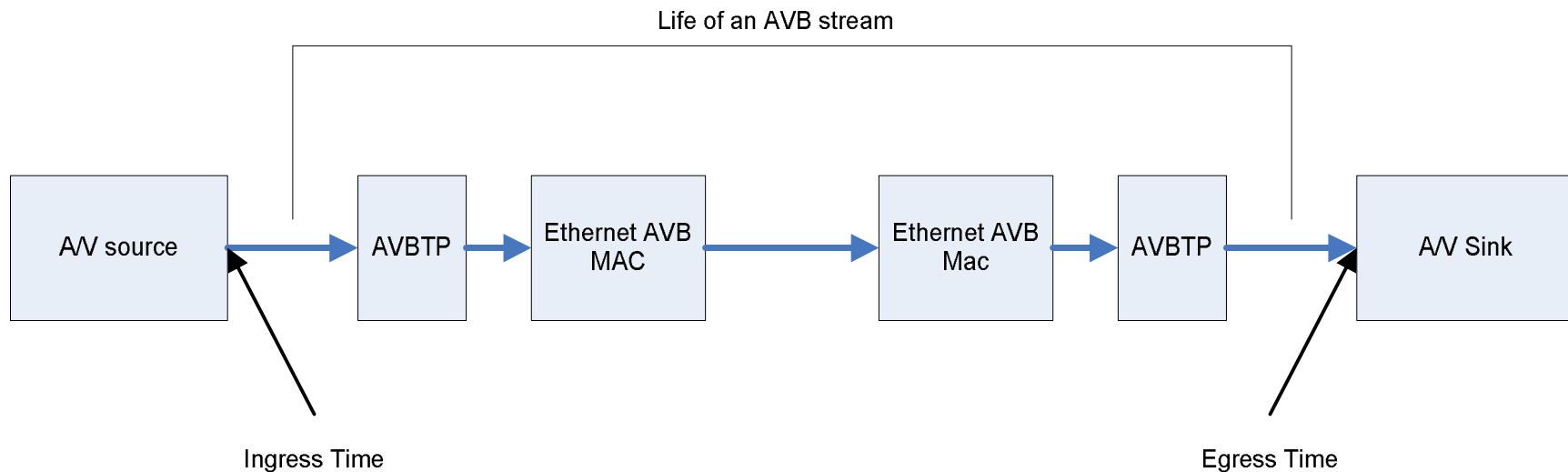


# AVBTP Presentation Time

May 07, 2007

AVBTP task group

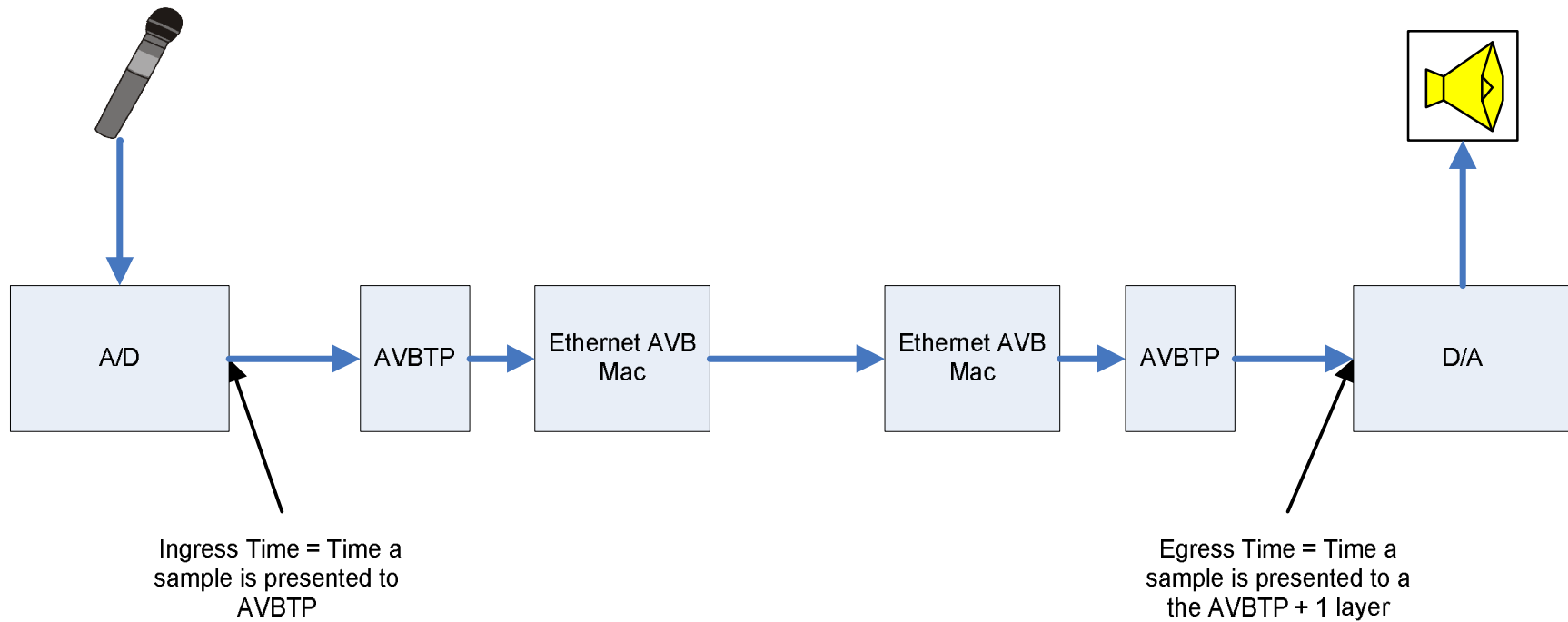
# Life of an AVBTP stream



# Assumptions

- The Presentation Time has the following purposes:
  - Reconstruction of the media clock
  - Account for link latency
  - Possible Synchronization of streams
- AVBTP Presentation time is only associated with a single AVBTP stream
- Presentation time is relative to the 802.1as clock

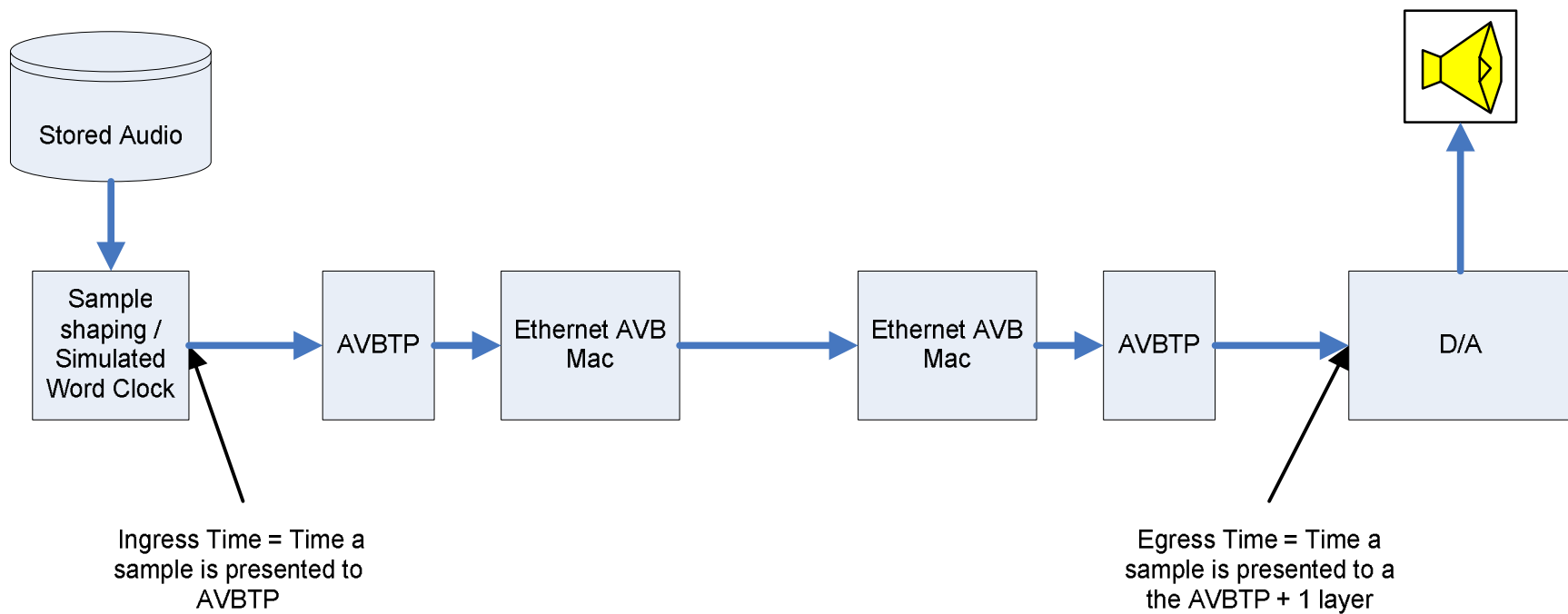
# Real Time Audio



# Real Time Audio

- Ingress time is when the sample is sent to the AVBTP layer
- On an I2S interface this is a 802.1AS timestamp of the word clock transition for the received sample.
- Egress time is the Ingress time plus a delay constant

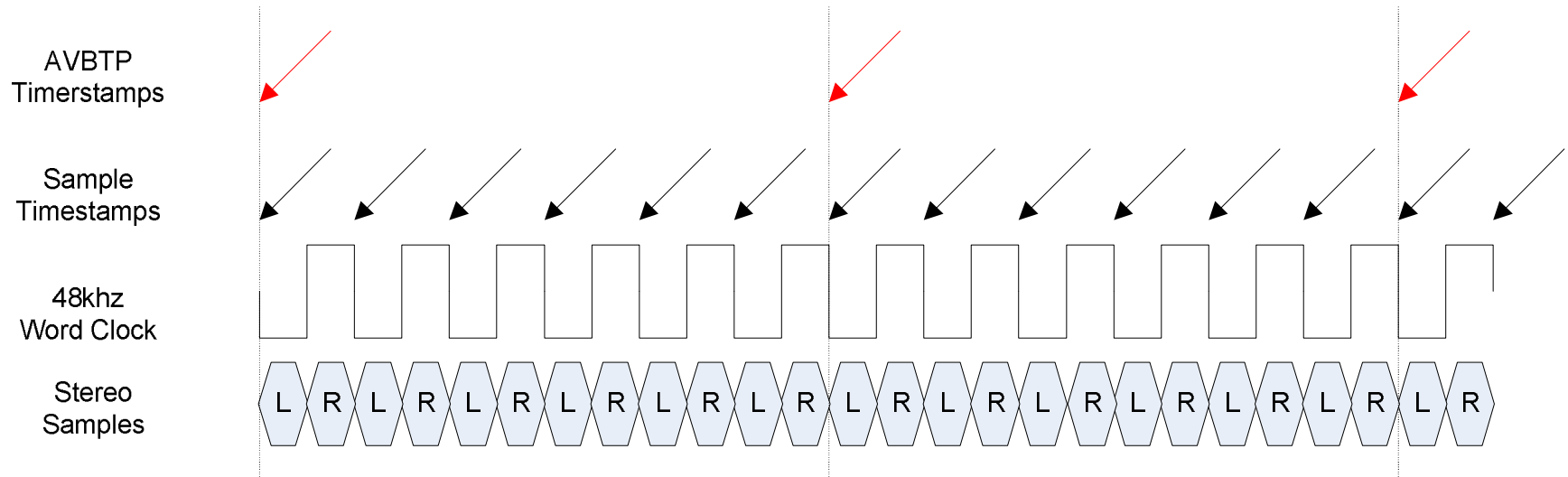
# Stored Media



# Stored Media

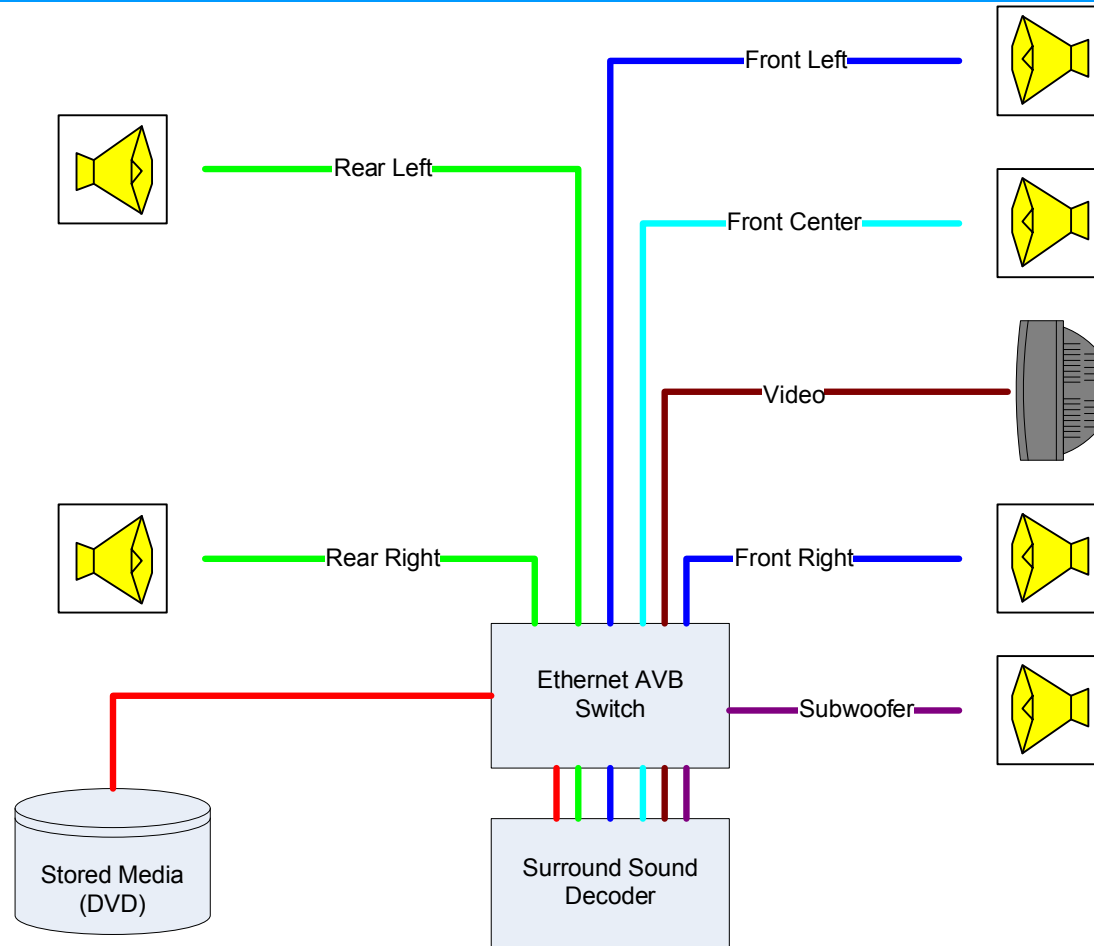
- When samples are simply being read from a disk or other media there is no media clock.
- Simulated ingress times can be computed easily with access to the 802.1AS clock and the stream's sample rate.
- Shaping of sample delivery will have to be done at some point as per 802.1Qav

# I2S timing





# AVBTP Streams in a Home Theater



# AVBTP Streams in a Home Theater

- Home Theater systems are going 7.2 (7 speakers, 2 subwoofers)
- 9 audio channels + 1 video channel
- Global audio delay (Lip Sync) can be adjusted by the user
- Delay for each audio channel can be adjusted by the user
- Typical setup involves placing a microphone at the listening position and have the surround processor auto set delays

# Presentation Time Formats

- Egress Time (30-64 bits)
  - Requires no math on the egress side
  - Could be limited to 2 msec or less
- Ingress Time (64 bits) + offset (30 bits?)
  - Requires minor math on the egress side
  - Offset would give recommended egress time, but will still allow the receiver to align streams based on actual ingress time if desired.
- Ingress Time (64 bits)
  - Requires some negotiated or default delta between ingress and egress
  - Additional setup information required to be defined

# Presentation Time Scope

- AVBTP should be a virtual cable
- An AVBTP stream is between one talker and one or more listeners
- AVBTP Presentation Time is limited in scope to a single stream