# IEEE Std 1722.1-2013
## The AVB Control Protocol

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# IEEE Std 1722.1-2013

- **A**udio

- **V**ideo

- **D**iscovery

- **E**numeration
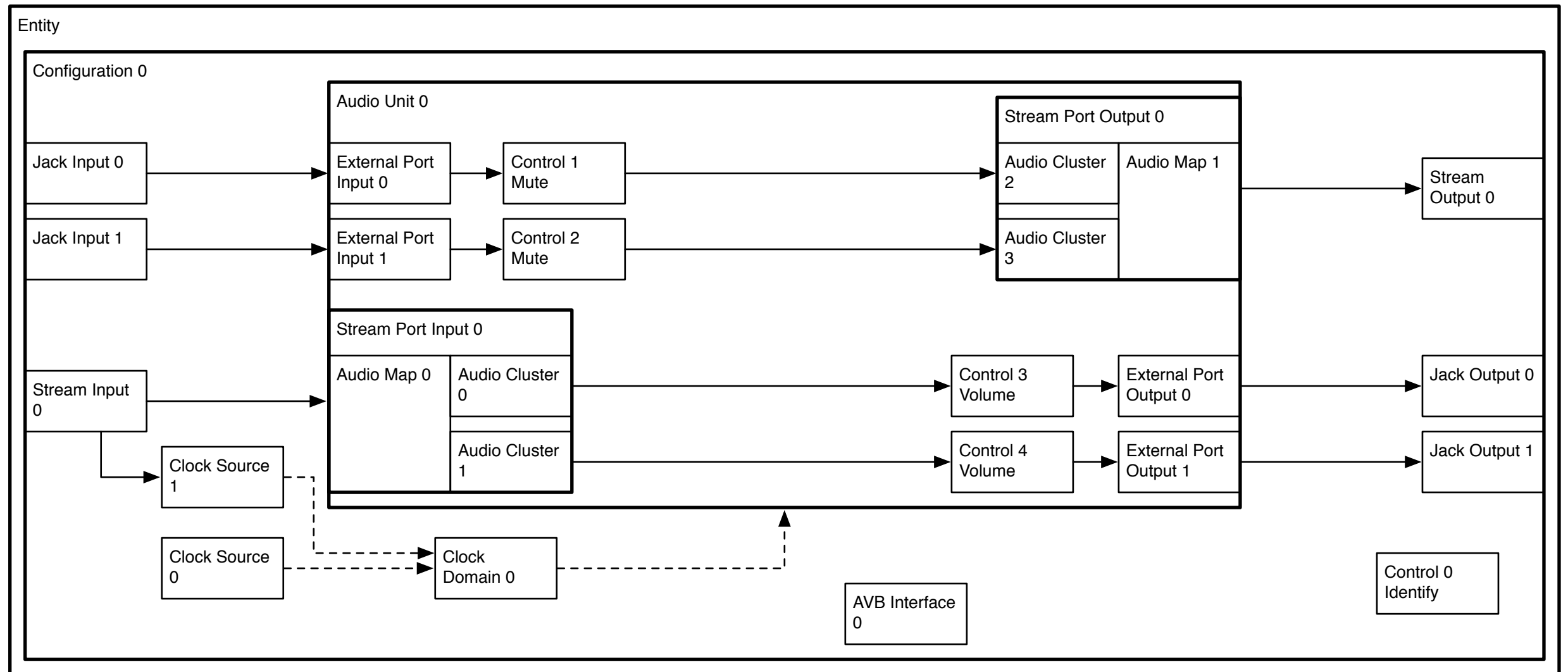
- **C**onnection management

- **C**ontrol

# 1722.1 was ratified on August 22, 2013

- Published and available for purchase now

- While it is fairly big at 352 pages it is lightweight to implement the minimal set of requirements

# AVDECC Roles

- Controller

- Talker

- Listener

- Responder

# AVDECC Entity Model

# Discovery

- Advertising

- Querying (Global/Specific)

- Redundancy

- Identification (Signal/Wink)

# Connection

- Connection of AVB streams with audio channel mapping

- Persistent connections

- Stream connection status and health

- Configuration of redundant connections

# Enumeration

- Describe the internal structure of the device from the stream entry/exit through to the "physical" entry/exit

- Describe and control the mapping of media sources and sinks to channels within the stream sinks and sources

- Describe and control the signal chains such as DSP, mute, volume, mixers, selectors, through the device

- Provide user settable names for many objects within the device including stream, media sources and sinks

# Enumeration

- Describes and controls the clocking model within the device to configure media clocking sources, sample rate converters

- Describe the internal latency through the device from the defined timing reference plane to the "physical" world

- Describe the AVB capabilities of the interfaces and provide the current AVB related information such as 802.1AS GMID, and MSRP domain, for each AVB interface

# Enumeration

- Provides diagnostic information such as AVB interface event counters and errors, stream packet event counters and errors, and clock domain lock status, as well as vendor specific counters when necessary.

- Describe and control generic control points within the device such as location information, enables, video camera controls, and custom controls

# Enumeration

- Performs basic authentication of controllers

- Perform key management for securing the network

- Enable and disable transport and stream security

# Control

- Distributes updates to multiple interested controllers

- Exposes signal path, processing latency and control latency

- Rich set of control meta-data available:

  - value data format and encoding

  - Min/Max/default/current values

  - SI units options: Time, Frequency, Distance, Temperature, Mass, Voltage, Current, Power, Energy, Resistance, Velocity, Level, etc, with scaling.

  - single values, multiple values, array values, and bode plots of filters and measurements

# Offline Provisioning

- A device's capabilities and control points are described by the set of descriptors that it publishes

- These descriptors are put into a standard XML Schema form which allows manufacturers to publish the Entity Models for their products on their website

- These XML files can then be loaded into an AVDECC Controller which can then be used to instantiate virtual AVDECC Entities based on them.

- The user can then connect them and configure them before arriving at the venue.

# Remote Access

- Allows access to AVB networks via TCP/IP for control and management

- Uses the existing HTTP 1.1 protocol which enables it to work over the internet via existing network infrastructure including traversing multiple transparent or non-transparent HTTP proxies

- Secured with existing SSL/TLS encryption tools

- Authentication with existing HTTP Basic/Digest authentication

# CALBears.com - CAL Stadium, Berkeley CA
With 40 Meyer Sound CAL-96 Beam Steering Column Array Loudspeakers using IEEE 1722.1

# Meyer Sound Compass controller for the CAL Beam Steering Speaker using 1722.1
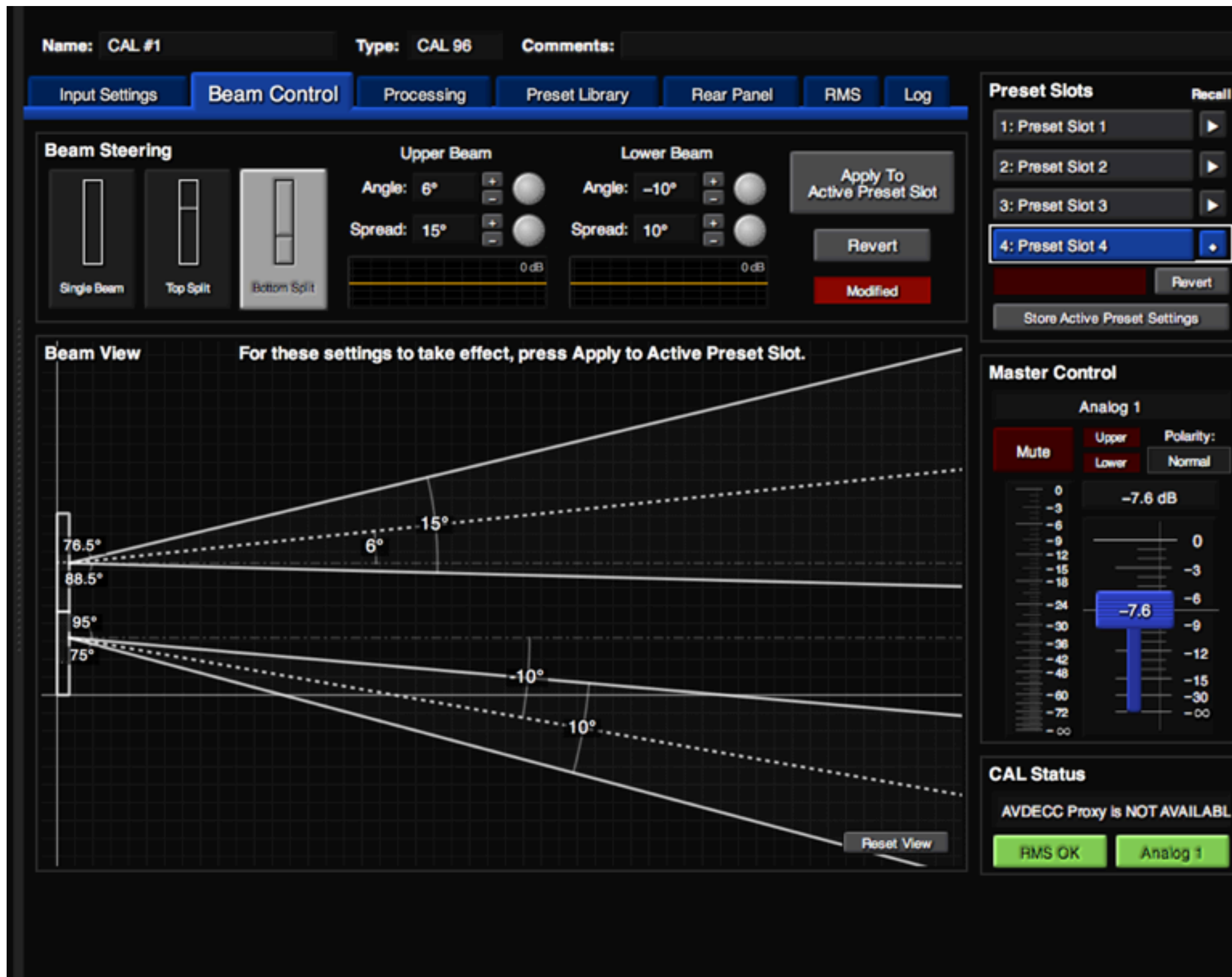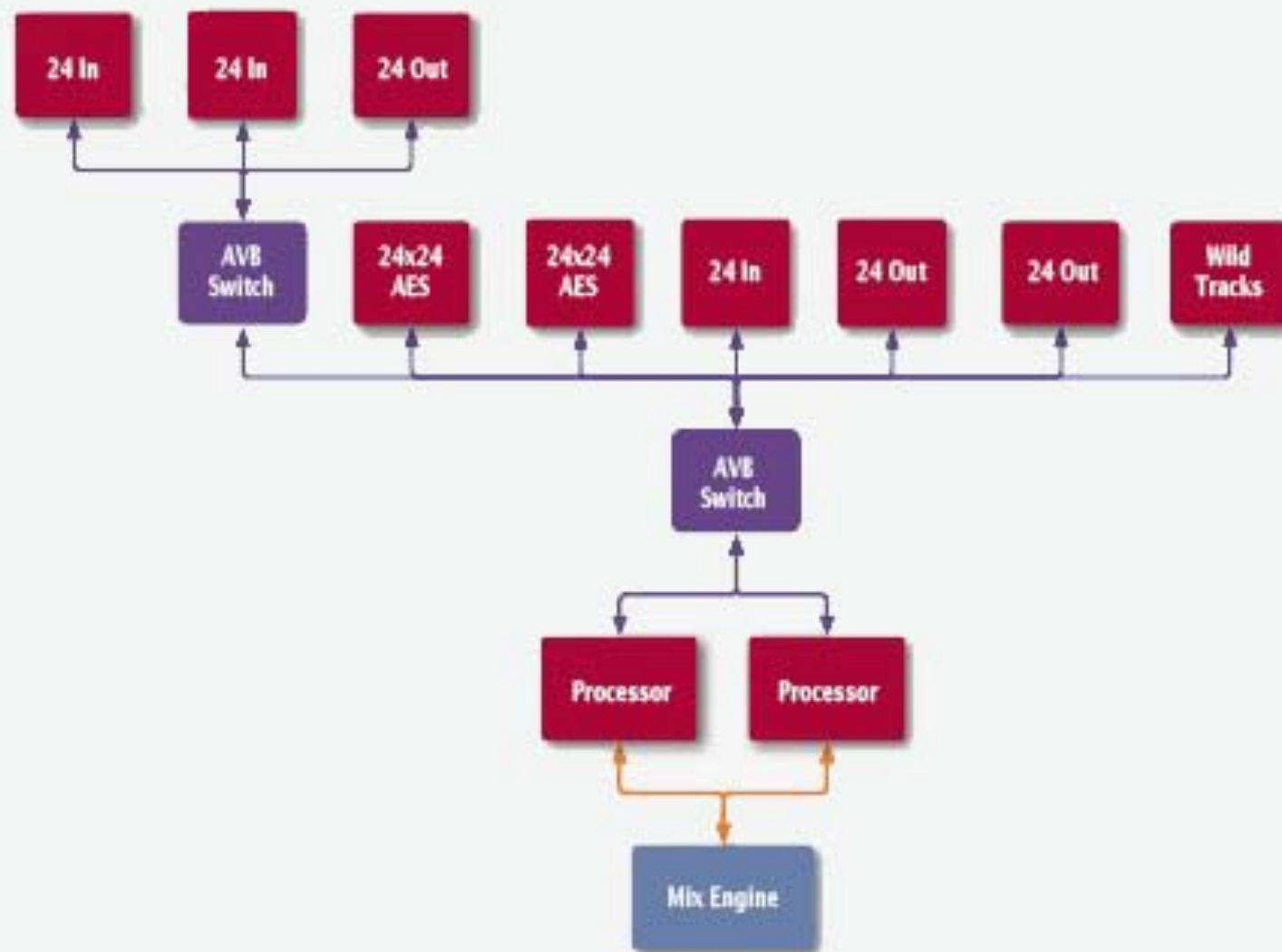
# Meyer Sound Real-Time Speaker Monitoring using 1722.1

Meyer Sound
D-Mitri
Digital Audio
Platform
Release 6.0
supports 1722.1

# AVID S3L System using 1722.1 for Discovery and Connection Management

# Avid S3L using AVB and AVDECC directly with Mac OS X running Pro Tools with the Pivitec Ethernet AVB Personal Monitor Mixing System

# The Riedel Connect AVB Digital Matrix Intercom Infrastructure using 1722.1

# Open Source

- General info: http://avb.statusbar.com/

- XMOS : https://github.com/xcore

- Intel: https://github.com/intel-ethernet/Open-AVB

- Me: https://github.com/jdkoftinoff/jdksavdecc-c