKED or ENTITY_ACQUIRED status response.

The SET_STREAM_FORMAT command may be protected by authentication. If this is the case, then the AVDECC Entity responds with a NOT_AUTHENTICATED status response to an unauthenticated AVDECC Controller.

7.4.10 GET_STREAM_FORMAT Command

The GET_STREAM_FORMAT command is used to get the format of a Stream.

The GET_STREAM_FORMAT command returns the format for the currently active Configuration.

7.4.10.1 Command Format

The GET_STREAM_FORMAT Command AECPDU format is shown in Figure 7.41.





The **command_type** field is set to GET_STREAM_FORMAT.

The descriptor_type and descriptor_index fields are set to the descriptor type and index of the Stream for which the stream format is being fetched. descriptor_type is set to either STREAM_INPUT or STREAM_OUTPUT.

7.4.10.2 Response Format

The GET_STREAM_FORMAT response uses the AECPDU format as shown in .

The **command_type** field is set to GET_STREAM_FORMAT.



IEEE Std 1722.1-2013

IEEE Standard for Device Discovery, Connection Management, and Control Protocol for IEEE 1722™ Based Devices

The **descriptor_type** and **descriptor_index** fields are set to the descriptor type and index of the Stream for which the stream format is being fetched. **descriptor_type** is set to either STREAM_INPUT or STREAM_OUTPUT.

The **stream_format** field is set to the current stream format. This is equivalent to the **current_format** field in the addressed STREAM_INPUT or STREAM_OUTPUT descriptor. The layout of **stream_format** is described in 7.3.2.

7.4.10.3 Restrictions

The GET_STREAM_FORMAT command may be protected by authentication. If this is the case, then the AVDECC Entity responds with a NOT_AUTHENTICATED status response to an unauthenticated AVDECC Controller.

7.4.11 SET_VIDEO_FORMAT Command

The SET_VIDEO_FORMAT command is used to set the format of a Video Cluster.

The SET_VIDEO_FORMAT command acts on a VIDEO_CLUSTER descriptor in the current Configuration. An AVDECC Entity may propagate the format change onto corresponding descriptors in other Configurations, but an AVDECC Controller cannot assume that this will happen.

On success, this command also sends an unsolicited notification.

7.4.11.1 Command and Response Format

The SET_VIDEO_FORMAT Command and Response share the same AECPDU format as shown in Figure 7.42.



Figure 7.42—SET_VIDEO_FORMAT Command and Response and GET_VIDEO_FORMAT Response Format

The **command_type** field is set to SET_VIDEO_FORMAT.

The **descriptor_type** and **descriptor_index** fields are set to the descriptor type and index of the Video Cluster for which the format is being set. **descriptor_type** is set to VIDEO_CLUSTER.



The **format_specific** field is set to a supported format specific value from the **supported_format_specifics** field of the descriptor. The layout of **format_specific** is described in 7.3.7.

The **aspect_ratio** field is set to a supported aspect ratio value from the **supported_aspect_ratios** field of the descriptor. The layout of **aspect_ratio** is described in 7.3.8.

The **color_space** field is set to a supported color space from the **supported_color_spaces** field of the descriptor. The layout of **color_space** is described in 7.3.10.

The **frame_size** field is set to a supported frame size from the **supported_sizes** field of the descriptor. The layout of **frame size** is described in 7.3.9.

The response always contains the current value of the fields (i.e., it contains the new value if the command succeeds, or the old value if it fails).

7.4.11.2 Restrictions

Setting the video format on a Video Cluster can only happen on a cluster mapped to a Stream that is not streaming. If the Stream is currently streaming, then the AVDECC Entity responds with a STREAM_IS_RUNNING status.

If the AVDECC Entity has been locked or acquired by another AVDECC Controller, then the AVDECC Entity responds with an ENTITY_LOCKED or ENTITY_ACQUIRED status response.

The SET_VIDEO_FORMAT command may be protected by authentication. If this is the case, then the AVDECC Entity responds with a NOT_AUTHENTICATED status response to an unauthenticated AVDECC Controller.

7.4.12 GET_VIDEO_FORMAT Command

The GET VIDEO FORMAT command is used to get the format of a Video Cluster.

The GET VIDEO FORMAT command returns the format for the currently active Configuration.

7.4.12.1 Command Format

The GET_VIDEO_FORMAT Command AECPDU format is shown in Figure 7.43.







IEEE Std 1722.1-2013

IEEE Standard for Device Discovery, Connection Management, and Control Protocol for IEEE 1722™ Based Devices

The **command_type** field is set to GET_VIDEO_FORMAT.

The **descriptor_type** and **descriptor_index** fields are set to the descriptor type and index of the Video Cluster for which the format is being set. **descriptor_type** is set to VIDEO_CLUSTER.

7.4.12.2 Response Format

The GET VIDEO FORMAT response uses the AECPDU format as shown in Figure 7.42.

The **command_type** field is set to GET_VIDEO_FORMAT.

The **descriptor_type** and **descriptor_index** fields are set to the descriptor type and index of the Video Cluster for which the format is being fetched. **descriptor_type** is set to VIDEO_CLUSTER.

The **format_specific** field is set to the current format specific value. This is equivalent to the **current_format_specific** field of the descriptor. The layout of **format_specific** is described in 7.3.7.

The **aspect_ratio** field is set to the current aspect ratio value. This is equivalent to the **current aspect ratio** field of the descriptor. The layout of **aspect ratio** is described in 7.3.8.

The **color_space** field is set to the current color space value. This is equivalent to the **current_color_space** field of the descriptor. The layout of **color_space** is described in 7.3.10.

The **frame_size** field is set to the current frame size. This is equivalent to the **current_size** field of the descriptor. The layout of **frame_size** is described in 7.3.9.

7.4.12.3 Restrictions

The GET_VIDEO_FORMAT command may be protected by authentication. If this is the case, then the AVDECC Entity responds with a NOT_AUTHENTICATED status response to an unauthenticated AVDECC Controller.

7.4.13 SET_SENSOR_FORMAT Command

The SET_SENSOR_FORMAT command is used to set the format of a Sensor Cluster. This command changes a Sensor Cluster to a new sensor format only if it is not currently streaming.

The SET_SENSOR_FORMAT command acts on a SENSOR_CLUSTER descriptor in the current Configuration. An AVDECC Entity may propagate the format change onto corresponding descriptors in other Configurations, but an AVDECC Controller cannot assume that this will happen.

On success, this command also sends an unsolicited notification.

7.4.13.1 Command and Response Format

The SET_SENSOR_FORMAT Command and Response share the same AECPDU format as shown in Figure 7.44.

178

IEEE Std 1722.1-2013 IEEE Standard for Device Discovery, Connection Management, and Control Protocol for IEEE 1722™ Based Devices





The **command_type** field is set to SET_SENSOR_FORMAT.

The **descriptor_type** and **descriptor_index** fields are set to the descriptor type and index of the Unit for which the Stream format is being set. **descriptor_type** is set to SENSOR_CLUSTER.

The **sensor_format** field is set to the new Sensor Cluster format. The response always contains the current value (i.e., it contains the new value if the command succeeds, or the old value if it fails). The layout of **sensor_format** is described in 7.3.11.

7.4.13.2 Restrictions

Setting the sensor format on a Sensor Cluster can only happen on a cluster mapped to a Stream that is not an Active Stream. If the Stream is an Active Stream, then the AVDECC Entity responds with a STREAM_IS_RUNNING status.

If the AVDECC Entity has been locked or acquired by another AVDECC Controller, then the AVDECC Entity responds with an ENTITY_LOCKED or ENTITY_ACQUIRED status response.

The SET_SENSOR_FORMAT command may be protected by authentication. If this is the case, then the AVDECC Entity responds with a NOT_AUTHENTICATED status response to an unauthenticated AVDECC Controller.

7.4.14 GET_SENSOR_FORMAT Command

The GET_SENSOR_FORMAT command is used to get the format of a Sensor Cluster.

The GET_SENSOR_FORMAT command returns the format for the currently active Configuration.

7.4.14.1 Command Format

The GET_SENSOR_FORMAT Command AECPDU format is shown in Figure 7.45.

179