MITSUBISHI ELECTRIC
Changes for the Better

802.1CBdb
Generic Mask & Match stream identification function

IEEE 802.1 Interim Oslo

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Contents

- Outcome of Aug 27 call
- Generic Mask & Match identification function
- Discussion

Starting point

OUTCOME OF AUG 27 CALL

WG feedback

- 2 identification function types presented
  - Ethertype + Application subtype
    - Similar to the existing schemes in 1.CB
  - Simplified Mask & Match based on:
    - a simple L2 header layout
      - 1 level of VLAN encapsulation
    - An {offset, length} bit field location in Upper-Layer payload

- Same concern expressed about both schemes
  - Too restrictive and not future-proof
    - Ethertype + Application subtype : difficult to find an Application subtype definition that fits all application (existing and to be defined) identified by a particular Ethertype
    - Simplified M&M not flexible enough for some existing Ethernet configuration (e.g. VLAN stacking) and future evolutions of the L2 header format.

WG feedback

- IP version distinction issue in 802.1CB-2017
  - Add a note in the « **9.1.5 Managed objects for IP Stream identification** » sub-clauses that reminds the implementer to first check for the IP version before looking up the addresses

9.1.5.4 tsnCpeIpIdIpSource

Specifies the IPv4 (RFC 791) or IPv6 (RFC 2460) source address parameter that must be matched to identify packets coming up from lower layers. An address of all 0 indicates that the IP source address is to be ignored on packets received from lower layers.

9.1.5.5 tsnCpeIpIdIpDestination

Specifies the IPv4 (RFC 791) or IPv6 (RFC 2460) destination address parameter that must be matched to identify packets coming up from lower layers.

First conclusions

- Drop Ethertype + Application subtype.
- Define a fully generic Mask & Match scheme.
  - As an additional optional stream identification function to .1CB
  - That also includes (and does not replace) the existing functions
- Check if the WG agrees with this choice
  - Would some participants be blocked by such a solution
    - Straw poll ?

GENERIC MASK & MATCH-BASED IDENTIFICATION

Principle

- “Flat” approach:
  - No more distinction between L2 and Upper-Layer parameters
    - All identification parameters in a frame are defined using the (offset, length) scheme.

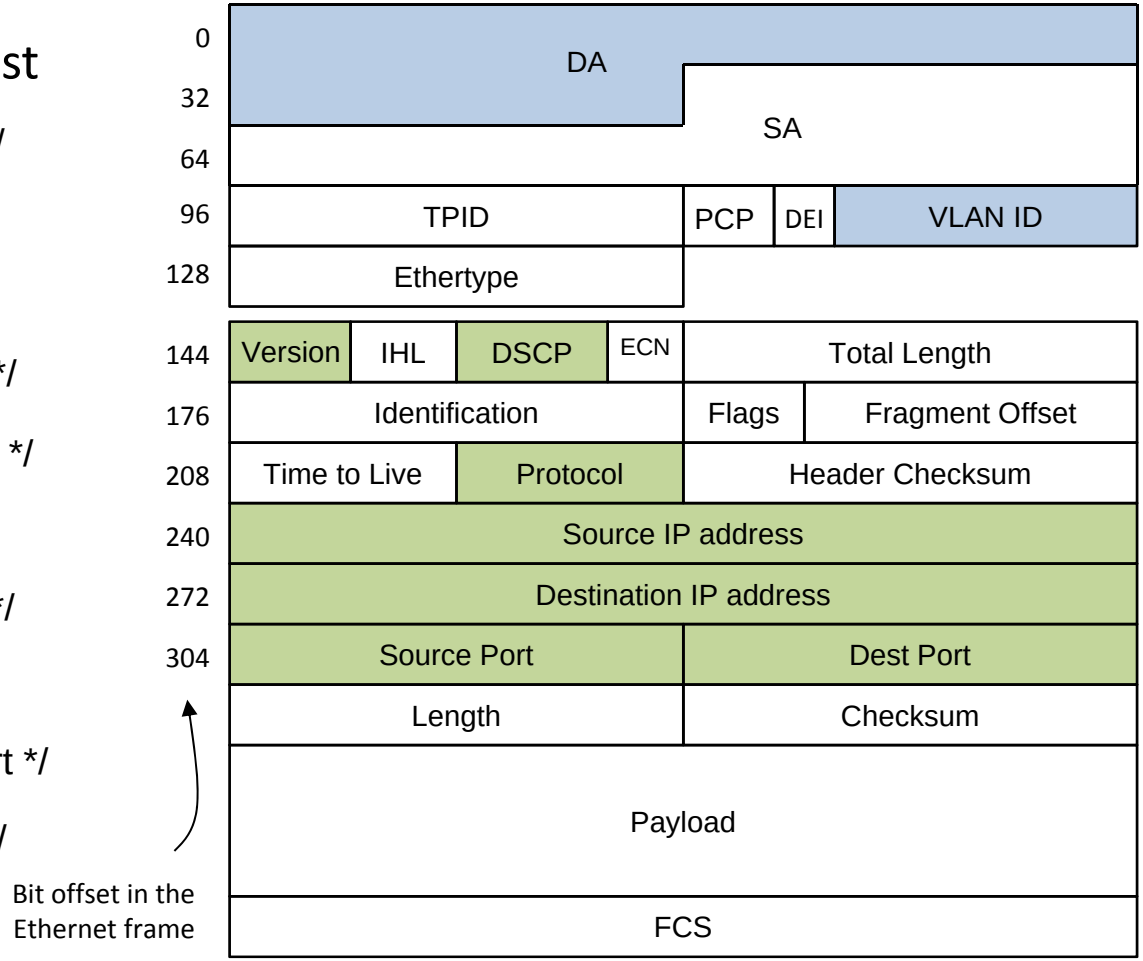
- Identification function’s input parameters = set of (offset, length) pairs
  - Each pair defines a bit field in the Ethernet frame
  - Offset 0 = first bit of the Destination MAC address
  - Offset in bits
  - Length in bits

Example 1

- An example of “flat” identification:
  - Based on 802.1CB-2017’s IPv4 + UDP stream identification

- function parameter list

```
{9;          /* Nb param */
(0,48),      /* DA */
(116,12),    /* VLAN-ID */
(144,4),     /* IP version */
(152,6),     /* DSCP field */
(216,8),     /* Protocol */
(240,32),    /* Source IP */
(272,32),    /*  Dest IP */
(304,16),    /* Source Port */
(320,16)}    /* Dest Port */
```



What is a stream ?

- The proposed solution may be too generic
  - Do we need to introduce constraints and limitation to guaranty that the chosen parameters effectively define a stream ?
    - Stream = unidirectional flow of data from a Talker to one or more Listeners
    - Shall identificationparameters include minimal information pertaining to addressing ?
      - Combination of MAC address(es) and/or VLAN-ID

A variant

- If the answers are yes, it may be better to organize the parameters' list in 2 groups
  - Layer-2 and Upper-Layers
    - Layer-2 group: mandatory
    - Upper-Layers group: optional
  - Minimal mandatory subset in L2 group
    - To be defined
  - Function form:

    {N_{L2}; (L2offset1,L2length1); [(L2offset2,L2length2); …; (L2offsetN_{L2},L2lengthN_{L2})]}

    +

    [{N_{UL}; (ULoffset1,ULlength1); (ULoffset2,ULlength2); …; (ULoffsetN_{UL},ULlengthN_{UL})}]

    $N_{L2} > n$ (n=?)

    $N_{UL} \geq 0$, ULoffset1=0

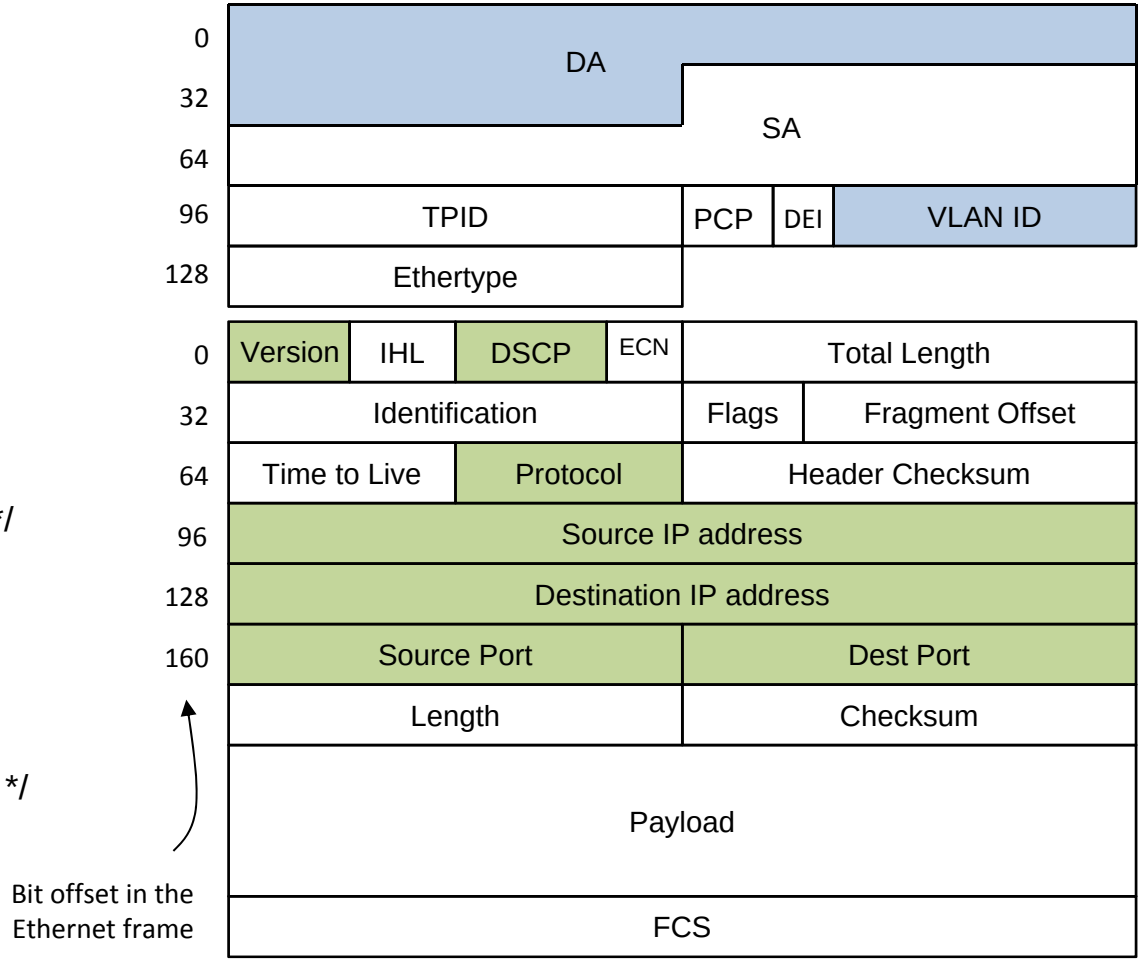
Example 2

- An example of L2-UL identification:
  - Based on 802.1CB-2017's IPv4 + UDP stream identification

- L2 parameter list

  {2; /* Nb param */
  (0,48), /* DA */
  (116,12), /* VLAN-ID */
- UL parameter list

  {7; /* Nb param */
  (0,4), /* IP version */
  (8,6), /* DSCP field */
  (72,8), /* Protocol */
  (96,32), /* Source IP */
  (128,32), /* Dest IP */
  (160,16), /* Source Port */
  (176,16)} /* Dest Port */



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Clarification to 802.1CB-2017

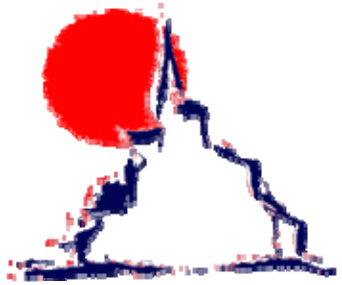
DISCUSSION

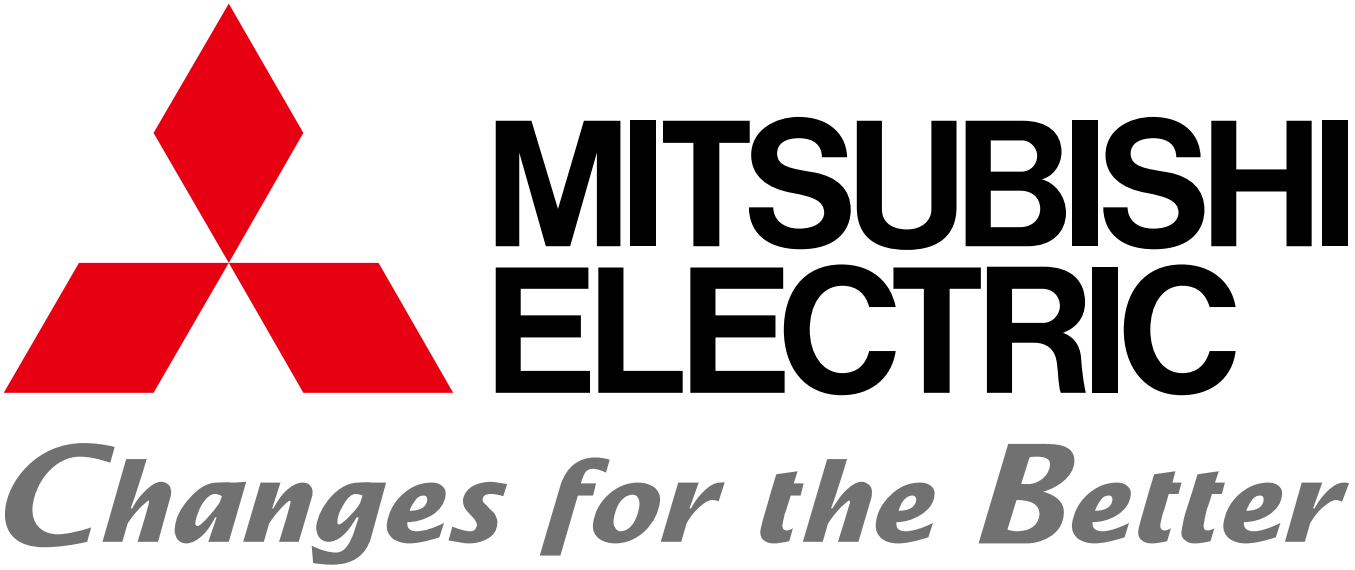
Discussion

- Packet classification using more or less deep packet content “inspection” is an already well deployed mechanism in bridges…

- Would the proposed Mask&Match-based stream identification scheme cause a problem to some WG members regarding their own solutions ?

Thank you for your attention

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