# Best Practices for AVB Devices and Controllers

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# Overview

❖ AVDECC Entity Types: Controllers, Talkers, Listeners, Responders

❖ Minimum requirements as defined by IEEE Std 1722.1-2013

❖ Market Expectations for AVB Devices

❖ Additional requirements needed for Controllers, Talkers, Listeners, Responders

# Entity Types

- Controllers are Entities that discover AVB devices, manage connections between them, set and get parameters and diagnostics

- Talkers are Entities that are able to source an AVB Stream

- Listeners are Entities that are able to sink an AVB Stream

- Responders are Entities that are none of the above types but can contain parameters and diagnostics

# Min Requirements (Discoverable Entities)

- AEM (AVDECC Entity Model) commands and responses (9.2.2.1, 9.2.2.2)

- AEM **Entity** State Machine (9.2.2.3.1) supporting:

  - ACQUIRE_ENTITY (7.4.1)

  - LOCK_ENTITY (7.4.2)

  - ENTITY_AVAILABLE (7.4.3)

  - CONTROLLER_AVAILABLE (7.4.4)

# Min Requirements (Controller)

- AEM (AVDECC Entity Model) commands and responses (9.2.2.1, 9.2.2.2)

- AEM **Controller** State Machine (9.2.2.3.2) supporting:

  - ACQUIRE_ENTITY (7.4.1)

  - LOCK_ENTITY (7.4.2)

  - ENTITY_AVAILABLE (7.4.3)

  - CONTROLLER_AVAILABLE (7.4.4)

# Min Requirements (Talker)

- Common Discoverable Entity Requirements

- ACMP Talker State Machine (8.2.2.6)

# Min Requirements (Listener)

❖ Common Discoverable Entity Requirements

❖ ACMP Listener State Machine (8.2.2.5)

# Market Expectations

❖ Discovery

❖ Device Information Reporting

❖ Multiple Controllers

❖ Device Naming, Stream Naming, Channel Naming

❖ Common Jack Control Points

❖ Media Clock Streams

❖ Multi-Channel Streams

❖ Auto-connect on power up

❖ Network and Stream Diagnostics

❖ Backup Streams

# Discovery Requirements

* Discovery: Rapid discovery on link up

    * Entities send ENTITY_AVAILABLE on network link up (Clause 6.2.5)

    * Controllers send ENTITY_DISCOVER on network link up (Clause 6.2.6.2.1)

# Device Information

❖ Entity Descriptor (7.2.1)

❖ I/O Jacks (7.2.7)

❖ AVB Interfaces (7.2.8)

❖ Manufacturer Logos (7.2.10)

❖ Proper Names

# Multiple Controllers

❖ A single Controller may want to ACQUIRE_ENTITY to disallow other Controllers from setting or changing parameters

❖ Larger systems with multiple Controllers would not use ACQUIRE_ENTITY

❖ REGISTER_UNSOLICITED_NOTIFICATIONS (7.4.37) for subscribing to state changes

# Naming

❖ Device Naming

❖ Stream Naming

❖ Channel (Cluster) Naming

❖ I/O Jack Naming

# Common Jack Control Points

- Phantom power

- Pre-Amp

- Mute

- Audio scale

- ASRC enable

# Media Clock Streams

- Single channel audio AM824 by default

- Listeners with multiple media sinks in the same clock domain must provide a media clock source

- Media Clock Stream sink on Talkers

- CLOCK_SOURCE Descriptors (7.2.9) for internal clocks, stream sinks

- SET/GET_CLOCK_SOURCE (7.4.23,7.4.24)

# Multi Channel Streams

❖ LCD multi-channel streams: 8

❖ Listeners should be able to receive a common format regardless of it's channel count and select the channels it needs via mapping

❖ GET/SET_STREAM_FORMAT (7.4.9, 7.4.10)

❖ dynamic maps: ADD_AUDIO_MAPPING (7.4.44, 7.4.45, 7.4.46)

# Auto Connect on Power Up

❖ Fast Connect (8.2.2.1.1)

❖ Don't start sending AVTP stream frames until after SRP success (8.2.2.6.2.2) and ACMP CONNECT_TX_RESPONSE sent

# Network and Stream Diagnostics

- ❖ GET/SET_STREAM_INFO (7.4.15, 7.4.16) including setting stream_id, stream_dest_mac, msrp_accumulated_latency, msrp_failure_code, msrp_failure_bridge_id

- ❖ GET_AVB_INFO (7.4.40)

- ❖ GET_AS_PATH (7.4.41)

- ❖ GET_COUNTERS (7.4.42) for STREAM_INPUT, AVB_INTERFACE, CLOCK_DOMAIN

# Backup Streams

❖ SET/GET_STREAM_BACKUP (7.4.74)