Scheduled Traffic
- Forwarding and Filtering

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Topology Change

AVB Gen1

- AVB streams follow the active topology created by STP
- After a topology change SRP automatically reconfigures the allocated streams (if possible)

Scheduled Traffic

- The following points assume that Scheduled Traffic follows the spanning tree or SPB-V/M
- An automatic reconfiguration is not possible, as the (offline calculated) schedule is closely linked to the active topology
- If the Scheduled Traffic frames follow another topology, they can break the latency guarantees of all other frames and cause buffer overflows, as the assigned time windows might not provide enough bandwidth

Possible Solutions

- The forwarding of Scheduled Traffic is outside of the STP or other redundancy protocols (traffic engineered paths)
- Scheduled Traffic follows the rules of the underlying redundancy protocol but does not reconfigure after a topology change
- This topic might be highly related to the redundancy concepts for Scheduled Traffic

Protection Against non Allocated/Scheduled Streams

AVB Gen1

- SRP stets up the forwarding and filtering for AVB streams
- AVB stream frames with non registered DAs are filtered

Scheduled Traffic

- A similar mechanism seems to be necessary for Scheduled Traffic streams
- It seems to be useful to require the use of multicast MAC addresses as DA (as AVB Gen1)

Possible Solution

- With the Schedule configuration a list of streams, which are part of this schedule, is deployed i.e.

  Configuration information (per port):

  - Time reference
  - List of events (including the events for all queues of this port)
  - List of streams (stream IDs, DAs, …)

- The forwarding is configured upon the registered streams

Signaling the Talker that the Network is Configured

AVB Gen1

- After a talker receives a listener ready it knows that the bandwidth is allocated, and the forwarding and shaper are configured

Scheduled Traffic

- A start time doesn't guarantee that all bridges are configured
- Making the bridges aware of the configured streams (as it is done in AVB Gen1) might allow the network to indicate to the end stations when the configuration is completed

Possible Solution

- After the configuration of the schedule, the bridge sends a list of (on that port) configured streams to its neighbor (using SRP/IS-IS) (Scheduled Traffic Advertise)
- The Scheduled Traffic Advertise attribute is **not** propagated
- If a listener receives a Scheduled Traffic Advertise it can send a Scheduled Traffic Ready
- If a bridges receives a Scheduled Traffic Ready, it configures the forwarding for this stream ID

Possible Solution

- The Scheduled Traffic Ready attribute is propagated on the port on which the bridge has received a Scheduled Traffic Advertise for this stream ID
- There might be no such attribute if the next bridge is not already configured
- Not configured DAs are filtered
- After a talker receives a Scheduled Traffic Ready it knows that:
  - At least one listener wants to listen to that stream
  - The network is configured

Priority Remapping

AVB Gen1

- SRP creates an SRP domain
- Traffic from outside of the SRP domain which is using the PCP of AVB stream classes is remapped

Scheduled Traffic

- A Scheduled Traffic domain seems to be necessary, as an engineered control network can be connected with a bigger network
- The priority of traffic ingressing the Scheduled Traffic domain on boundary ports (detected by SRP/IS-IS?) using the PCP of Scheduled Traffic frames needs to be remapped

Possible Solution

It seems to be enough to extend the priority remapping to Scheduled Traffic and to add Scheduled Traffic to the SRP domain attribute

Next Steps

- Should this be done in Qbv or in an separate SRP Gen2 project with all the other SRP improvements?

- These topics are related to the configuration support protocol for simple networks/schedules
- Both should use the same mechanisms to solve these issues

Thank You