Information Elements for Data Link Layer Traffic Measurement
(draft-kashima-ipfix-data-link-layer-monitoring-03)

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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.

Under a discussion in IEEE 802.1 Data Center Bridging
Proposal

- A flexible traffic measurement in Ethernet layer.
  - Just like ip*PacketSection for IPv4 and IPv6.
  - Just like mpls*LabelStackSection* for MPLS.

Then we proposed adding three IEs in IETF77 meeting.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Data Type</th>
<th>Id</th>
</tr>
</thead>
<tbody>
<tr>
<td>dataLinkFrameType</td>
<td>The type of the selected link frame.</td>
<td>signed32</td>
<td>TBD1</td>
</tr>
<tr>
<td>dataLinkFrameSize</td>
<td>The size of the selected link frame.</td>
<td>unsigned16</td>
<td>TBD2</td>
</tr>
<tr>
<td>dataLinkFrameSection</td>
<td>The first N octets of the selected link frame. A variable length.</td>
<td>octetArray</td>
<td>TBD3</td>
</tr>
</tbody>
</table>
Discussion

Several definitions for “dataLinkFrameType” are considered.

- Reference to “IANAifType”:
  - Good enumeration, but indicates interface type, not frame type.
  - Probably needs more than 8 bit length because it has already reserved from 1 to 255, (including legacy types).

- Sub-type by reusing libpcap (used in tcpdump) frame type:
  - Good enumeration, but is not under the management of IANA.
  - Perhaps needs more than 8 bit length because it has already reserved from 1 to 215, (including legacy types).

- New sub-type:
  - Needs IANA registration, and needs to discuss about list.
  - Needs only 8 bit length if we make a list with only required types.
Discussion [cont.]

- Perhaps an Ethernet-specific method is better than a generic method applicable to all link layer protocols.
  - Just like that mpls*LabelStackSection* is MPLS-specific.
  - Because Ethernet is very common.
  - Ethernet-specific method:
    - “dataLinkFrameType” -> (removed)
    - “dataLinkFrameSize” -> “ethernetFrameSize”
    - “dataLinkFrameSection” -> “ethernetFrameSection”
## Comparison

<table>
<thead>
<tr>
<th>Plan</th>
<th>Plan 1-1</th>
<th>Plan 1-2</th>
<th>Plan 1-3</th>
<th>Plan 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>IANAifType (1-255)</td>
<td>Libpcap (1-215)</td>
<td>New sub-type (1-??)</td>
<td>(removed)</td>
</tr>
<tr>
<td>General Versatility</td>
<td>Good</td>
<td>Good</td>
<td>Good</td>
<td>Bad</td>
</tr>
<tr>
<td>Sub-type Standards Work</td>
<td>Easy (no work)</td>
<td>Not easy (not under the management of IANA)</td>
<td>Difficult</td>
<td>Easy (no work)</td>
</tr>
<tr>
<td>Saving Data Size</td>
<td>Maybe not good (16bit or 32bit if more than 255 types are reserved)</td>
<td>Maybe not good (16bit or 32bit if more than 255 types are reserved)</td>
<td>Good (8bit)</td>
<td>Very good (0 bit)</td>
</tr>
</tbody>
</table>

*Primal plan*
Discussion [cont.]

- Is this valuable as WG item?