MSRP Redundant Stream Reservation Protocol Proposal

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Proposal Aims

- Keep a clear separation between reservation and path selection
- Minimize the modifications to the current MSRP reservation protocol
- Rely on Short Path Bridging (801.1Qca) to select the best and constrained paths for the streams
- Leave the redundancy scheme and its characteristics as a listener’s choice
Proposed Scheme

• Extend the Listener Ready message to allow a Listener to request the Talker to advertise the same stream (same stream ID) thru alternate paths computed by SPB

• As a result, the redundancy for a given stream could be created.

• Disclaimer: This proposed scheme does not try answer the redundant scheme requirements of all the TSN market segments (in particular industrial control & automotive,..)

The next 3 slides illustrate this proposed scheme
MSRP – “Legacy” scenario

“Server App”  
Shortest Path Bridging  
Talker

1. Default Shortest Path
   TA (Stream i)
   LR (Stream i)

2. Default Shortest Path

Listener  
“Client App”

“Legacy” case
MSRP 1+n Redundant Streams

"Server App" Shortest Path Bridging

Talker

Listener "Client App"

"Legacy" case

Redundancy (n new paths requested by the Listener)

1. TA (Stream 1, New_params_TBD)
2. TA (Stream i)
3. LR (Stream i, Additional_Path_Request(n, constrain_params(n))
4. Add Path Request (n, constrain_params)
5. (n) CP VIDs

n" Constrained Path i=1..n

n" Constrained Path i=1..n

n+1 streams
MSRP – n Constrained Streams only

"Server App"  
Shortest Path Bridging  
Talker  
Listener  
"Client App"

1. Default Shortest Path
   TA (Stream i)
   LR (Stream i)

2. "Legacy" case

3. Default Shortest Path
   TA (Stream i, New_params_TBD)

4. Add Path Request (n, constrain_params)
   (n) CP VIDs

5. LR (Stream i, No_Reservation, Additional_Path_Request (n, constrain_params[n]))

6. Constrained Path(s) only
   (n new paths requested by the Listerner)
   LR (Stream i)
   Stream
   n streams

7. Constrained Path (i = 1..n)
   TA (Stream i)

8. Constrained Path (i = 1..n)

9. n streams

tsn-phk-redundant-stream-rsv-0813-v3
New Parameters

• TA: New parameters
  – TBD (i.e. redundant path request failure indication)

• LR (either MSRP, IS-IS or a mixed bag of both?):
  The parameter data structure should support the case where multiple LRs from multiple listeners for the same stream are merged together

  The listener could optionally indicate its constrain parameters for the default shortest path to allow the network resource to be optimized

  – Array of Listener IDs
  – Per Listener ID:
    – Reservation/No_Reservation flag (for default shortest path)
    – Constrain parameters for default shortest path
    – Nbr of requested additional paths
    – Per requested path: constrain parameters (TBD)
Path Recovery After Failure

• To avoid re-executing the whole n-way exchange after a path failure, the redundancy requests per Stream_ID could be stored in the Talker DB

• Details and other alternatives however are subject to further studies
Thank You

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