

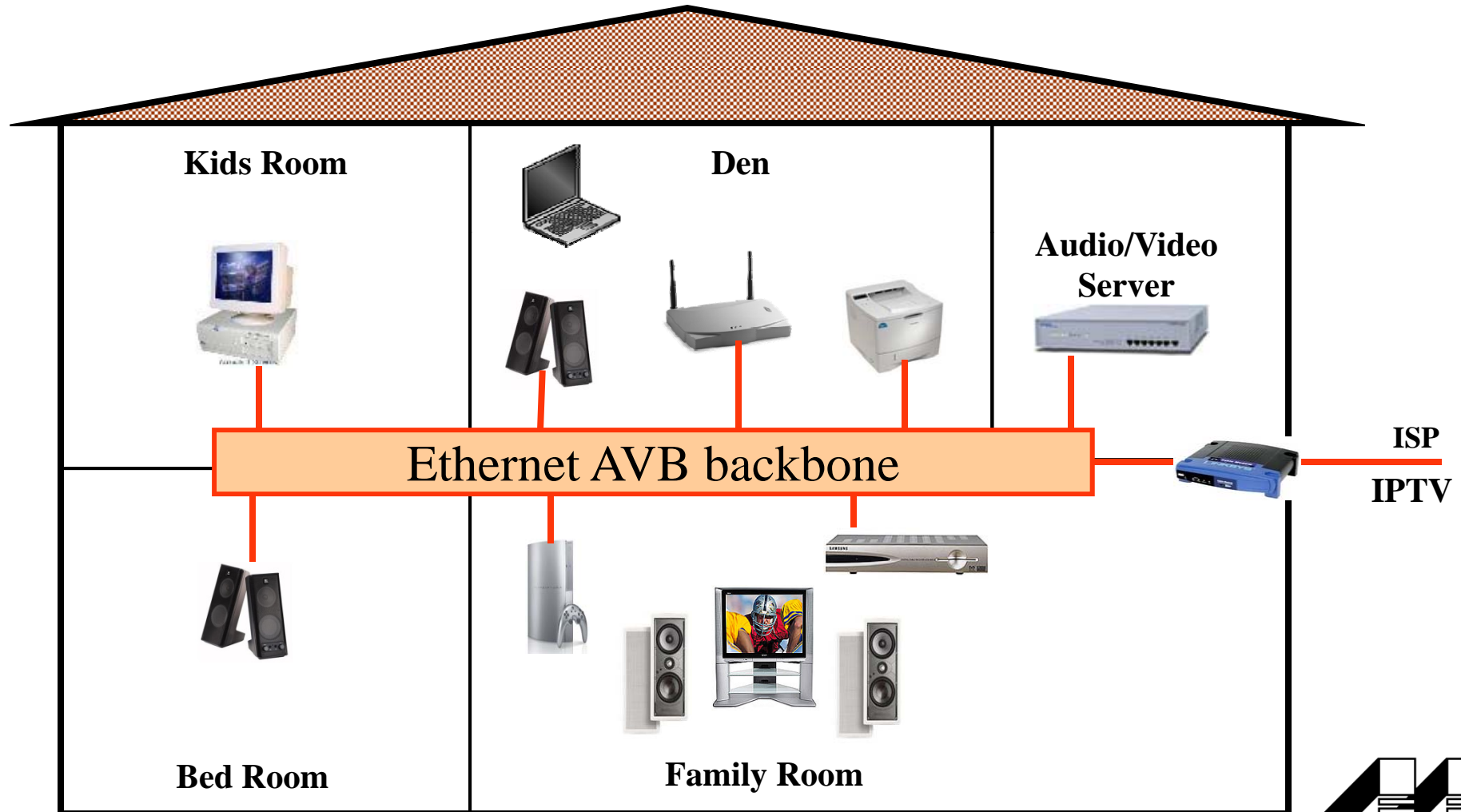


What Makes Talkers & Listeners AVB Compliant?

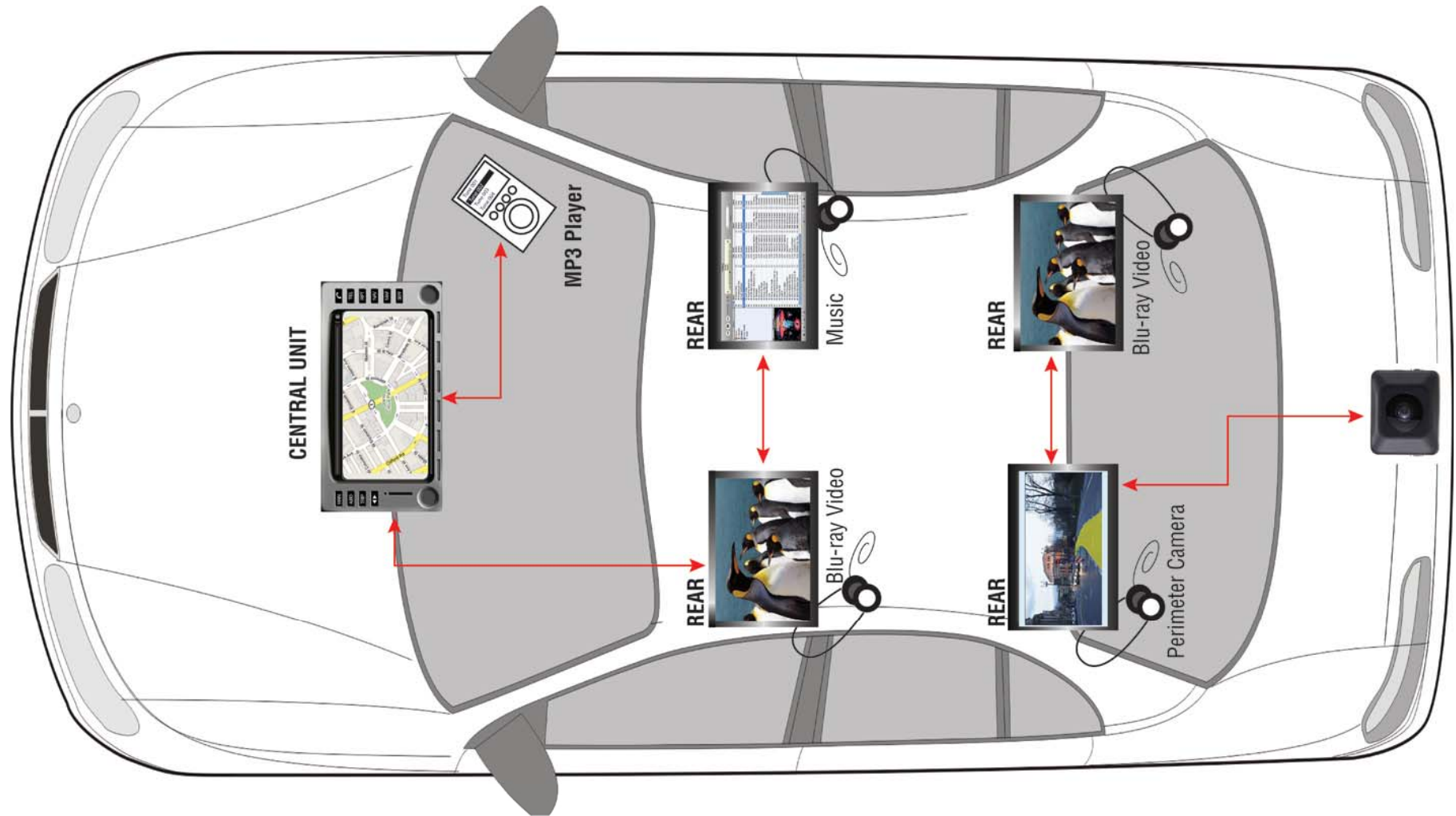
Let's Look at some Target Use Cases

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Home Network – Audio/Video/Games



Automotive Infotainment Network



Studios – Video & Audio – Pro & Amateur



Theaters/Churches - Tuned Speaker Arrays



Airport Concourses - Speakers & Displays



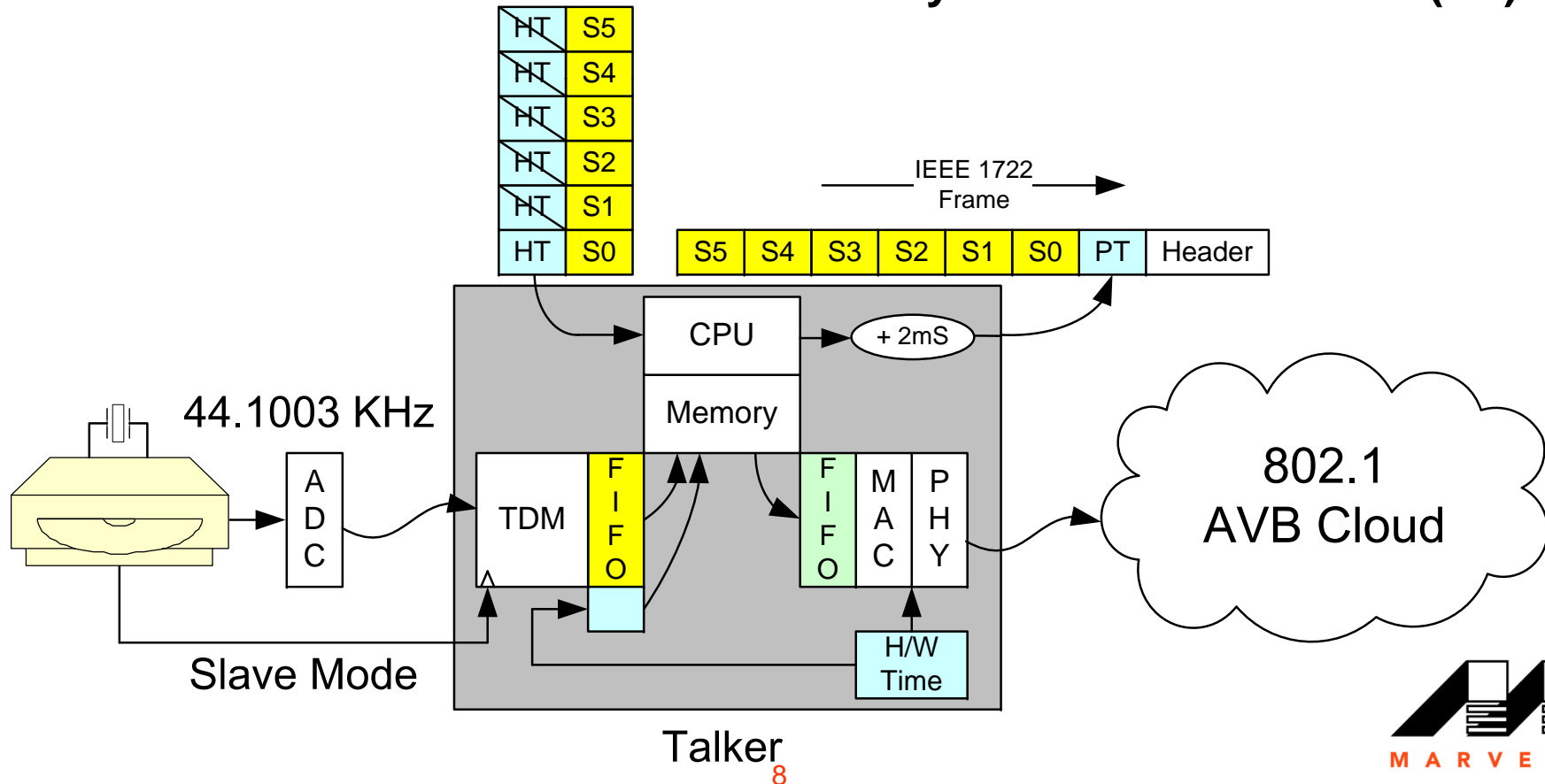


What's Inside a Talker and a Listener?

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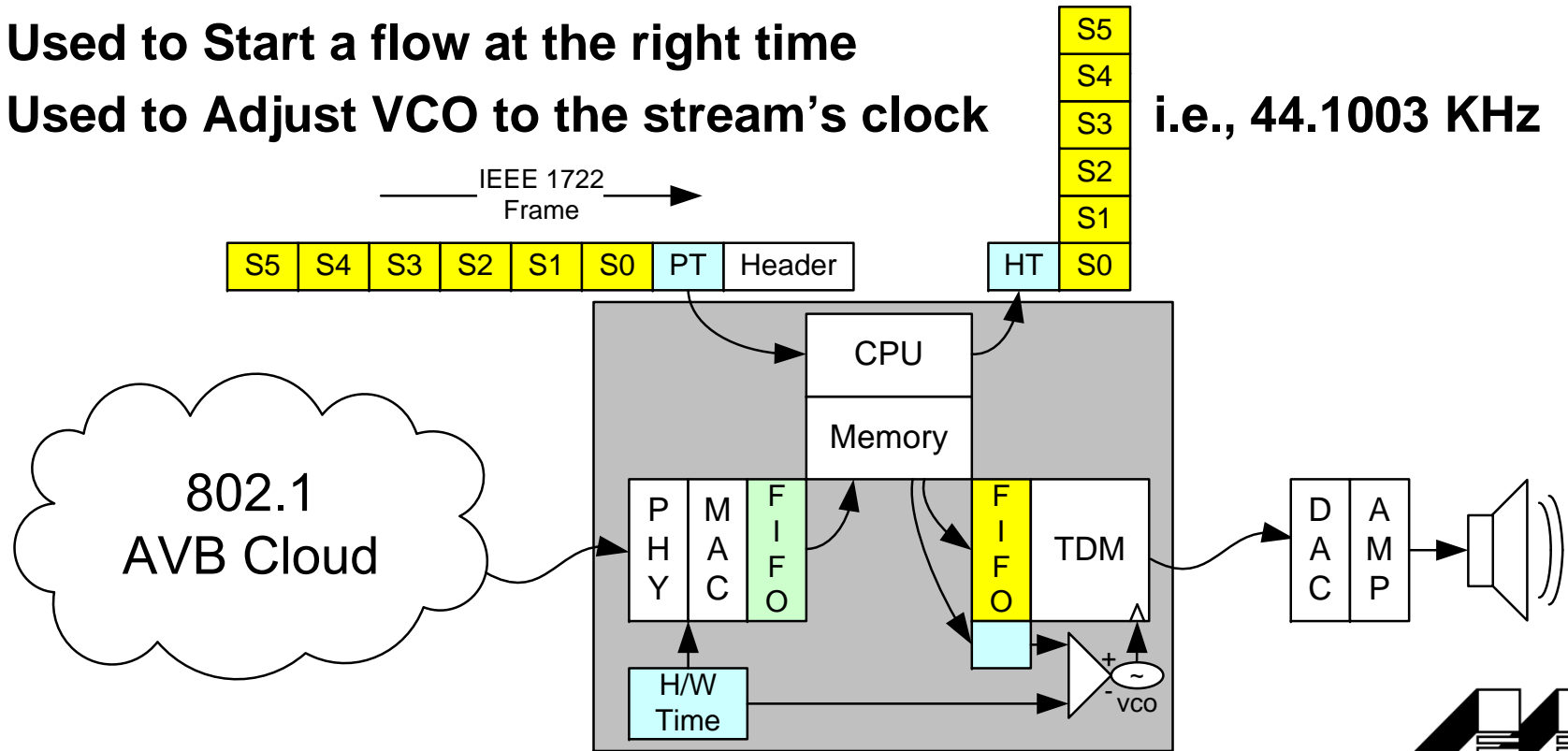
AVB Talker (Slave Mode)

- Capture audio samples w/local 'Hardware Time (HT)' at the pins
- Build IEEE 1722 Frame w/1st sample's HT converted to Frame Time
 - Uses the known relationship between H/W Time and GM (PTP) Time
- CPU adds an offset for network latency = Presentation Time (PT)



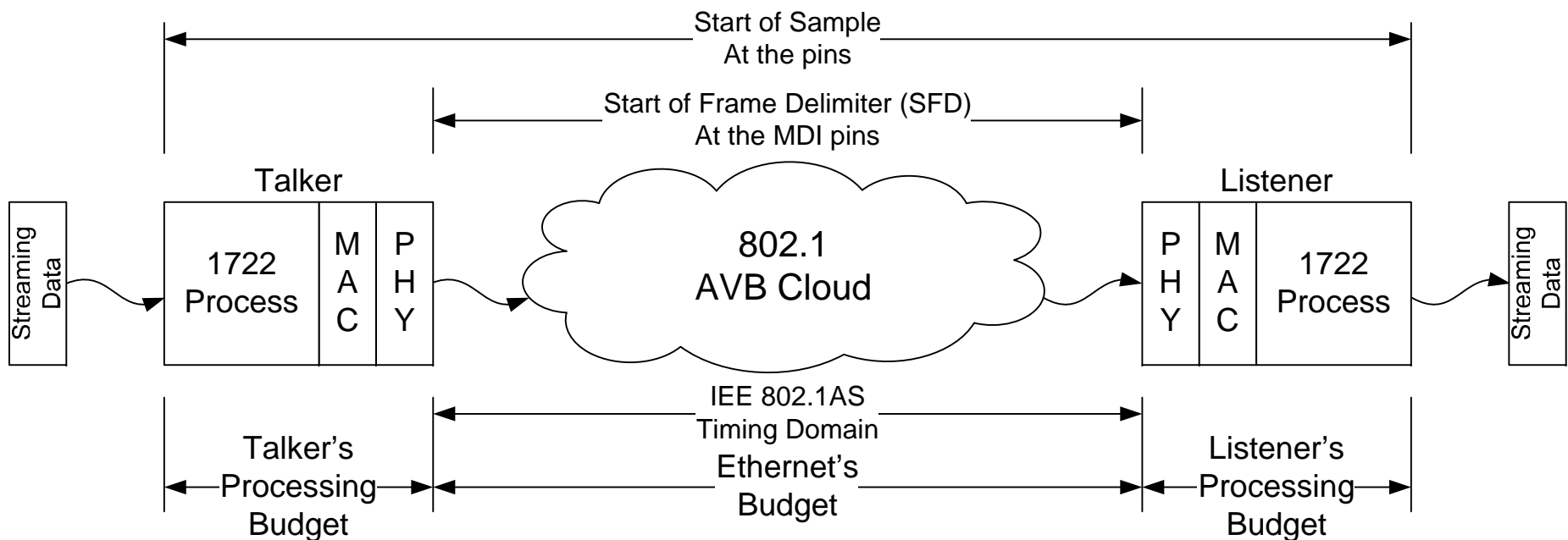
AVB Listener

- IEEE 1722 Frame has Presentation Time (PT) w/Multiple Samples
- CPU Converts PT from 'Frame Time' to local 'Hardware Time (HT)'
 - Uses the known relationship between H/W Time and GM (PTP) Time
- Valid HT's are compared to the Current H/W Time (at the TDM Pins)
- Used to Start a flow at the right time
- Used to Adjust VCO to the stream's clock



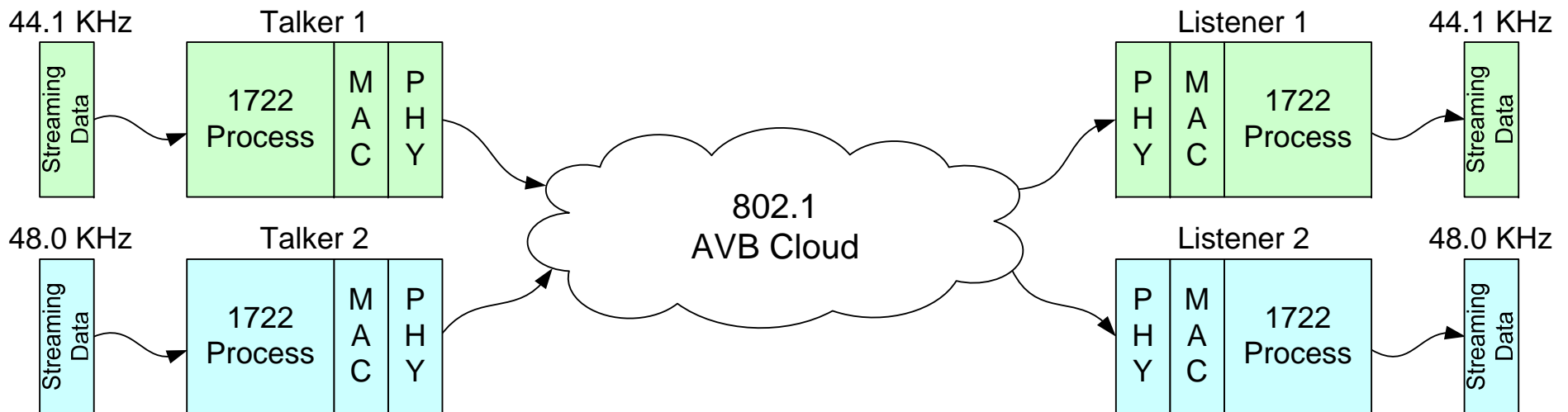
How is PTP Time Used with PT?

- PTP stops at the MAC's & gets each node to be at the same time
- Then the Talkers & Listeners use PTP time as a way to Measure when audio Sample were received or transmitted
- The exact Timing Budgets and exact edge for each of these time domains is being worked on in the committees



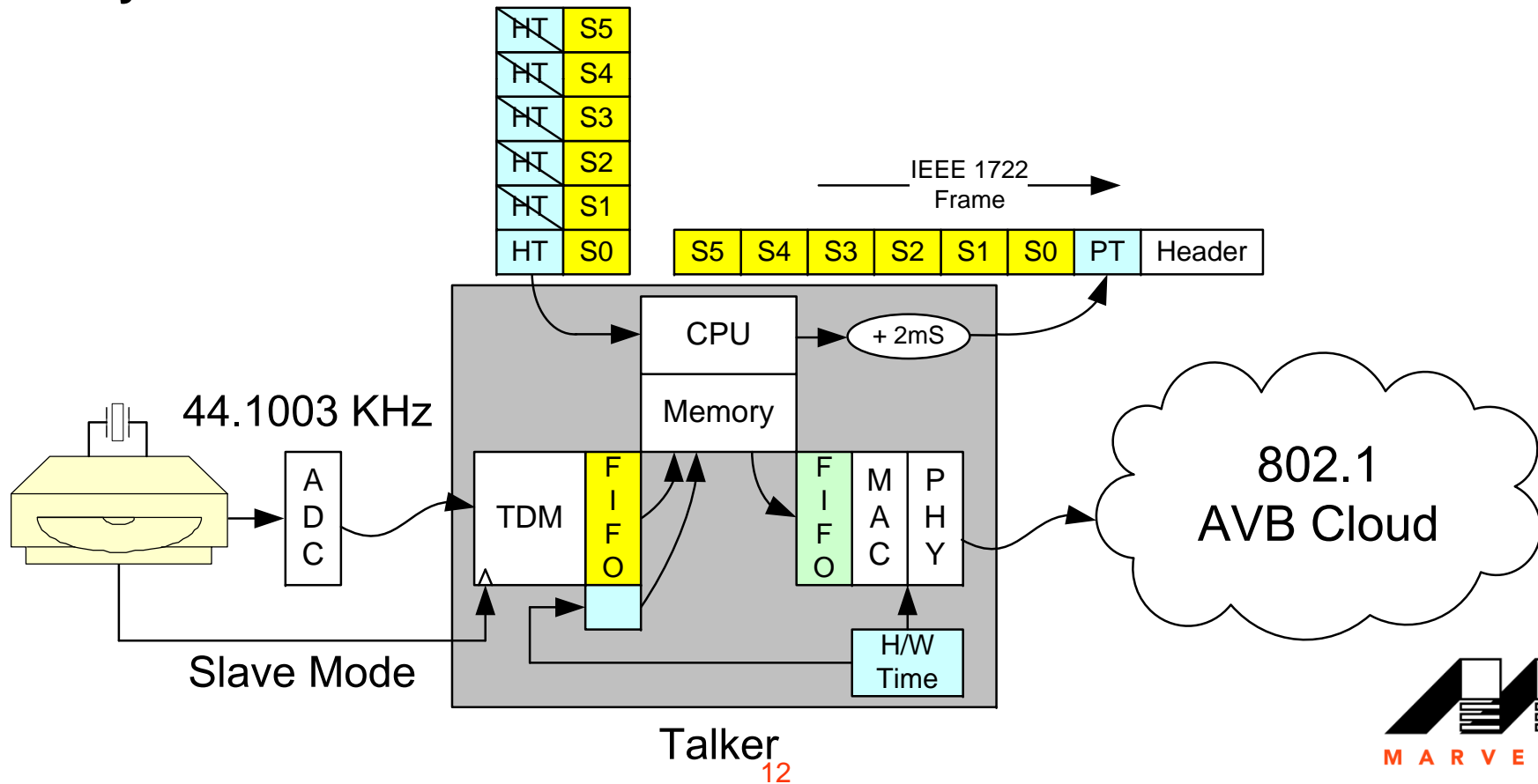
Supports Mixed Media Clocks

- **This approach supports multiple different Media Clocks at the same time in the AVB Cloud**
 - Each Stream could have a unique Media Clock
 - Multiple Listener's can receive the same Stream & they will play in sync
- **A Physical Chip or Device could contain any combination of Talkers, Listeners and Bridges**



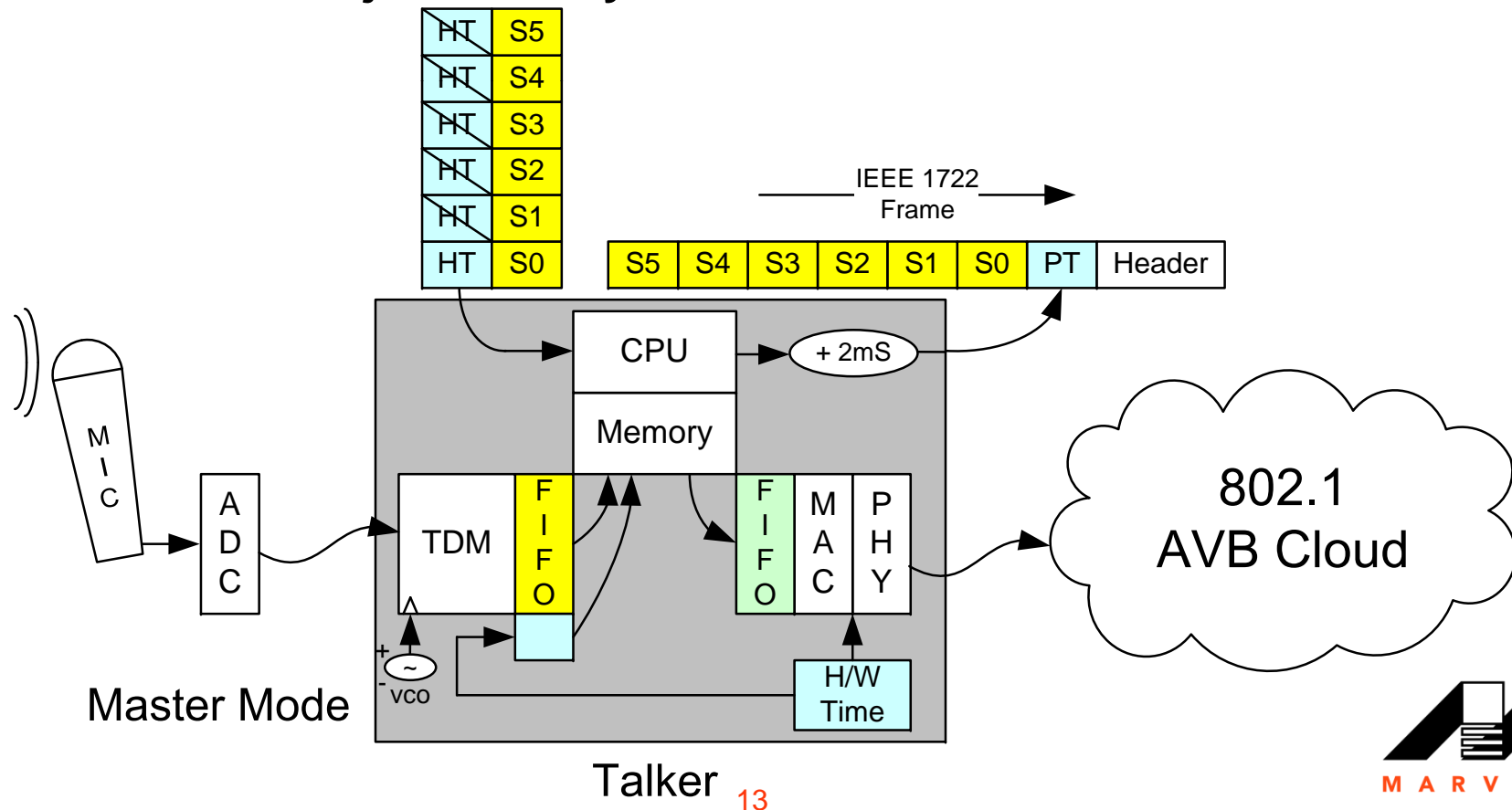
AVB Talker (Slave Mode)

- Let's look at the various different kinds of Talkers
- We have already seen this Slave Mode version
- Here the Stream's Media Clock comes from the external source's crystal



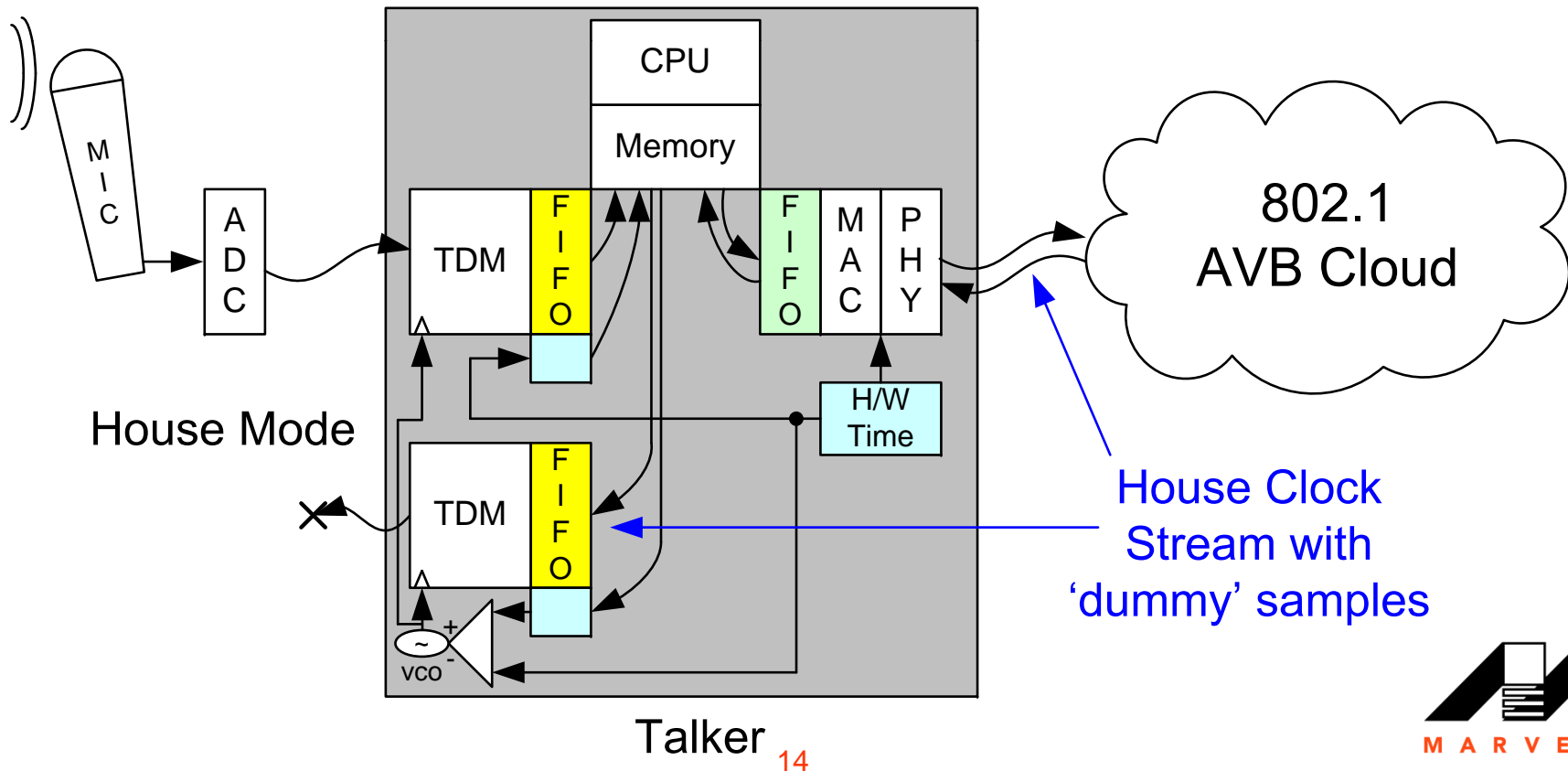
AVB Talker (Master Mode)

- Here the source of the Media Clock is the TDM port's Local VCO
- Otherwise it Works the same as an Talker in Slave mode
- End node Listeners still locks their Media VCO to the Talker's Media Clock – just as they did when the Talker was in Slave Mode



AVB Talker (House Clock Mode)

- A 'House Clock' stream is sent to all Talkers w/'null' samples
- The 'House Clock' stream is 'played' to lock a VCO to its clock
- This 'House Clock' VCO is used to clock the input Media Clock
- Multiple different 'House Clocks' can be supported





Questions?

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THANK YOU

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