IEEE 802.1Q Stream Reservation Protocol

What is it, how does it work, and who wants/uses it?

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What is SRP?

The dynamic MRP* based layer-2 control protocol used to build paths through a network for rank-based, latency guaranteed bandwidth reservations within a heterogeneous AVB Cloud

- IEEE 802.3 “wired” Ethernet (DA=00-80-C2-00-00-0E, Type=22-EA)
- IEEE 802.11 Wi-Fi
- MoCA (Multimedia over Coax Alliance)

Bridges do not allow a reservation unless they can provide the requested QoS

- The “network core” enforces the rules

* MRP = Multiple Registration Protocol (IEEE 802.1Q clause 10)
MSRP = Multiple Stream Registration Protocol (IEEE 802.1Q clause 35)
MVRP = Multiple VLAN Registration Protocol (IEEE 802.1Q clause 11)

SRP Terminology

TALKER: Source of a stream

LISTENER: Destination for a stream

DOMAIN: A connected set of Talkers, Listeners, and Bridges that support the same priority* for a stream class

RESERVATION: A network path between a Talker and its Listener(s) that supports the requested QoS

* Priority is stored in the 3-bit PCP field which is contained in the 32-bit 802.1Q Tag, along with the Tag Protocol ID and the VLAN ID.

The Reservation Process

A simple three step process:

1. Establish a Domain*
2. Talker Advertises a stream
3. Listener(s) Attach to the stream

* Non-AVB traffic entering into the Domain using stream class priorities (A=3, B=2) will have their priority remapped to protect the AVB traffic

The Reservation Details - Talkers

TALKER and BRIDGE(S)

Stream Registration

- Establish the Domain
- Talkers advertise one or more streams and specify the QoS requirements
- Bridges propagate those advertisements throughout the network while updating the Accumulated Latency at each hop

The Reservation Details - Listeners

LISTENER and BRIDGE(S)

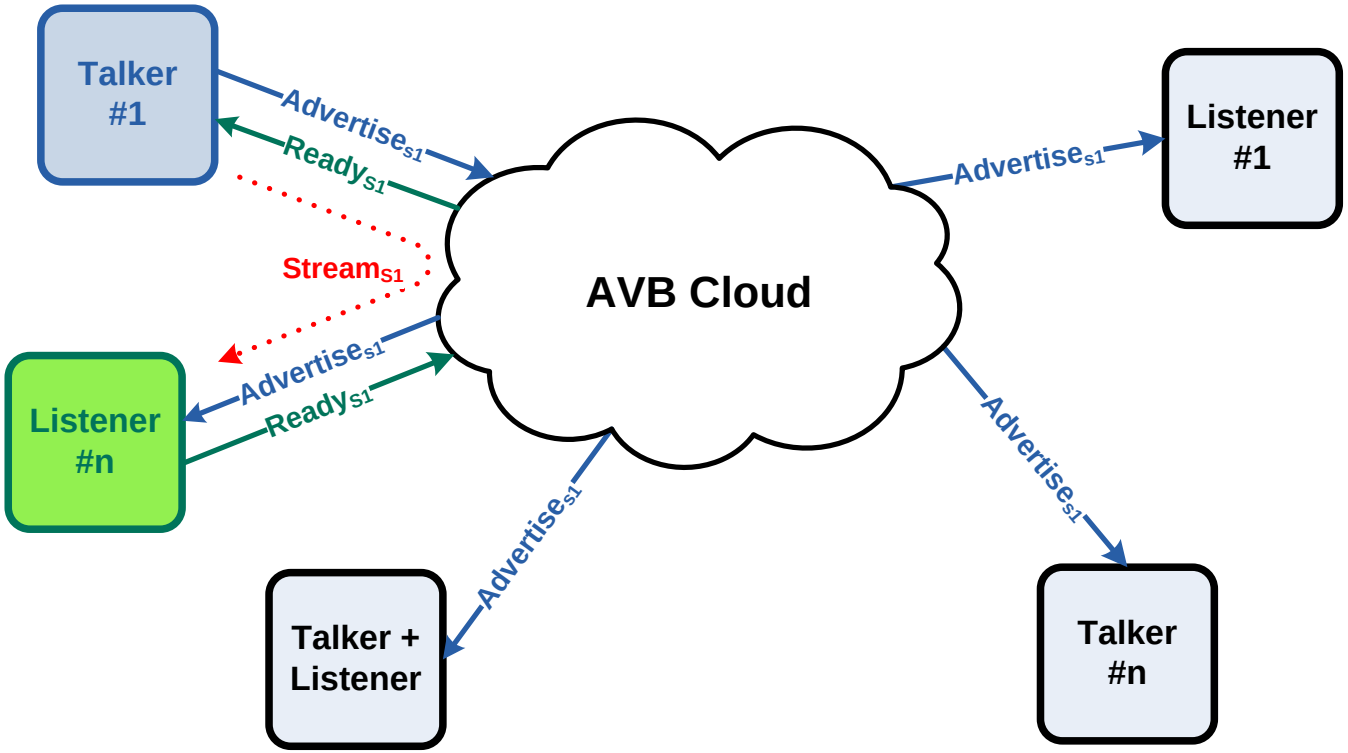
Stream Attach

- Establish the Domain
- Listener(s) request the stream
- Bridges
  - Add associated ports to VLAN Membership
  - “Nail-up” the path and configure the stream shaper and traffic forwarding
  - Update streamAge
  - Forward Listener Ready toward Talker

The Reservation Process in a Picture

Talker Advertise propagates everywhere by default.

Listener Ready propagates towards Talker.



Who Wants It?

Professional Audio products

- Installed Sound (studios, airports, churches, theaters, amusement parks, sports venues)
- Portable PA (club bands)
- Tour Sound (outdoor concerts, touring bands)

Automotive

- Infotainment
- Control and Command under development

Industrial Control

AVnu has an established certification process

ESPN Digital Center 2 (DC2)

ESPN's DC2 is a very large installation that uses AVB for the audio programming you hear today

(see: http://sportsvideo.org/main/blog/2014/06/espns-dc2-scales-avb-large/)

- 194,000 sq ft, $125 million facility in Bristol, CT
- Audio infrastructure is primarily AVB
- 46 Tbps network throughput
- 60,000 simultaneous signals
- 1,100 miles of fiber
- Four audio control rooms
- Audio is just Phase 1, next is video then control
- Heading for AV/IT singularity

What are they asking for next? **Layer-3!**

Thanks