LSVR IETF Organizationally Specific TLVs for IEEE Std 802.1AB (LLDP) draft-congdon-lsvr-lldp-tlvs-00.txt

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November 19, 2019
Motivation

- LSVR has a need to exchange information between link adjacent peers.
- L3DL is using a TLV format to represent the information exchanged.
- LLDP uses TLVs to exchange information between link adjacent peers.
- This draft defines LLDP TLVs that can be used to exchange the information needed by LSVR.
- The draft demonstrates how IETF can define their own LLDP TLVs for other uses cases as well.
IEEE Std 802.1AB (LLDP) has two types of TLVs; The base set and an organizationally defined set.

The standard supports vendor and SDO defined TLVs using the ‘Organizationally Specific TLV’ definition as follows:

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Figure 1 LLDP Organizationally Specific TLV Format
Proposed set of LSVR IETF Specific LLDP TLVs

<table>
<thead>
<tr>
<th>Subtype</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Logical Link Endpoint Identifier Attributes</td>
</tr>
<tr>
<td>1</td>
<td>IPv4 Announcement</td>
</tr>
<tr>
<td>2</td>
<td>IPv6 Announcement</td>
</tr>
<tr>
<td>3</td>
<td>MPLS IPv4 Announcement</td>
</tr>
<tr>
<td>4</td>
<td>MPLS IPv6 Announcement</td>
</tr>
<tr>
<td>5-255</td>
<td>Reserved</td>
</tr>
</tbody>
</table>

Comments:

- As far as the authors know, this is the first time IETF Organizationally Specific TLVs have been defined for LLDP.
- The Subtype number space needs to be managed across IETF/IANA – Perhaps RFC 5342 “IANA Considerations and IETF Protocol Usage for IEEE 802 Parameters”
The definition of many of the fields in the TLVs (e.g. LLEI, Attributes, Encaps flags, etc) come from L3DL as a normative reference.

L3DL TLV Per-TLV signatures have not be included

Encapsulation TLVs (IPv4, IPv6) do not include a count of encapsulations because they are fixed length.

In order to prevent having to run an instance of LLDP per LLEI, the LLEI is included in each of the TLVs.

For many of the TLVs, it is possible to send multiple instances of the same type of TLV, but with different contents, to accommodate sending more information that fits into a single TLV.

The expectation is that P802.1ABdh (LLDPv2) will be used to carry the TLVs because it will be likely that the needed set of TLVs will extend beyond the size of a single LLDPDU.
LLEI Attributes TLV

Note: Expect that only a single LLEI TLV per unique LLEI would be sent
IPv4 Announcement TLV

Note: Multiple IPv4 TLVs allowed, but the set of IPv4 Addresses in each TLV should be unique for each LLEI
IPv6 Announcement TLV

Note: Multiple IPv6 TLVs allowed, but the set of IPv6 Addresses in each TLV should be unique for each LLEI.
MPLS IPv4 Announcement TLV

Note: Multiple MPLS IPv4 TLVs allowed, but the set of Labels and IPv4 Addresses in each TLV should be unique for each LLEI
MPLS IPv6 Announcement TLV

Note: Multiple MPLS IPv6 TLVs allowed, but the set of labels and IPv6 Addresses in each TLV should be unique for each LLEI.
Next Steps and Questions

• How should this draft relate to RFC 5342?
• Is it necessary to ‘sign’ each TLV, or can we provide a new signature TLV for LLDPv2 including it’s manifest.
• Fix errors, omissions, clarifications and produce another draft – assuming WG interest.