Information Elements for Data Link Layer Traffic Measurement
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Motivation

A Wide-Area Ethernet and a Data Center Bridging has a lot of Ethernet components.
- Many kinds of MAC-Address and VLAN-Tag (VLAN ID and QoS parameter bit), etc.

A variety of traffic monitoring is required.
- Traffic volume for each VLAN and QoS class (for traffic report to customer)
- Multicast traffic volume (for capacity planning and loop detection)

A flexible traffic measurement is required in Ethernet layer.
Proposal

- A flexible traffic measurement in Ethernet layer.
  - Just like ip{Header, Payload}PacketSection for IPv4 and IPv6.
  - Just like mpls{LabelStack, PayloadPacket}Section for MPLS.

- Then I proposed adding tree IEs in the past meeting.
  - dataLinkFrameSize, dataLinkFrameSection, dataLinkFrameType

- I propose adding two IEs in this meeting.
  - dataLinkFrameOffset, dataLinkFrameSectionObservedOctets
Information Elements

- **dataLinkFrameSize:**
  - specifies the length of the selected data link frame.

- **dataLinkFrameSection:**
  - carries n octets from the data link frame of a selected frame, starting dataLinkFrameOffset octets into the frame.

- **dataLinkFrameType:**
  - specifies the type of the selected data link frame.
Information Elements [cont.]

- **dataLinkFrameOffset**: New
  - Specifies the offset of the observed dataLinkFrameSection within the data link frame.

- **dataLinkFrameSectionObservedOctets**: New
  - Specifies the observed length of the dataLinkFrameSection when padding is used.
    - Though IPFIX supports variable-length encoding, Exporter can process fixed-length encoding easier than variable-length and a wasting data is little when extracting size is small.

![Diagram of IEEE 802.1ah frames](image)
Discussion 1

- Where should be the enumeration of dataLinkFrameType value?
  - In dataLinkFrameType’s description
    - Just like flowEndReason and biflowDirection.
    - Very simple at this time but dataLinkFrameType’s description is revised when a new frame type is required.
  - In a new registry
    - Just like mplsTopLabelType.
    - Not simple at this time but only enumeration is revised when a new frame type is required.

4.3. dataLinkFrameType
Description:
This Information Element specifies the type of the selected data link frame.
The following data link types are defined here.
- 0x0001 ETHERNET
Further values may be assigned by IANA.
The data link layer is defined in [ISO_IEC.7498-1_1994].

Abstract Data Type: unsigned16
Data Type Semantics: identifier
ElementId: 347
Status: current
Do we need a generic offset?

- No. `dataLinkFrameOffset` supports only `dataLinkFrameSection`.
  - We cannot have general versatility.
- Yes. `dataLinkFrameOffset` supports all packet section IEs.
  - Then IE name should be changed to “SectionOffset”.
  - We need modify the existing IEs’ description.
    - `ipHeaderPacketSection`:
      - carries a series of octets from the start of the IP header
    - `ipPayloadPacketSection`:
      - carries a series of octets from the start of the IP payload
    - `mplsLabelStackSection`:
      - carries the first n octets from the MPLS label stack
    - `mplsPayloadPacketSection`:
      - carries the first n octets from the MPLS payload
Thank You!