SVID Assignment in CDCP

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Motivation

- CDCP is used to assign SVIDs for multi-channel operation in 802.1Qbg
- There is some ambiguity with respect to SVID assignment in 802.1Qbg
- Specifically, it is not clear whether or not an end station can request particular values of the SVID
- The goals of the presentation are
  - To call out the parts of the spec that need further clarification
  - Get feedback from the group on how we would like to address these

What are the options?

- The following options were discussed during the development of 802.1Qbg
- Option (1): Allow a station to request a particular value of SVID
  - If not available bridge can override this value
- Option (2): Don't allow a station to request a particular value of SVID
  - The bridge ALWAYS gets to assign it
- The current standard clearly supports (2)
- There is some ambiguity with respect to (1)

The rationale for Option (1)

- There are situations where the link becomes non-operational

- When the link comes back online, it may be advantageous to have the same SVID values be allocated to the channels on that link

What does 802.1Qbg say?

- 42.2 CDCP state machine overview
  - The configuration proceeds by the bridge providing the best match it can to the station's requested channels and configuration. The station makes the resource request, the bridge responds with its best matching resources…

- 42.4.3 AdminSVIDWants [end station]
  - The S-channel numbers may be any valid number in the range 0–167. A 0 S-channel number indicates reserved space in the TLV. If the S-VID value is 0 it means the station is requesting any available S-VID. S-VID value 1 is reserved for exclusive use for the default S-channel S-VID. The AdminSVIDWants parameter is used to form the (SCID, S-VID) pairs in the CDCP TLV. This list is formed from the EVB station's S-channel interface table (12.26.4) and is used to build the EVB Bridge's S-channel interface table.

- These 2 clauses suggest Option (1) is permitted, but perhaps not explicitly enough

What does 802.1Qbg say? [2]

- 42.5.1 SetSVIDRequest (OperRole, AdminSVIDWants, OperSVIDList) [end station]
  - 1) All active S-channels in the OperSVIDList that are in the AdminSVIDWants are kept active, and in addition, any channels not currently in the OperSVIDList are requested by including them in the OperSVIDList along with a 0 S-VID number. The OperSVIDList S-channel order is changed to match the AdminSVIDWants.
  - 2) Any S-channels in the OperSVIDList that are not in AdminSVIDWants are made inactive and are removed from the OperSVIDList.
- Suggests Option (1) is not permitted

What does 802.1Qbg say? [3]

- 42.5.3 TxSVIDConfig (OperChnCap, RemoteChnCap, LastLocalSVIDPool, RemoteSVIDList, OperSVIDList) [bridge]
  - a) For each S-channel in the RemoteSVIDList with a (SCID, S-VID) pair in the OperSVIDList, the (SCID, S-VID) remains unchanged unless the S-VID is no longer part of the LastLocalSVIDPool. If the S-VID is no longer in the pool, a new one is selected if available. If no S-VID is available, the (SCID, S-VID) pair will be deleted from the OperSVIDList.
  - b) For each S-channel in the OperSVIDList without a (SCID, SVID) pair in the RemoteSVIDList, the (SCID, SVID) pair will be deleted from the OperSVIDList.
  - c) For a (SCID, SVID) pair in the remote list, where the S-VID is zero, an S-VID is assigned if it is available and the pair is inserted in the OperSVIDList. If an S-VID is not available, the pair is not inserted in the OperSVIDList.

- Suggests SVIDs are allocated by the bridge without any regard for a non-zero SVID that may have been sent by the end station

Where to from here?

- Decide on which options are desirable
- Update the spec to reflect the choice(s)
  - Make it clear whether or not Option (1) is supported
- The following slides suggest the changes needed depending on the decision of the group

Qbg modified to <u>allow</u> Option (1)

- 42.2 CDCP state machine overview
  - The configuration proceeds by the bridge providing the best match it can to the station's requested channels and configuration. The station makes the resource request, the bridge responds with its best matching resources...

- 42.4.3 AdminSVIDWants [end station]
  - The S-channel numbers may be any valid number in the range 0–167. A 0 S-channel number indicates reserved space in the TLV. If the S-VID value is 0 it means the station is requesting any available S-VID. S-VID value 1 is reserved for exclusive use for the default S-channel S-VID. For channels requested by any other non-zero SVID, the station is indicating a preference for that SVID. The AdminSVIDWants parameter is used to form the (SCID, S-VID) pairs in the CDCP TLV. This list is formed from the EVB station's S-channel interface table (12.26.4) and is used to build the EVB Bridge's S-channel interface table.

- Makes Option (1) explicitly supported

Qbg modified to <u>allow</u> Option (1) [2]

- 42.5.1 SetSVIDRequest (OperRole, AdminSVIDWants, OperSVIDList) [end station]
  - 1) All active S-channels in the OperSVIDList that are in the AdminSVIDWants are kept active, and in addition, any channels not currently in the OperSVIDList are requested by including them in the OperSVIDList along with a 0 S-VID number or non-zero SVID number (other than 1) to indicate the station's preference for a particular SVID assignment. The OperSVIDList S-channel order is changed to match the AdminSVIDWants.
  - 2) Any S-channels in the OperSVIDList that are not in AdminSVIDWants are made inactive and are removed from the OperSVIDList.

Qbg modified to <u>allow</u> Option (1) [3]

- 42.5.3 TxSVIDConfig (OperChnCap, RemoteChnCap, LastLocalSVIDPool, RemoteSVIDList, OperSVIDList) [bridge]

  – a) For each S-channel in the RemoteSVIDList with a (SCID, S-VID) pair in the OperSVIDList, the (SCID, S-VID) remains unchanged unless the S-VID is no longer part of the LastLocalSVIDPool. If the S-VID is no longer in the pool, a new one is selected if available. If no S-VID is available, the (SCID, S-VID) pair will be deleted from the OperSVIDList.

  – b) For each S-channel in the OperSVIDList without a (SCID, SVID) pair in the RemoteSVIDList, the (SCID, SVID) pair will be deleted from the OperSVIDList.

  – c) For a (SCID, SVID) pair in the remote list, where the S-VID is zero, an S-VID is assigned if it is available and the pair is inserted in the OperSVIDList. If an S-VID is not available, the pair is not inserted in the OperSVIDList.

  – d) For a (SCID, SVID) pair in the remote list, where the S-VID is non-zero but not in the OperSVIDList, the requested S-VID is assigned if it is available and the pair is inserted in the OperSVIDList. If the S-VID is not available, the pair is not inserted in the OperSVIDList.* (see next slide)

- Slight change to the way processing is done at the bridge

Notes from the previous slide

- If the bridge does not have the requested SVID available, there are two ways to handle it
  - Deny the request
    - The station can always re-request with a non-zero SVID
    - This is the option that was picked
  - Allocate some other SVID, if available
    - A complication with this option is what happens if the station does not like that allocation

Qbg modified to <u>disallow</u> Option (1)

- 42.2 CDCP state machine overview
  - The configuration proceeds by the bridge providing the best match it can to the station's requested channels and configuration. The station makes the resource request, the bridge responds with its best matching resources…

- 42.4.3 AdminSVIDWants [end station]
  - The S-channel numbers may be any valid number in the range 0–167. A 0 S-channel number indicates reserved space in the TLV. If the S-VID value is 0 it means the station is requesting any available S-VID. S-VID value 1 is reserved for exclusive use for the default S-channel S-VID. No other values of SVID are permitted. The AdminSVIDWants parameter is used to form the (SCID, S-VID) pairs in the CDCP TLV. This list is formed from the EVB station's S-channel interface table (12.26.4) and is used to build the EVB Bridge's S-channel interface table.

- Explicitly disallow Option (1)

Qbg modified to <u>disallow</u> Option (1) [2]

- 42.5.1 SetSVIDRequest (OperRole, AdminSVIDWants, OperSVIDList) [end station]
  - 1) All active S-channels in the OperSVIDList that are in the AdminSVIDWants are kept active, and in addition, any channels not currently in the OperSVIDList are requested by including them in the OperSVIDList along with a 0 S-VID number. The OperSVIDList S-channel order is changed to match the AdminSVIDWants.
  - 2) Any S-channels in the OperSVIDList that are not in AdminSVIDWants are made inactive and are removed from the OperSVIDList.
- No change is needed.

Qbg modified to <u>disallow</u> Option (1) [3]

- 42.5.3 TxSVIDConfig (OperChnCap, RemoteChnCap, LastLocalSVIDPool, RemoteSVIDList, OperSVIDList) [bridge]
  - a) For each S-channel in the RemoteSVIDList with a (SCID, S-VID) pair in the OperSVIDList, the (SCID, S-VID) remains unchanged unless the S-VID is no longer part of the LastLocalSVIDPool. If the S-VID is no longer in the pool, a new one is selected if available. If no S-VID is available, the (SCID, S-VID) pair will be deleted from the OperSVIDList.
  - b) For each S-channel in the OperSVIDList without a (SCID, SVID) pair in the RemoteSVIDList, the (SCID, SVID) pair will be deleted from the OperSVIDList.
  - c) For a (SCID, SVID) pair in the remote list, where the S-VID is zero, an S-VID is assigned if it is available and the pair is inserted in the OperSVIDList. If an S-VID is not available, the pair is not inserted in the OperSVIDList.
  - d) For a (SCID, SVID) pair in the remote list, where the S-VID is non-zero, there is no effect on the OperSVIDList.

- Explicitly indicate that requesting a specific SVID is disallowed

Summary

- The issue of a station requesting a particular SVID value was discussed

- The functionality is useful in some scenarios

- The current specification is unclear about intent with regard to this option

- The group should determine which option is preferable and add clarification to the specification

THANK YOU