AVB Higher Layer Interfaces

From a UPnP QoS Perspective

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Disclaimer and Assumptions

- These are Preliminary suggestions.
- Still under discussion in UPnP QoS.
- UPnP QoS needs to work with some legacy devices in the network.
  - Bridges with No Layer 2 QoS
  - Different PHYs
  - Exact Topologies supported TBD

Interface Categories

- Stream Admission and Bandwidth Reservation
- Failure Recovery
- Preemption Support
- Interoperation with other PHYs
- Stream ID / Addressing

Stream Admission and Bandwidth Reservation Functions

- Reserve Bandwidth (Resources)
- Release Bandwidth (Resources)
- Traffic specifications / Parameters
  - Bandwidth
  - Packet size (min, average, max)
  - Max number of Packets
  - Delay

Failure Recovery

- Presence Indication
  - Refresh Reservation to maintain receiver presence
  - Keep alive packet or null packet to indicate server still active (when there is no data to be sent)
- Failure Detection
  - If the Receiver dies the Res. Refresh times out
  - If the Server dies there is no keep alive or null packet
- Recovery
  - Free Layer 2/3 Resource Reservations
  - Signal Applications(s)

Preemption Support
Reasons for Preemption

- Consumer / User Decisions
- Incoming VOIP
- PVR automatically starts to record

Preemption Support
What is Needed

- ID of stream(s) that could be preempted
  - Only streams on path of failed reservation
  - Only streams on failed link on above path
  - Translate layer 2 ID to Layer 3 ID
- Bandwidth reserved for existing streams
- Bandwidth available on link where reservation failed.

Interoperation with other PHYs

- UPnP defines a Segment as a part of the network that can manage QoS at layer 2 end to end.
- There may be non AVB bridges between some dissimilar phys
- There will be UPnP devices with multiple PHYs that can manage QoS at layer 3.

Interoperation with other PHYs

- There may be legacy (non QoS) bridges between phys.
- Legacy bridges act are treated as wires.
- With a legacy bridge in the middle part of the reservation may need to be done from the server end.

Stream ID / Addressing

- Need for both Unicast and Multicast IP stream addresses
- How do we get from a Unicast IP address to a group MAC address?
- How do we get from a Multicast IP address to a group MAC address?
- How do we get from a layer 2 MAC address to a layer 2 IP Address and Port (needed for preemption support)