802.1CBdb
EISS-parameters-based
Mask&Match Stream Identification Function
Contents

• Outcome of Bangkok meeting

• New proposal

• 802.1CB’s amendments
OUTCOME OF BANGKOK MEETING
The context

• Recall of the MAC sublayer internal organization, 802.1Q Cl. 6

The MAC Sublayer comprises:

a) Media access method-specific functions that realize transmission and reception of MAC Protocol Data Units (MPDUs).
b) Media access method-dependent convergence functions that use item a) to provide a media access method-independent service.
c) Media access method-independent functions that use a media-independent service to provide the same or another media-independent service.

– A MAC Bridge’s MAC Relay Entity forwards frames between the instances of the media-independent ISS (IEEE Std 802.1AC).

– A VLAN Bridge’s MAC Relay Entity forwards frames between the instances of the media-independent EISS (6.8). The EISS is provided by the functions specified in 6.9 using the media-independent ISS (IEEE Std 802.1AC). The convergence functions that provide the ISS using the media-specific functions for each IEEE 802 LAN MAC type are specified in IEEE Std 802.1AC.
The context

- What 802.1CB says about the stream identification functions’ location in the 802.1 stack
  
  “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.”
Bangkok proposal

- M&M stream identification on top of the ISS

M_UNITDATA.indication
M_UNITDATA.request

- M&M stream identification function using a subset of the ISS indication primitive parameters as inputs (up the stack):
  - destination_address
  - source_address
  - mac_service_msdu
• Mask&Match stream identification function based on 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
Issues

• Possible incompatibility with the stream identification functions already defined in 802.1CB.
  – The 4 functions already defined in 802.1CB are located on top of the EISS (Enhanced Internal Sublayer Service)
  • their integration in the bridging stack is described in the context of VLAN-capable bridges.
Issues

• In addition, the approach taken in the Bangkok proposal was making the M&M stream identification function (kind of) part of the EISS
  – Ending up making it another function supporting the EISS in addition to the tagging and untagging functions.
  – This is not 802.1CB anymore...
M&M identification on top of the EIASS

NEW PROPOSAL
New proposal

• M&M stream identification as passive stream identification function on top of the EISS
  – implemented only up the stack
  – using a subset of the EM_UNITDATA.indication primitive parameters as input

```c
( destination_address,
  source_address,
  mac_service_data_unit*,
  priority,
  drop_eligible,
  vlan_identifier,
  frame_check_sequence,
  service_access_point_identifier,
  connection_identifier,
  flow_hash,
  time_to_live
)
```

* If the frame is VLAN-tagged, the mac_service_data_unit is the mac_service_data_unit provided by the ISS, which VLAN-tag has been removed.
New proposal

• Similar to the Bangkok proposal: a union of 2 sets of masks to be matched:
  – \{da_mask, sa_mask, vlan_id_mask\} U \{msdu_mask\}
    • with \{msdu_mask\} = \{(offset1, length1), (offset2, length2), \ldots, (offsetN, lengthN)\} or Ø
  – with the following conditions:
    • offset = 0 points to the first bit of the mac_service_data_unit
    • The values of N, offsetN and lengthN are bounded.
    • If da_mask is NULL, the destination_address parameter is ignored.
    • If sa_mask is NULL, the source_address parameter is ignored.
    • If the frame is VLAN-tagged and vlan_id_mask is NULL, the vlan_identifier is ignored.
New proposal

• How to determine if a frame is tagged or untagged
  – The EISS indication primitive always provides a vlan_identifier parameter
  – In the case “Port-and-Protocol-based VLAN Classification” (802.1Q Cl. 6.12) is not used
    • Tagged frames can be identified by:
      – vlan_identifier in the range 001-FFE, excluding PVID
    • And untagged frames by:
      – vlan_identifier = PVID
New proposal

• msdu_mask dimensioning:
  – Number of (offset, length) couples
  – Unit of offset and length: bits or bytes
  – Max offset value, max length value

• Would we really need any finer granularity in the definition of the da_, sa_ and vlan_id_ masks?
  – i.e. use for each of these masks a definition similar to the msdu_mask’s
Way Forward

ADDITIONS AND CHANGES TO 802.1CB
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 EIIS interface with the upper layers
    • Uses specific EIIS’s indication primitive parameters as input:
      – source_address, destination_address, vlan_identifier, mac_service_msdu
    • The function defines a set of bit fields obtained by masking these input parameters
    • The stream_handle produced by the function is derived from the matching of the bit field(s) with values defined by network management or stream establishment signaling.

*: name proposal
Changes in 802.1CB

- Clause 9 “Stream Identification Management”
  - Addition of a new `tsnStreamIdlIdentificationType`
    - OUI: 00-80-C2, Type number: 5
  - Addition of managed objects (`tsnStreamIdParameters`) for bit field set identification
    - Sub-clause 9.1.6
    - See next slide

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

- Additional clauses:
  - YANG model
  - Informative annex: example use of the function
## Changes in 802.1CB

- **tsnStreamIdParameters**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>tsnCpeMmIdDestAddMask</td>
<td>48-bit mask to be applied to the destination_address parameter passed up by the EM_UNITDATA.indication primitive</td>
</tr>
<tr>
<td>tsnCpeMmIdDestAddMatch</td>
<td>N-bit value to be matched with the masked destination_address parameter</td>
</tr>
<tr>
<td>tsnCpeMmIdSrcAddMask</td>
<td>48-bit mask to be applied to the source_address parameter passed up by the EM_UNITDATA.indication primitive</td>
</tr>
<tr>
<td>tsnCpeMmIdSrcAddMatch</td>
<td>N-bit value to be matched with the masked destination_address parameter</td>
</tr>
<tr>
<td>tsnCpeMmIdVlanIdMask</td>
<td>12-bit mask to be applied to the vlan_identifier parameter passed up by the EM_UNITDATA.indication primitive</td>
</tr>
<tr>
<td>tsnCpeMmIdVlanIdMatch</td>
<td>N-bit value to be matched with the masked vlan_identifier parameter</td>
</tr>
<tr>
<td>tsnCpeMmIdMsduFieldNb</td>
<td>Number of bit fields to be matched in the mac_service_data_unit parameter passed up by the EM_UNITDATA.indication primitive</td>
</tr>
<tr>
<td>tsnCpeMmIdMsduFieldMask1</td>
<td>Bit field mask, defined by the couple (Offset1, Length1), to be applied to the mac_service_data_unit parameter passed up by the EM_UNITDATA.indication primitive. Result of masking = MsduField1</td>
</tr>
<tr>
<td>tsnCpeMmIdMsduFieldMatch1</td>
<td>Length1-bit value to be matched with MsduField1</td>
</tr>
<tr>
<td>...</td>
<td></td>
</tr>
<tr>
<td>tsnCpeMmIdMsduFieldMaskN</td>
<td>Bit field mask, defined by the couple (OffsetN, LengthN), to be applied to the mac_service_data_unit parameter passed up by the EM_UNITDATA.indication primitive. Result of masking = MsduFieldN</td>
</tr>
<tr>
<td>tsnCpeMmIdMsduFieldMatchN</td>
<td>LengthN-bit value to be matched with MsduFieldN</td>
</tr>
</tbody>
</table>
What’s next?

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

• Mature enough to start editing?
Thank you for your attention