Media Clock Distribution in a 1722 Network

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Capabilities

- Synchronize Media clock on multiple 1772 endpoints
- Allow multiple talkers to produce multiple 1722 streams that are all synchronized
- Listener can receive 1722 streams from multiple sources without making use of sample rate conversion

Media clock sources

- Any active stream can be designated as the media clock source stream
- This stream could be a standard stream or a null stream that contains only clock information
- Since any stream can supply media clock, there is no need for a special stream type

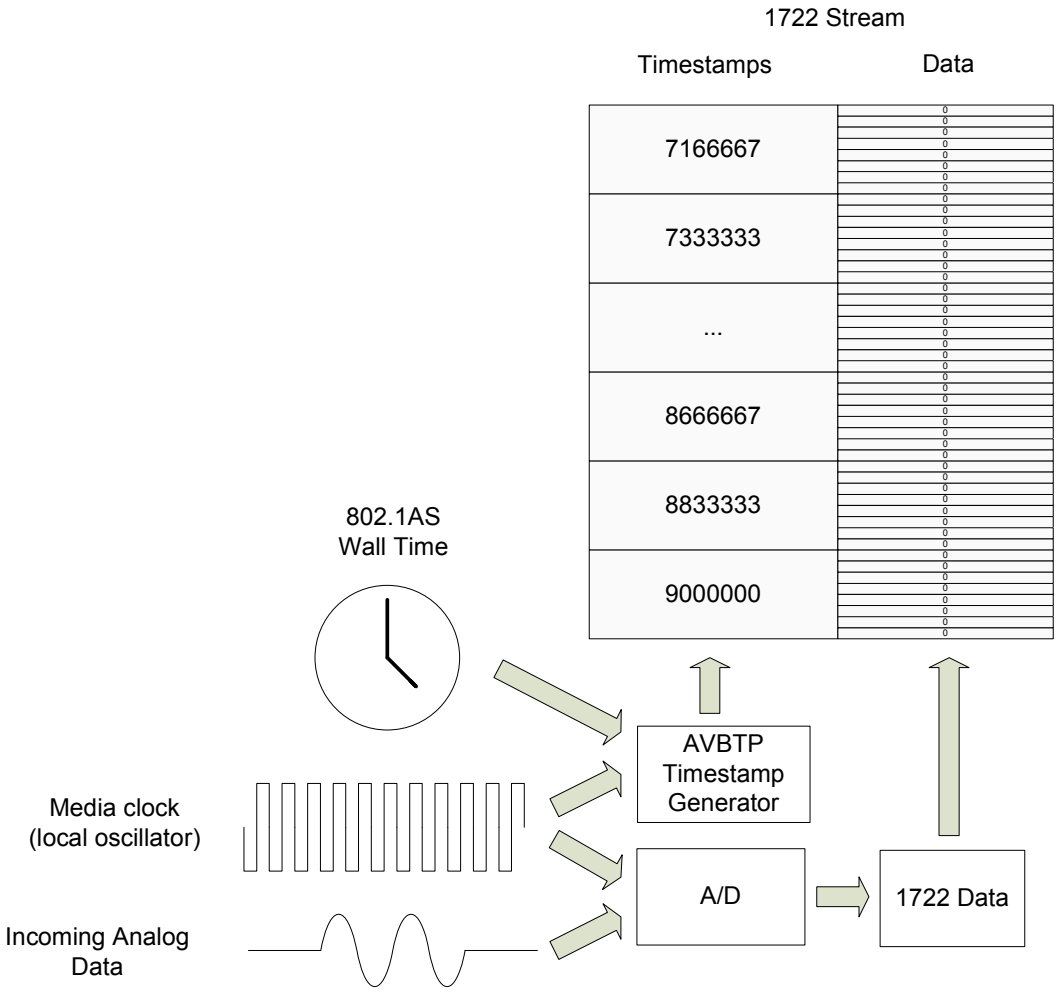
Talkers

- Talkers receive the designated stream and synchronize their media clock to the incoming stream
- Streams produced by the talker are then automatically syntonized with the designated stream

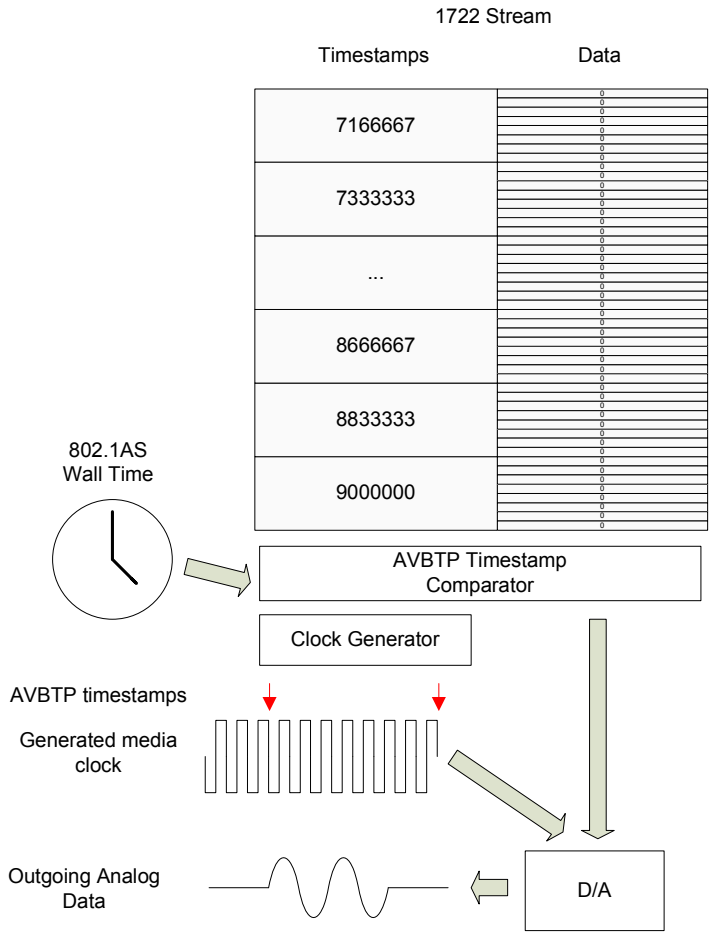
Listeners

- Listeners receive the designated stream and synchronize their media clock
- Listeners utilize the presentation time of individual stream to time align the streams

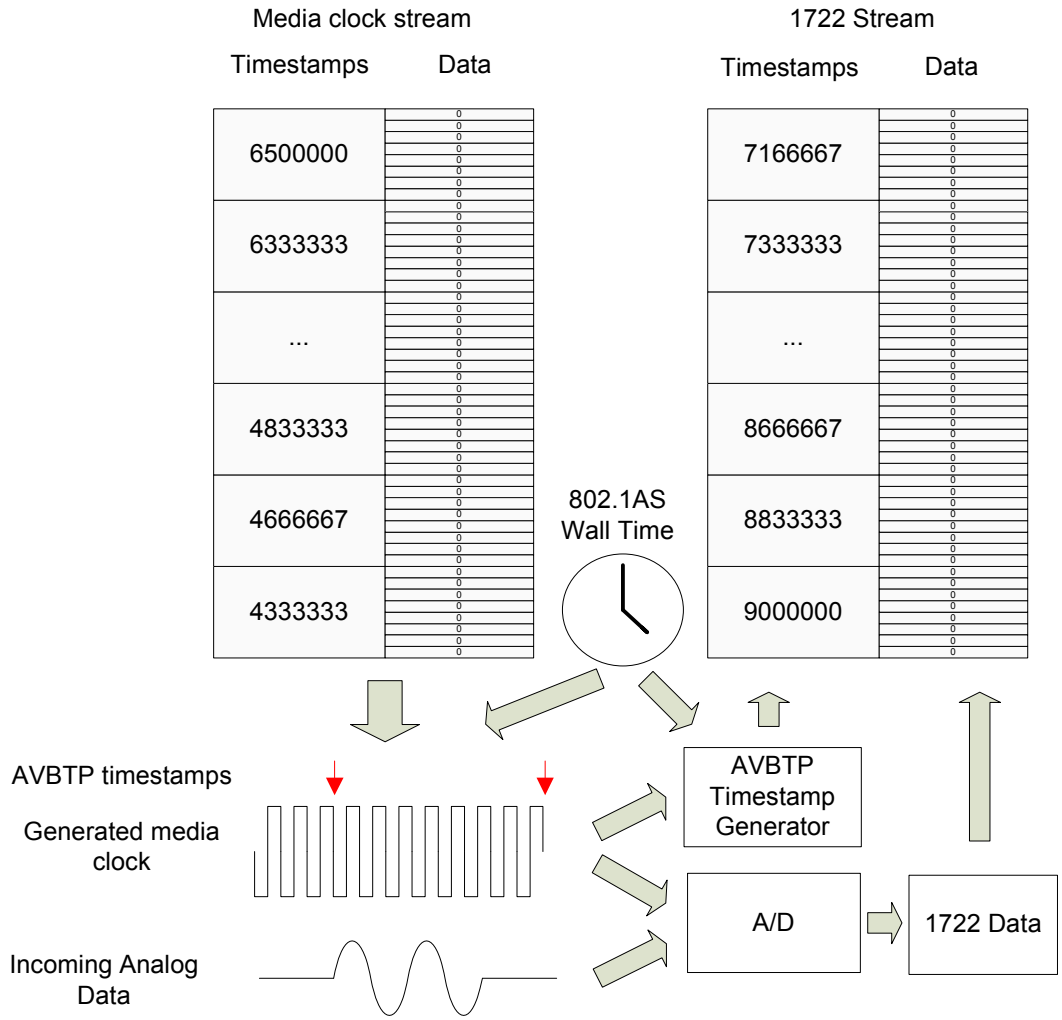
Outgoing Stream



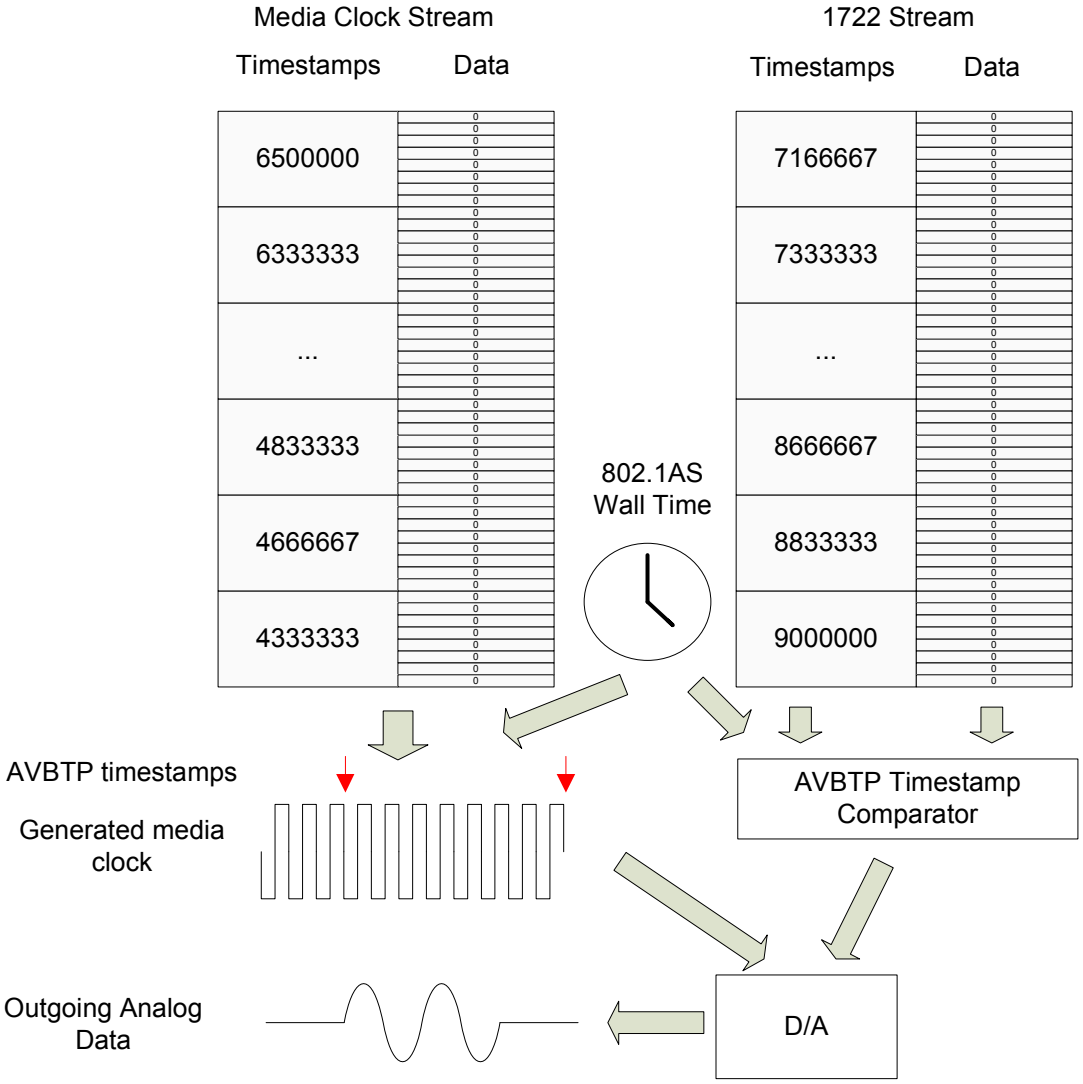
Incoming Stream



Outgoing Stream



Incoming Stream



Sync Streams

- Locally administered Sync Streams
  - Allow completely user defined environment
  - No wasted bandwidth on unused sync streams
  - All equipment must be manageable
  - Interoperability between brands could be problematic

Sync Streams

- Globally defined Sync Streams
  - Reduce system setup
  - Interoperability between brands improved
  - No need to assign sync streams for each piece of equipment
  - Possible wasted bandwidth on unused streams
  - Who supplies the sync streams must be managed

Sync Streams

- Global sync streams must be easily identifiable
  - Defined multicast address
  - Defined Stream ID

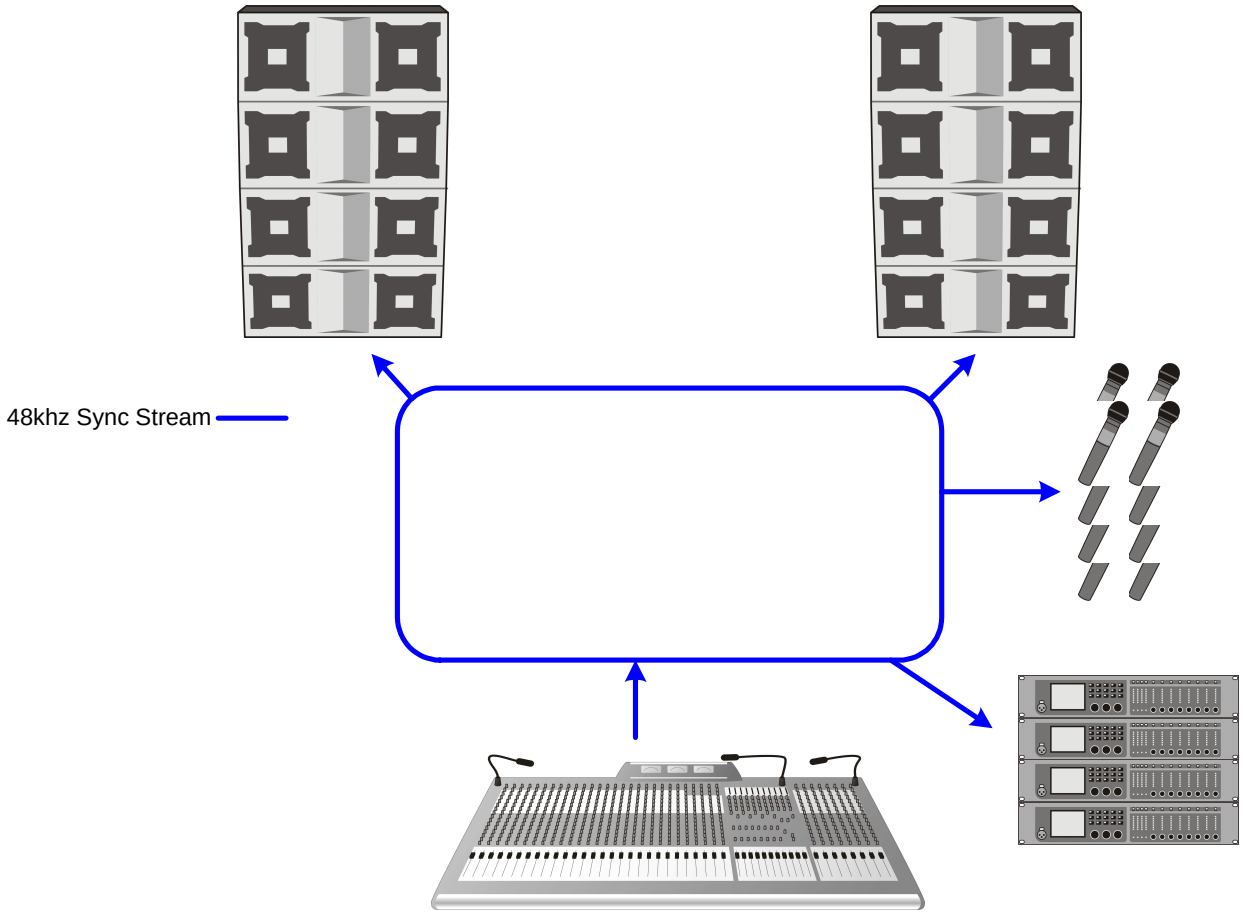
Sync Streams

- Sync streams need to be stable
  - A recurring election process may introduce too much instability
  - Can we use MAAP to allocate designated multicast addresses?
  - First one to acquire the address supplies the designated sync stream forever
  - Management interface need to reliably set the provider of sync streams

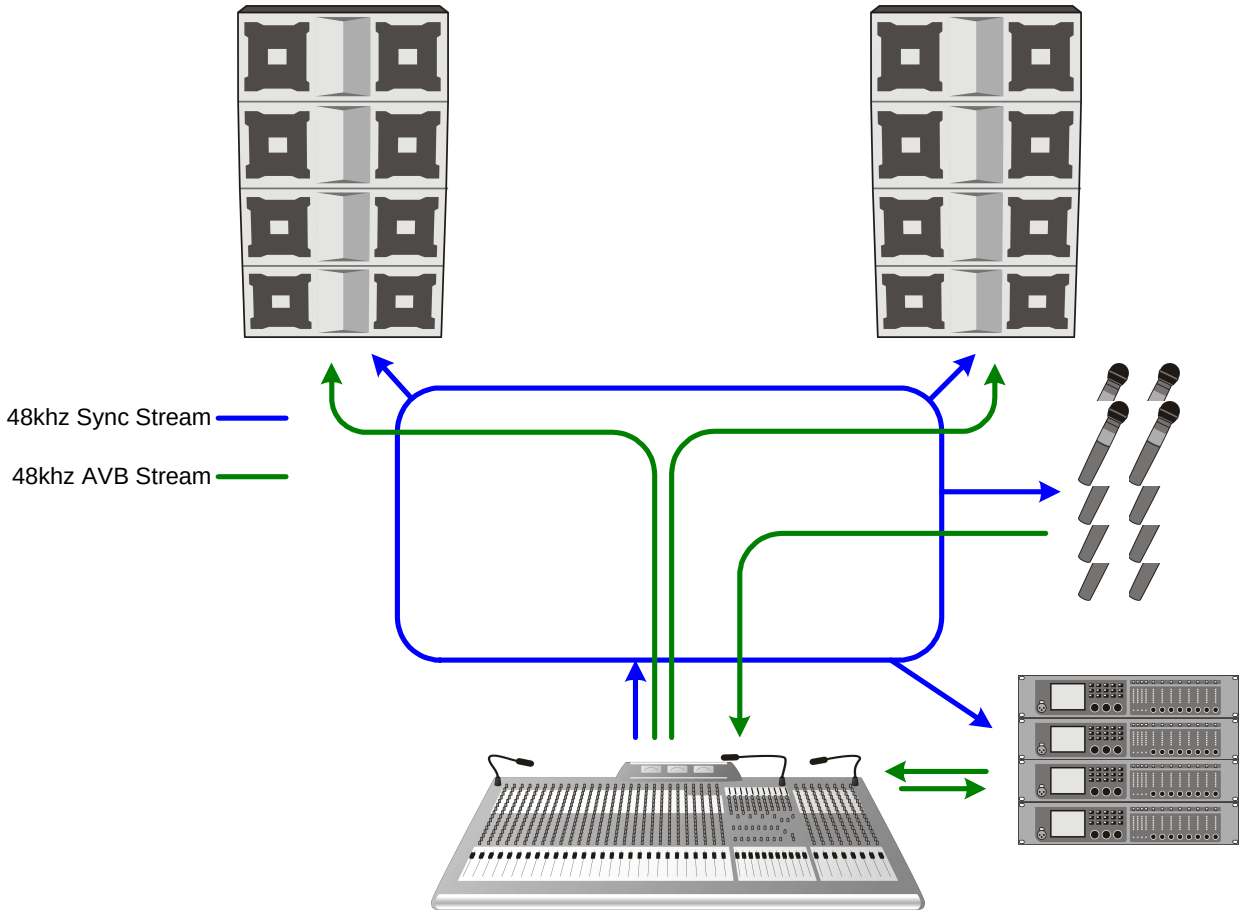
Sync Streams

- Number of sync streams to be defined
  - Default Audio sync
    - Set at the default rate for the network
  - Standard set of audio syncs
    - 44.1, 48, 88.2, 96, ….
  - Default Video sync
    - Set at the default rate for the network
  - Standard set of video syncs
    - ????

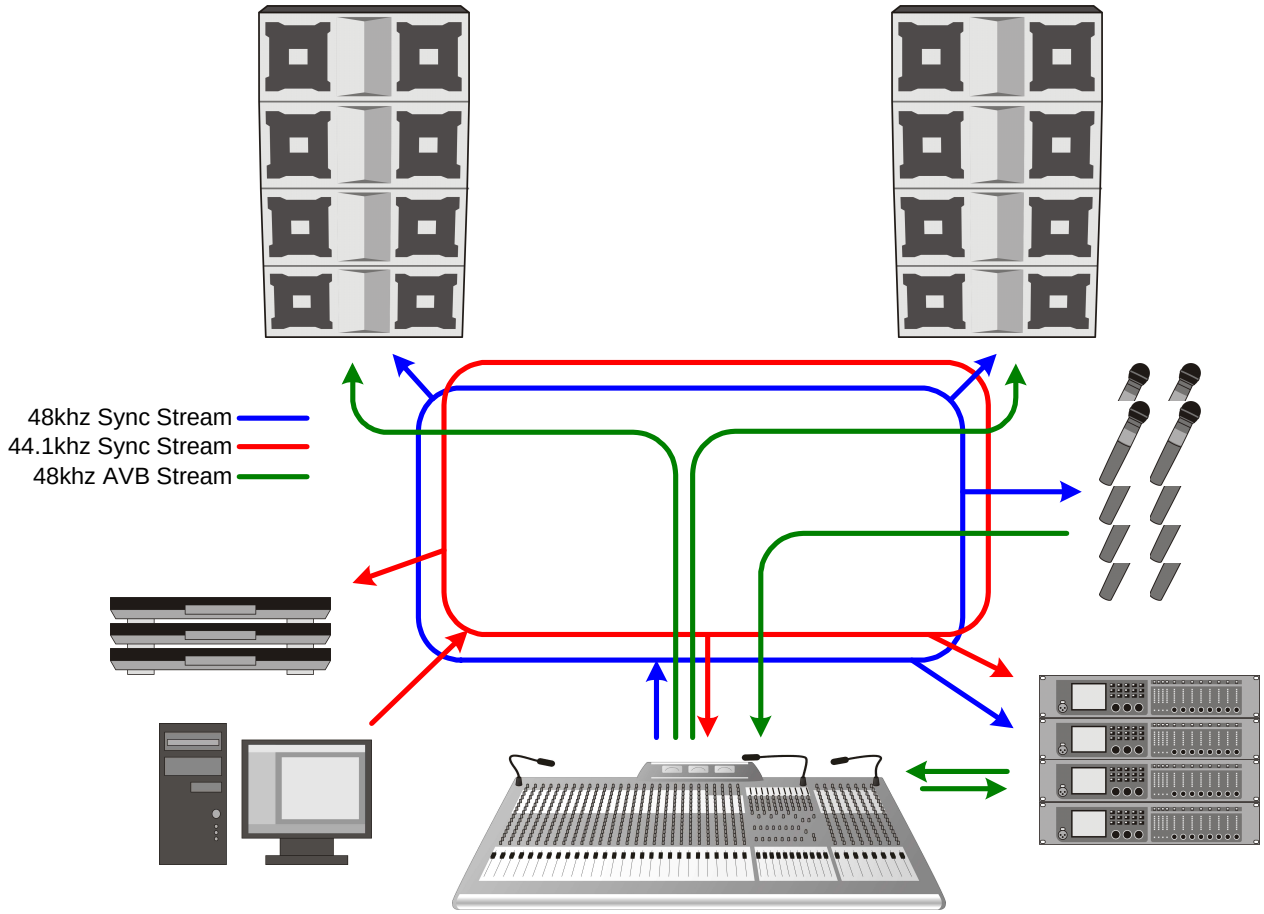
Sync Streams



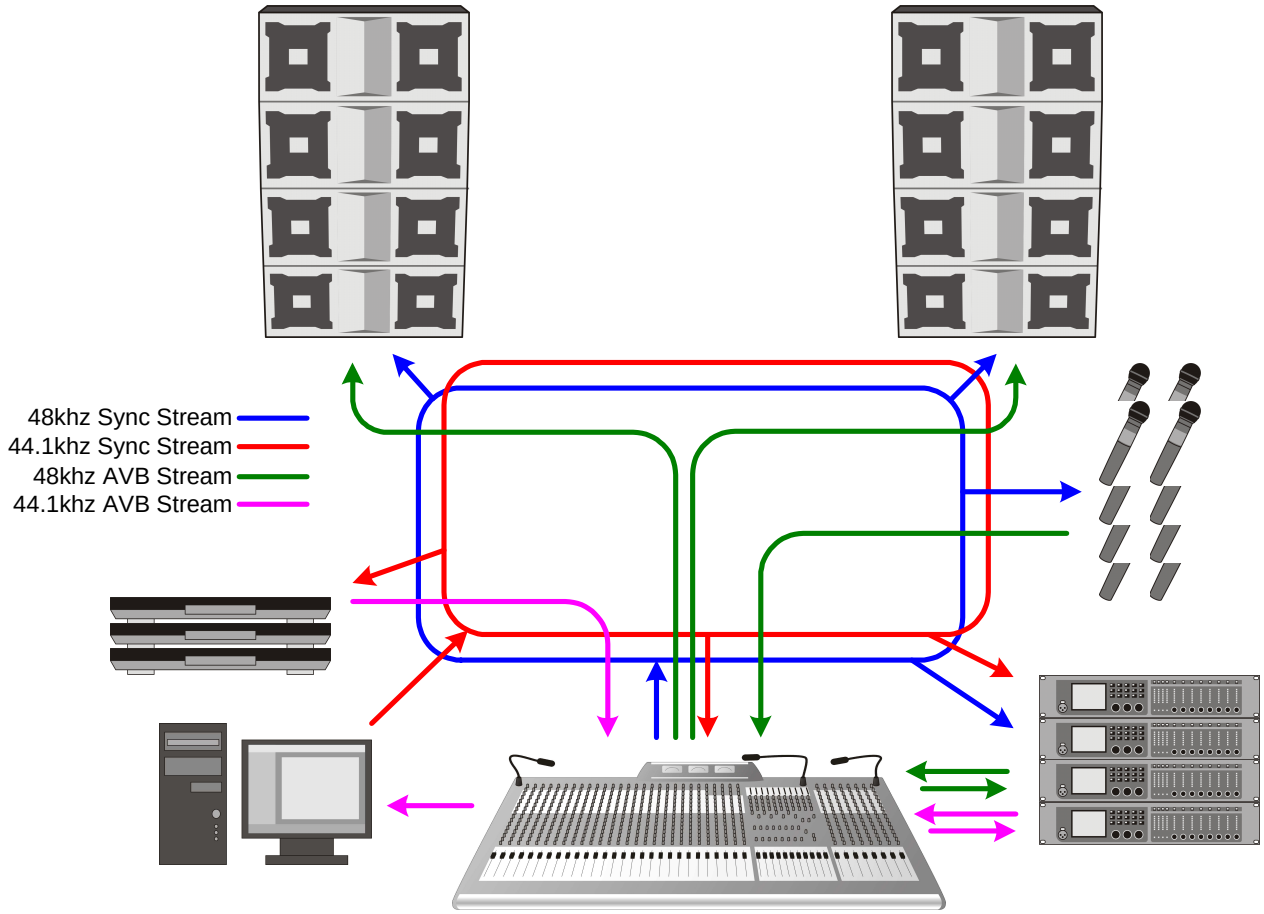
Sync Streams



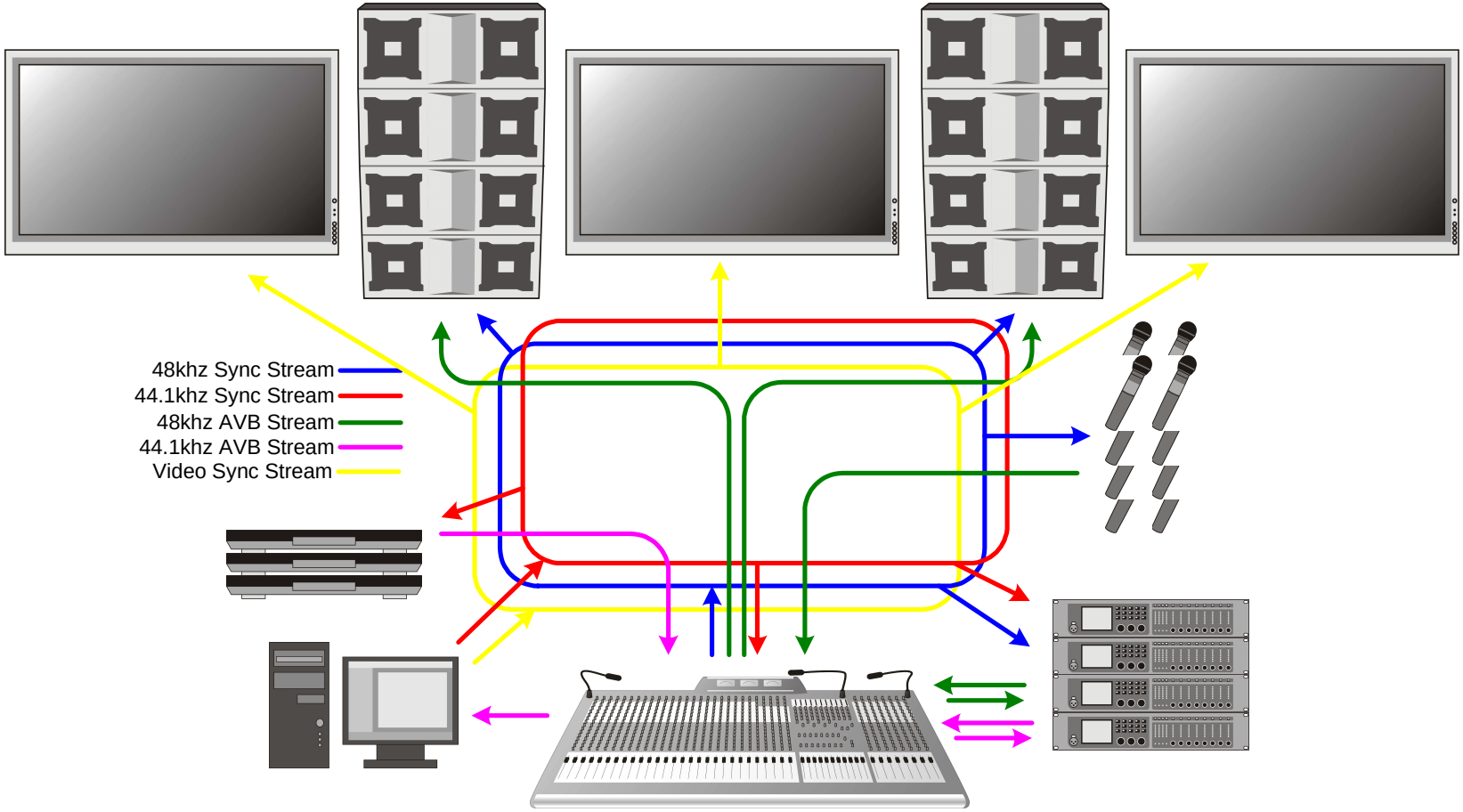
Sync Streams



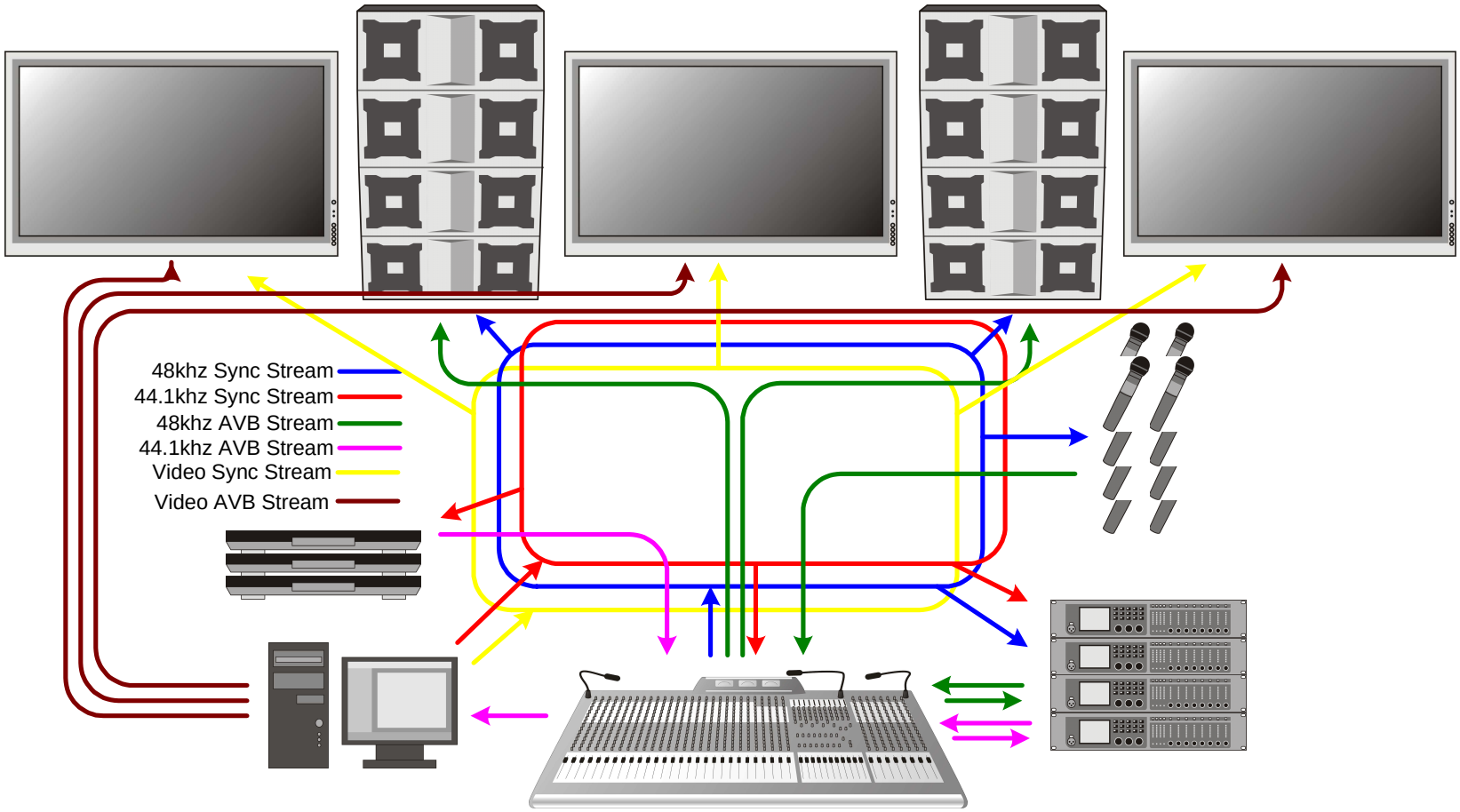
Sync Streams



Sync Streams



Sync Streams



Proposal

- Reserved addresses/Stream IDs for a set of Sync Streams
- Network default audio/video sync streams
  - Allows a device to learn the defaults for the network and sync to it if possible
- A set of designated rate audio/video sync streams
  - Allows for interoperability of multiple clock domains
  - A device that cannot sync to the default can still find a compatible sync domain

Proposal

- 64 reserved Multicast addresses from the MAAP range
  - xx:..:01 Default Audio Sync
  - xx:..:02 Default Video Sync
  - xx:..:03 48khz Audio Sync
  - xx:..:04 44.1khz Audio Sync
  - xx:..:05 ??? Video Sync
  - etc.