802.1CBdb
Generic stream identification function
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MASK&MATCH-BASED FLAT STREAM IDENTIFICATION
Outcome of the latest discussion

• Considering the potential evolution of Ethernet and the upper-layer protocols
  – Ethernet: the Tags issue
    • The Tag family will have new additions
    • No fixed Tag order in the frame
    • Tags’ Ethertype attribution policy not “deterministic”
  – Upper-layer protocols
    • Variety of existing protocols
    • More to come
• Keep it simple for the user to define the identification parameters
  – Mask&Match using a list of bit fields in the frame
New proposal

• Starting from what we have in 802.1CB
  – “Stream identification utilizes a single Service Access Point (SAP) to a connectionless packet service offered by the layer below it [e.g., the Intermediate Sublayer Service (ISS) of Clause 11 of IEEE Std 802.1AC], and offers an array of SAPs to the layers above it, corresponding to different Streams.”
New proposal

• Starting from what we have in 802.1CB
  – In fact, the ISS defined in 802.1AC (Clause 11) seems to be the right candidate for a Mask&Match-based identification:

    ```
    M_UNITDATA.indication
    (destination_address,
     source_address,
     mac_service_data_unit,
     priority,
     drop_eligible,
     frame_check_sequence,
     service_access_point_identifier,
     connection_identifier)
    M_UNITDATA.request
    (destination_address,
     source_address,
     mac_service_data_unit,
     priority,
     drop_eligible,
     frame_check_sequence,
     service_access_point_identifier,
     connection_identifier)
    ```

  – The M&M stream identification function can use a subset of the ISS primitive parameters as inputs:
    • destination_address
    • source_address
    • mac_service_msdu
New proposal

• At that particular level in the stack, the `mac_service_msdu` contains all the possible Tags a frame can include.

• and the Ethertype,
  – somewhere beyond the Tags

• ... and the upper-layer (application) payload
  – after the Ethertype
New proposal

- Principle: the Mask&Match-based stream identification function uses a union of 2 sets of parameters:
  - Address (source and/or destination) set
  - msdu bit field set
    - the mask of the fields that have to be matched within the `mac_service_msdu` in the form of list of offset-length couples:
      \{(offset_1, length_1); (offset_2, length_2); ...; (offset_N, length_N)\}
      Offsets and lengths expressed in bits
      First bit of the `mac_service_msdu` at offset 0
    - This union must not be empty
      - At least 1 address or at least 1 msdu bit field present
      N > 0 if the address set is empty
• An example of:
  – Stream identification based on:
    • Destination Address
    • VLAN-ID
    • UDP flow
      – DSCP
      – L4 protocol number
      – Source IP address
      – Destination IP address
      – Source Port
      – Destination Port
  – Applied to VLAN- and R-Tagged frames
Example

- Corresponding identification parameter set:

  Address set $\{\text{destination_address}\} \cup$

  $\{(0,16), \text{ C-TAG Ethertype}\}$

  $\{(20,12), \text{ VLAN-ID}\}$

  $\{(80,16), \text{ Ethertype}\}$

  $\{(96,4), \text{ IP version}\}$

  $\{(104,6), \text{ DSCP field}\}$

  $\{(168,8), \text{ IP Protocol number}\}$

  $\{(192,32), \text{ Source IP}\}$

  $\{(224,32), \text{ Dest IP}\}$

  $\{(256,16), \text{ Source Port}\}$

  $\{(272,16)\}$

  Dest Port
Way forward

HOW TO PROCEED WITH 802.1CBDB
Changes in 802.1CB

• Addition of a new passive stream identification function in 802.1CB Clause 6
  – Sub-clause 6.8 “Bit field mask stream identification”*

  • Passive identification function that sits at the ISS interface
  • Uses ISS’s specific parameters as input:
    – source_address, destination_address, mac_service_msdu
  • The function matches the a list of fields
  • The *stream_handle* produced by the Bit-field mask identification function (up the stack) is derived from the matching of address(es) and/or msdu bit field(s) with values defined by the user (through network management or stream establishment signaling)

*: name proposal
Changes in 802.1CB

• Clause 9 “Stream Identification Management”
  – Addition of a new tsnStreamIdIdentificationType
    • OUI: 00-80-C2, Type number: 5
  – Addition of managed objects for bit field set identification
    • Sub-clause 9.1.6
      – Source address,
      – Destination address
      – Enumeration of (Offset, Length) couples defining the bit fields to be matched in the mac_service_msdu.

• Other clauses to be modified
  – 5 “Conformance”
  – Annex A “PICS”

• Additional clauses:
  – YANG model
  – Informative annex: example use of the function
What’s next?

• Is this proposal acceptable from a technical point of view?
  – Any missing bits?
  – Any switch / bridge implementer having issues with such an identification function?

• Mature enough to start editing?
Thank you for your attention
Utiliser paramètres des primitives ISS et EISS

- DestMAC
- SourceMAC
- MSDU
- Tag ? Tags ?

Mask and match applied to MSDU only

Can we say that M&M stream identification is always applied at the ISS of the media independent convergence sublayer ?

=> Pas de notion de tag VLAN