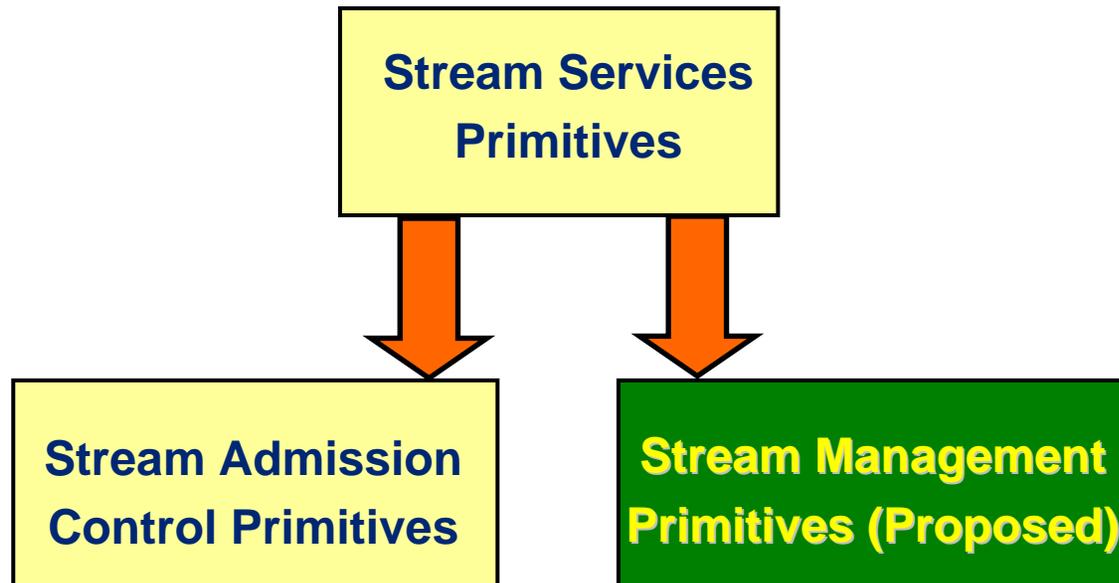


SRP Proposal to IEEE 802.1AVB

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- **Stream Services Primitives**
- **SRP Missing Sections**
- **Dynamic Stream Update**
- **Generalized SRP**
- **Open Issues**



Stream AC primitives:

1. Create (or Add) stream
2. Dynamic Update (or Modify) stream
3. Delete (or Tear Down) stream

Stream Management primitives:

1. List (ingress node) streams
2. Query (QoS capable node)

■ Proposed change

Purpose:

- To enable a node to retrieve a list of QoS flows and associated TSpec that are entering the QoS segment at any node (in case of failed Create or Update flow operation)

Usage Case:

Allow a node to find out available BW and/or list of flows on a given Ingress node in multi-QoS segment network

Transaction has the following primitives:

- Talker node sends LIST INGRESS request primitive to the specific node (listener) with following parameters:
 - Flow ID
 - Ingress node ID
- Corresponding node sends ACK response with the Flow IDs and associated TSpec parameters

Purpose:

To identify the Ingress node that has a specific QoS flow ID (Nice to have feature)

Usage Case:

Node to match a specific AV stream needed for an end-user application (e.g. media player)

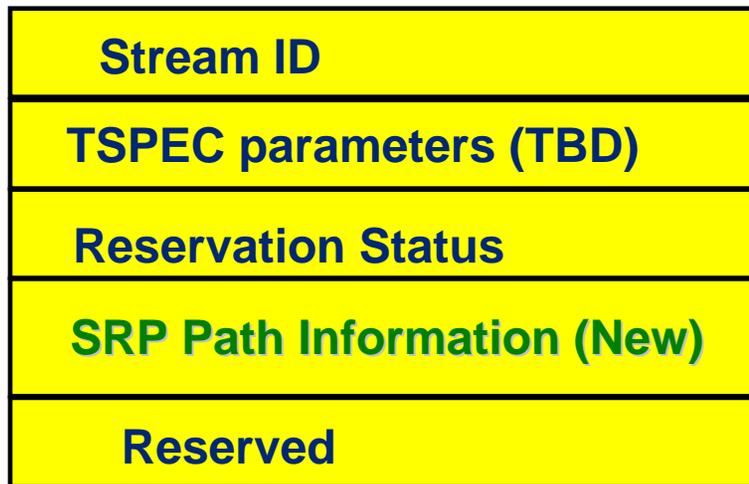
Transaction has the following primitives:

- Talker node sends FLOW QUERY request primitive to all the nodes, input parameter is the Flow ID
- Nodes that has the Flow active on them send ACK response with the following query results:
 - Requested flow found
 - Tspec

The current IEEE 802.1at/D0.2 draft is missing the following details:

1. Overall SRP reference model
2. Theory of operation
3. Reservation PDUs (next slide)

1. Each intermediate node should update the Reservation PDUs.
2. Reservation PDU should have the following structure



Reservation Status	Value
Reserved	0
Success	1
Failed	2
Node timeout	3

SRP path info	Value
MAC Address	
AVB Latency	
Available BW	
INA number	

- Both talker and listener will get the full path information

Problem Statement:

Dynamic flow reservation update needs to allow switching between different Tspecs (e.g., HD vs. SD video, or trick mode), without having to tear down and then create a new flow

Without Dynamic Update:

- **Must create a new flow and tear down the existing flow**
 - First Create then Tear down: Create may fail due to BW limitation
 - First Tear down then Create: discontinuity of flow

With Dynamic Update:

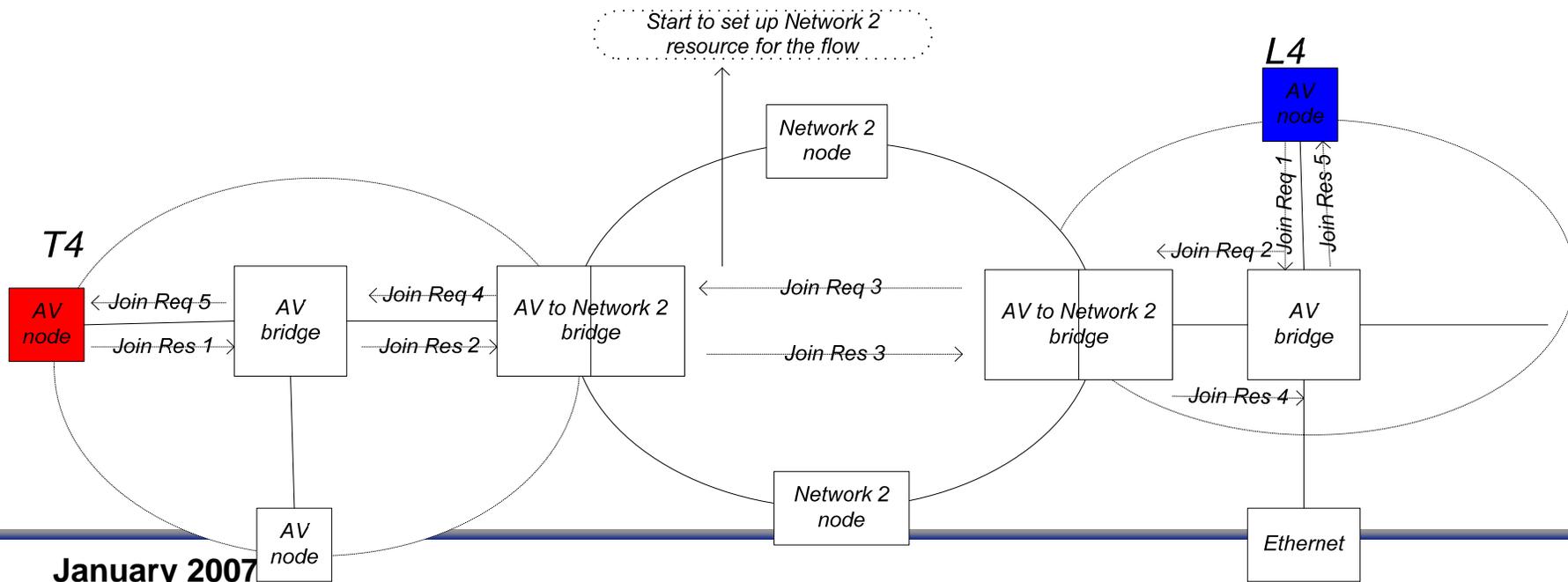
1. **Use Create Flow for both creating a new flow and updating an existing flow**
 - Intermediate nodes may succeed or fail the update operation just like they may succeed or fail the creation of a flow.
 - If the flow already exists, then the command is considered as updating an existing flow; otherwise it is considered as creating a new flow.
2. **Use Update Flow to explicitly update an existing flow.**

- **Generalized SRP (originally defined for Ethernet) can be used for endpoints and bridges of any L2 technologies**
- **All QoS Segment Bridging nodes are required to support the same SRP**
- **UPnP QoS can set up a flow, provided that the Listener supports the UPnP QoS Device Service. All other nodes need not support UPnP QoS**
- **The process is: the QME invokes AdmitTrafficQos to the QDS which in turn triggers the layer-2 SRP for the flow admission**
- **Usage scenario (next slide)**

- Flow from Talker 4 (AVB node) to Listener 4 (AVB node) through Alternate Network (AN)
- L4 SRP Join Request 1 translated to AN Flow setup in AVB/AN Bridge 1
- AN Flow setup translated back to SRP Join Request 3 in AVB / AN Bridge 2

SRP related delay constraints in AVB/ AN Bridges?

- Message propagates to T4
- T4 response is translated back in the same manner
- Currently AVB assumes only two delay values: 1ms and 0.125ms, but non-Ethernet layer-2 technologies typically cannot achieve that



- Flow ID used by all layer-2 segments needs to be consistent. Otherwise, the intermediate bridges need to do the translation.
- Latency classes
- **Traffic profile changes:**
When a flow traverses multiple layer-2 segments, the traffic profile (Tspec) may be reshaped (burstiness, aggregation etc.) at the egress of each segment (depending on the traffic scheduling mechanism of the layer-2 segment). Such reshaping may accumulate over several segments. Each bridge may need to update the Tspec for the next segment to avoid having big discrepancy between the Tspec (used for admission) and the actual traffic.

Each AVB output port needs keep flow Tspec unchanged?

- No scheduling algorithm is described in SRP draft.