

# AVB vs A2B

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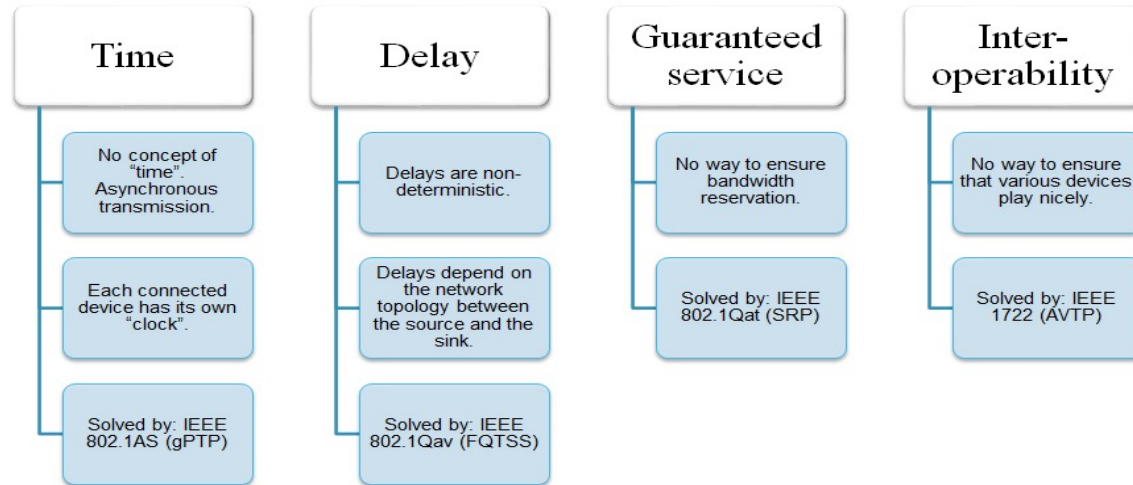


# Agenda

- ▶ Audio Video Bridge (AVB)
  - ▶ AVB High Level Overview
  - ▶ AVB Pros & Cons
- ▶ Automotive Audio Bus (A2B)
  - ▶ A2B High Level Overview
  - ▶ A2B Pros & Cons

# AVB High Level Overview

- ▶ Mainly used for Audio & Video transfer over ethernet (using Broad Reach Connectors : 10/100/1000 BASE T1)
- ▶ Audio Video Bridging is implemented as a switched Ethernet network which works by reserving a fraction of the available Ethernet for AV traffic.
- ▶ Daisy chain connection topology can be with intermediate AVB bridges / point – to – point connections
- ▶ AVB implementation is based on the below IEEE standards :



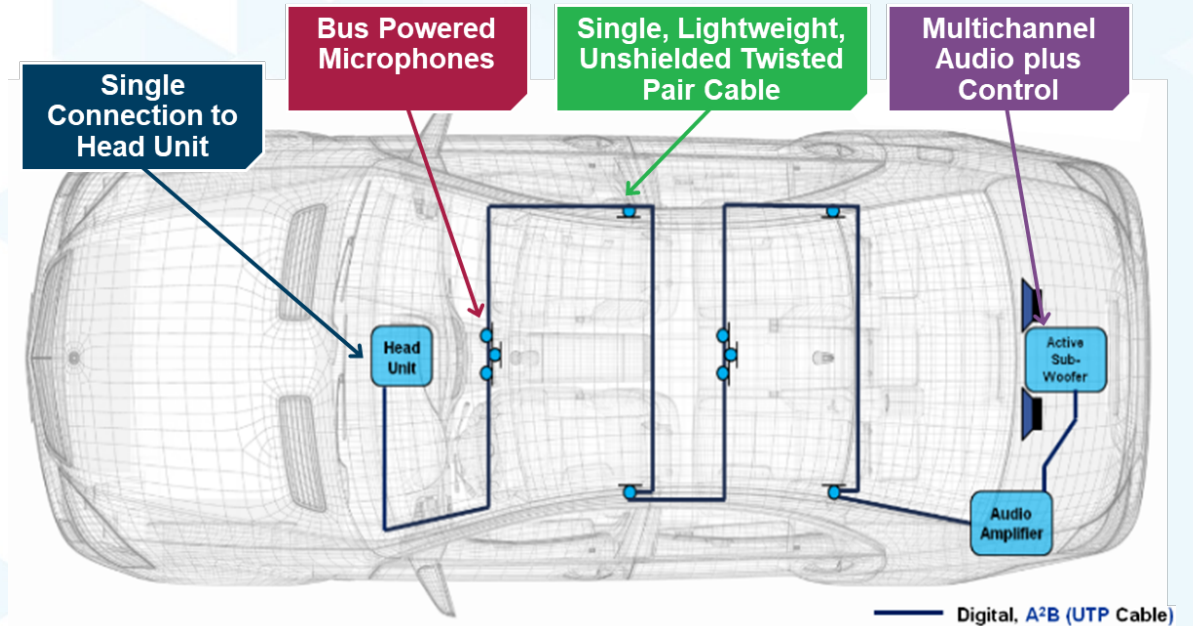
- Few more standards are to be adopted when completely moving towards TSN and to be confined for Automotive Profile
- ▶ Traffic priority is classified into 3 classes (Class A, B, C) based on maximum latency
- ▶ More information at - <https://tsn.readthedocs.io/>
- ▶ From ADI, ADSP SC58x/59x Family supports AVB with IEEE standards

# AVB Pros & Cons

- ▶ Pros :
  - Standardized protocol by IEEE so any vendor can follow the standards for implementation of AVB Stack
  - Readily available AVB Stack from different vendors for different chipsets
  - Supports both Audio/video/other control data transmission
  - Can also be useful in acting as a Gateway along with a protocol converter (Ethernet to CAN/LIN & vice-versa)
  - Scalable bandwidth from 10Mbps to 1000Mbps
- ▶ AVB Challenges/Cons :
  - Heavy set of IEEE Standards overhead for implementation of AVB Stack SW and integration of AVB Stack to platforms
  - No centralized GUI tool for the complete network configuration/visibility of AVB traffic (as of now not available, coming up)
  - Microcontroller needed to run a AVB stack (which leads to additional BOM)
  - Need additional clock generator to lock the PTP recovered (which leads to additional BOM)
- ▶ Suitable Applications :
  - For camera applications
  - For video streaming
  - OTA, Gateways (when used as TSN)

# A2B High Level Overview

- ▶ Used for Audio Transfer using simple UTP wires
- ▶ A2B is connected in a Daisy chain topology from main to sub-nodes
- ▶ Supports communication over Distance (I2C/GPIO) where main node can access all the sub-nodes and peripherals connected to sub-node also
- ▶ Direct sub-node support for Pulse Density Modulation (PDM) supported microphones without host uC
- ▶ Sub-nodes can sync with Master Clock & also have deterministic time delay from master to sub-nodes
- ▶ Sub-nodes can either be bus powered or local powered



# A2B Pros & Cons

- ▶ Pros :
  - No overhead of IEEE standards
  - Easy A2B Stack integration on RTOS, Linux & QNX
  - A2B support network bus diagnostics
  - Significantly less cable weight & cost
  - A2B also supports asynchronous communication over synchronous bus for applications like OTA, diagnostics, etc.
  - Since it supports bus power, A2B can also be used for wake-up applications from deep sleep state
  - No presence of microcontroller is mandatory at the sub-node end
  - GPIO control over distance on the sub-nodes from master
  - Flexible design of A2B network topology using GUI (Sigma Studio) tool
- ▶ Cons :
  - Fixed bandwidth of up to 50Mbps. If there is need to increase bandwidth then possibility is to go with parallel bus connections (multi-main node)
- ▶ Suitable Applications :
  - Radio/Audio, Light Weight Application controls, Sensor data
  - Voice applications
  - Suits for light weight OTA



# Thank you

