



# AVDECC Entity Model

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# What is it

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- Descriptor based model for representing internal components of entity
- Descriptor based on future compatible C structs
- Command set for reading, writing and interacting

# Entity Structure

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- Entity has one or more configurations
  - A configuration describes the entire model for one mode of operation
  - A mode of operation may correspond to such things as optical jack format (SPDIF or ADAT), or sample rate limitations (different channel counts at different sample rates)

# Entity Structure cont.

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- Each configuration has one or more AUDIO, VIDEO or SENSOR units representing a clock domain in each media type
- Entity has a number of STREAM\_INPUT and STREAM\_OUTPUT representing possible stream sources and sinks
- Entity has a number of EXTERNAL\_JACK\_INPUT and EXTERNAL\_JACK\_OUTPUT representing physical jacks

# Entity Structure cont. 2

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- STREAM\_INPUT and STREAM\_OUTPUT map to AUDIO\_PORT\_INPUT and AUDIO\_PORT\_OUTPUT ports on the AUDIO unit via AUDIO\_MAPs
- STREAM\_INPUT and STREAM\_OUTPUT map one-to-one to VIDEO\_PORT\_INPUT and VIDEO\_PORT\_OUTPUT ports on VIDEO units
- STREAM\_INPUT and STREAM\_OUTPUT map one-to-one to SENSOR\_PORT\_INPUT and SENSOR\_PORT\_OUTPUT ports on SENSOR units

# Entity Structure cont. 3

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- EXTERNAL\_JACK\_INPUT and EXTERNAL\_JACK\_OUTPUT map one-to-one to EXTERNAL\_PORT\_INPUT and EXTERNAL\_PORT\_OUTPUT ports on AUDIO, VIDEO and SENSOR units.

# Descriptor Structure

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- Entity has top level ENTITY descriptor
  - Info from ADP
  - Names and strings (vendor name, model name, entity name, firmware version, group name and serial number)
  - How many configurations and what the current configuration is (how many CONFIGURATION descriptors)

# Descriptor Structure cont.

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- Each configuration has CONFIGURATION descriptor
  - Includes count of each of the top level descriptors
  - AUDIO, VIDEO, SENSOR, STREAM\_INPUT, STREAM\_OUTPUT, EXTERNAL\_JACK, AVB\_INTERFACE, CLOCK\_SOURCE and CONTROL (but only for those CONTROLS at the entity level)



# Descriptors Structure cont. 2

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- Each unit has a descriptor (AUDIO, VIDEO or SENSOR) which contains info about unit and points to descriptors for ports (streaming, external, and internal)
- A unit represents a single clock domain
- Unit may contain controls (CONTROL, SIGNAL\_SELECTOR, MIXER or MATRIX) which may be attached to the unit or a port
- Controls on a port are arranged in a linear chain of increasing id away from the port.

# Descriptor Structure cont. 3

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- Audio ports connect to streams via an AUDIO\_MAP which allows for mapping multiple input streams into one AUDIO\_PORT\_INPUT or multiple AUDIO\_PORT\_OUTPUTs into an output stream
- Descriptors also for clock sources and each AVB interface

# Controls

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- Controls are specified with a number of possible formats
  - signed and unsigned (8, 16, 32, and 64 bit ints)
  - double and float
- Controls can have multiple values
  - For example: a volume control can be one value applying to all signals or it could be 10 values applying to each of the 10 channels of the signal it is attached to

# Controls cont.

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- Control could be a selection (menu) where it can choose one of a number of preset choices.
  - This control can only have one value

# Commands

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- Commands provided for reading and writing descriptors as well as getting and setting info.
- Lock and Acquire commands allow for multiple controllers on network
  - Lock is a short term lock intended for “atomic” changing of state which requires multiple commands
  - Acquire is a long term (optionally permanent) exclusive access over the entity for any command which can change state (reading state is always permitted since it shouldn't change state).

# Commands cont.

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- Commands provided for authentication