



**Joint IEEE-SA and ITU Workshop on Ethernet**

**Stream Reservation Protocol  
(SRP)**

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Geneva, Switzerland, 13 July 2013

## What is SRP?

- The dynamic control protocol used to create a path through a network for rank-based, latency guaranteed bandwidth reservations within a heterogeneous AVB Cloud
  - IEEE 802.3 “wired” Ethernet
  - IEEE 802.11 Wi-Fi
  - MoCA (Multimedia over Coax Alliance)

## What is SRP (continued)?

- Bridges do not allow a reservation unless they can provide the requested QoS
- Part of the “2011 AVB Protocol Suite”
  - 802.1AS: GENERALIZED PRECISION TIME PROTOCOL
  - 802.1Qav: CREDIT BASED SHAPER (Q:34)
  - 802.1Qat: STREAM RESERVATION PROTOCOL (Q:35,C)
  - 802.1BA: AUDIO VIDEO BRIDGING (AVB) SYSTEMS

## 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 an SR class
- **RESERVATION:** A network path between a Talker and its Listener(s) that supports the requested QoS

# Reservation Process

- A simple three step process:
  1. Establish a Domain
  2. Talker Advertises a stream
  3. Listener(s) Attach to the stream

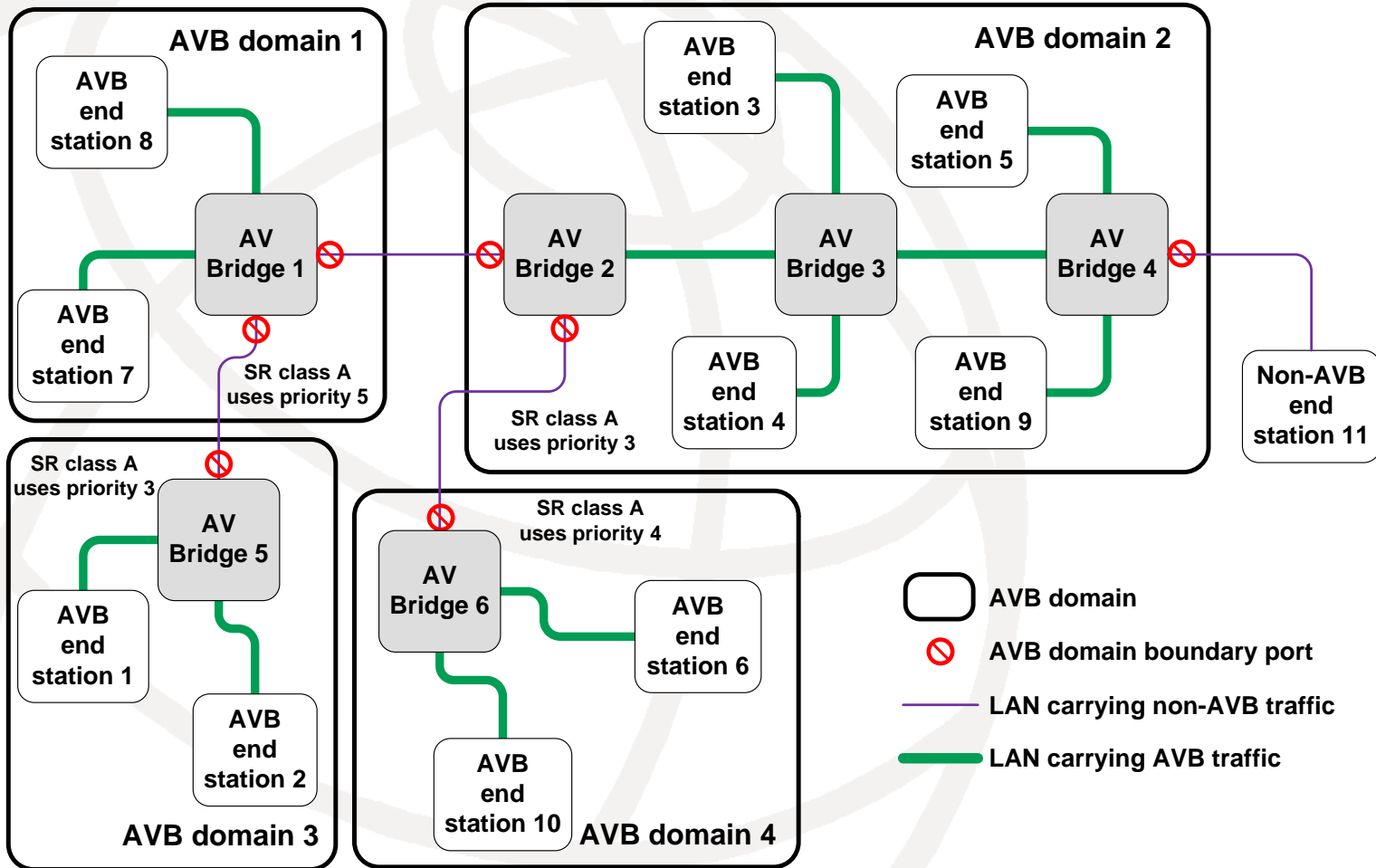
# How do SRP Domains work?

- Establish the Domain Boundary (Q:34.2\*)
  - ➔ Must have same priority value for SR class, otherwise it's a boundary, and:
    - Conflicting ingress priority is regenerated to protect SR class priorities and queues (Q:6.9.4)
    - Talker Advertise -> Talker Failed (Q:35.2.3.1)

Note: The **AVB Cloud** is an intersection of an SRP Domain and a gPTP (802.1AS) Domain.

\* Q:34.2 is a reference to 802.1Q-2011 Clause 34.2

# Four Domain example



# How do SRP Reservations work?

## TALKER and BRIDGE(S)

### ■ Stream Registration

- ➔ Talkers advertise one or more streams and specify the QoS requirements
- ➔ Bridges propagate those advertisements throughout the network



# How do SRP Reservations work?

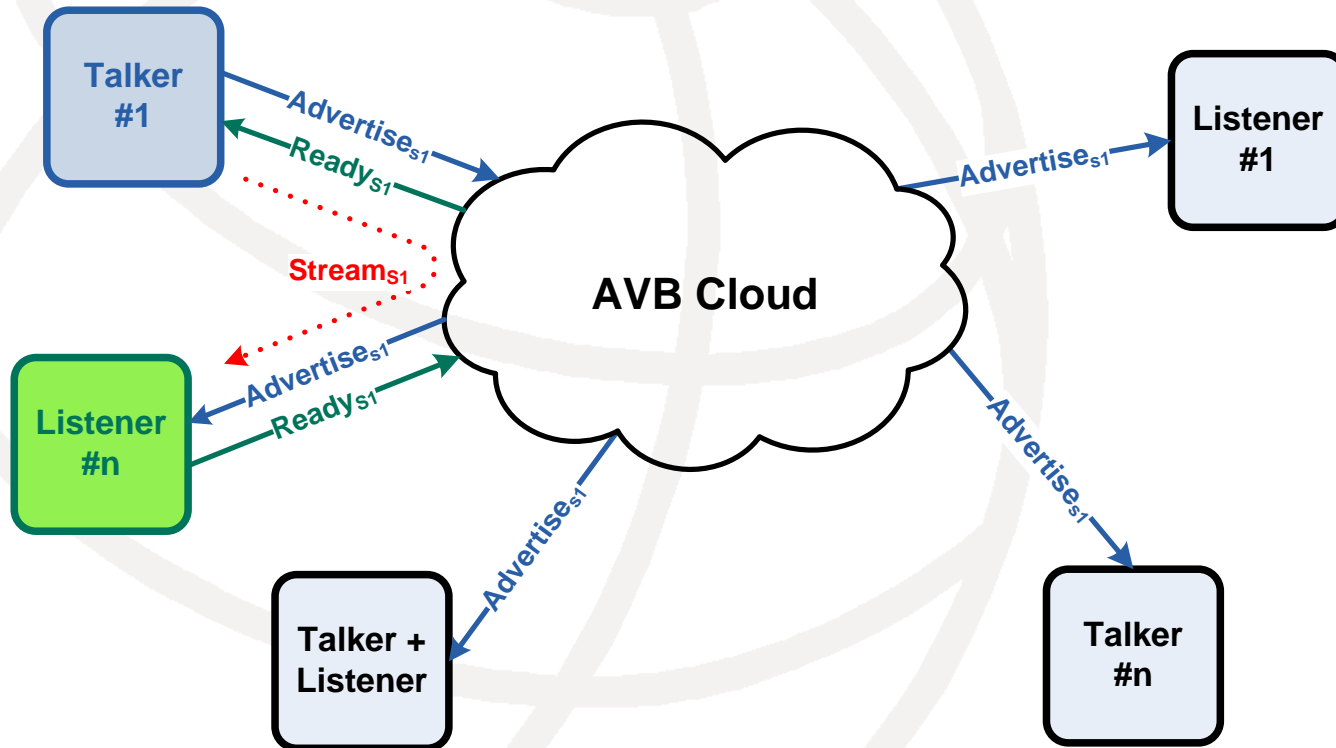
## LISTENER and BRIDGE(S)

### ■ Stream Attach

- ➔ 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

# Reservation process

Talker Advertise propagates everywhere  
 Listener Ready propagates towards Talker



# Who uses SRP today?

- **Professional Audio products**
  - **Installed Sound** (airports, churches, theaters, amusement parks, sports venues)
  - **Portable PA** (club bands)
  - **Tour Sound** (outdoor concerts, touring bands)
- **Automotive**
  - **Infotainment**
  - **Control and Command - eventually**
- **Industrial Control**



# What's next for SRP?

# Requests from current SRP users

- **Automotive**
  - Statically define reservations
  - Faster startup times
  - 10x to 100x reduced packet rates
  - Traffic shaper selection (A/V vs control)

## More Requests

- Professional, Industrial and Consumer
  - Configurable SR classes, priorities and default VLAN-IDs
  - Support link aggregation
  - Explicit path selection
  - Latency and Energy Efficient Ethernet
  - Support for Layer 3
  - Two-way reservations
  - Multiple Talkers per stream

# IEEE 802.1Qcc

## ■ Requesting authorization for new work

### ➤ PAR:

<http://www.ieee802.org/1/files/public/docs2013/new-p802-1qcc-draft-par-0513-v1.pdf>

### ➤ 5C:

<http://www.ieee802.org/1/files/public/docs2013/new-p802-1qcc-draft-5c-0513-v1.pdf>

## ■ Targeted for 2017 completion



**THANK YOU**