

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

IETF-106

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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.

Organizationally Specific TLVs for LLDP

- 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:

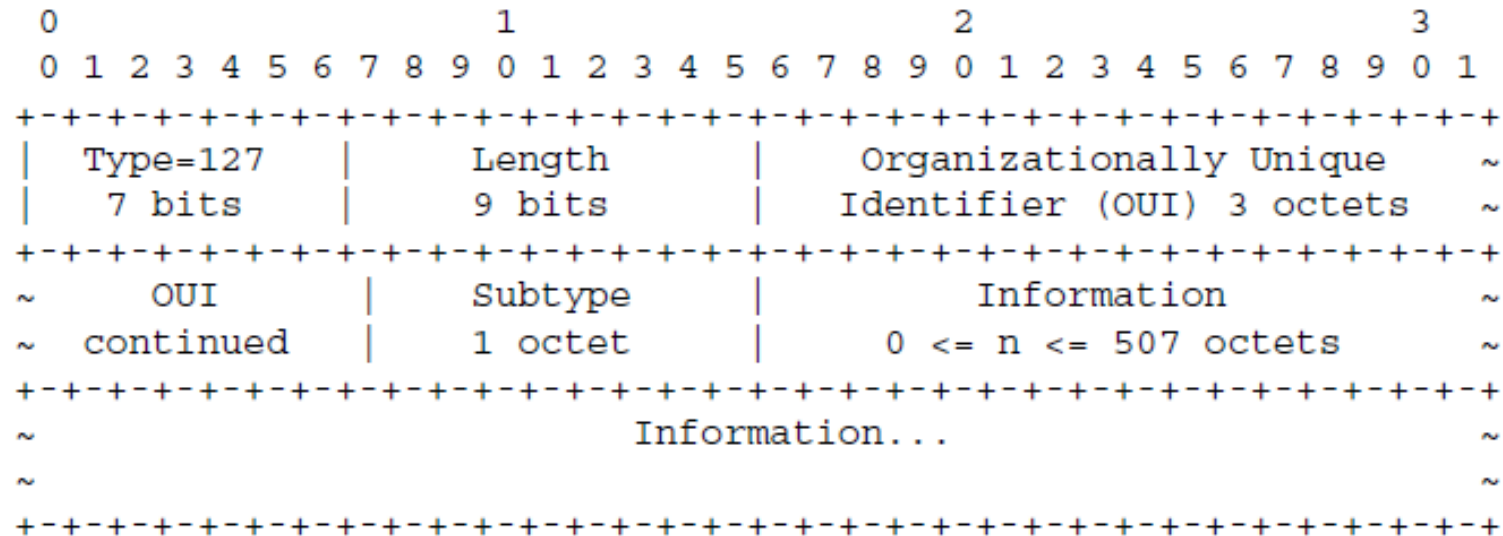


Figure 1 LLDP Organizationally Specific TLV Format

Proposed set of LSVR IETF Specific LLDP TLVs

Subtype	Name
0	Logical Link Endpoint Identifier Attributes
1	IPv4 Announcement
2	IPv6 Announcement
3	MPLS IPv4 Announcement
4	MPLS IPv6 Announcement
5-255	Reserved

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”

LSVR IETF TLV Design Comments

- 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

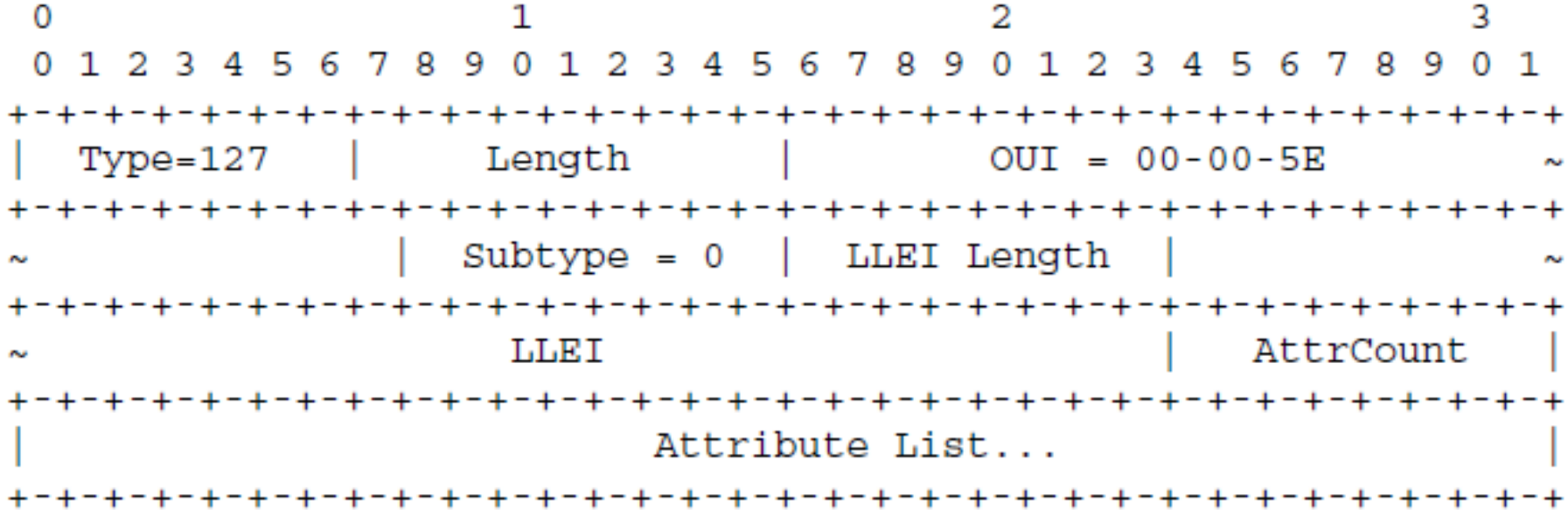


Figure 2 Logical Link Endpoint Identifier Attributes TLV

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

IPv4 Announcement TLV

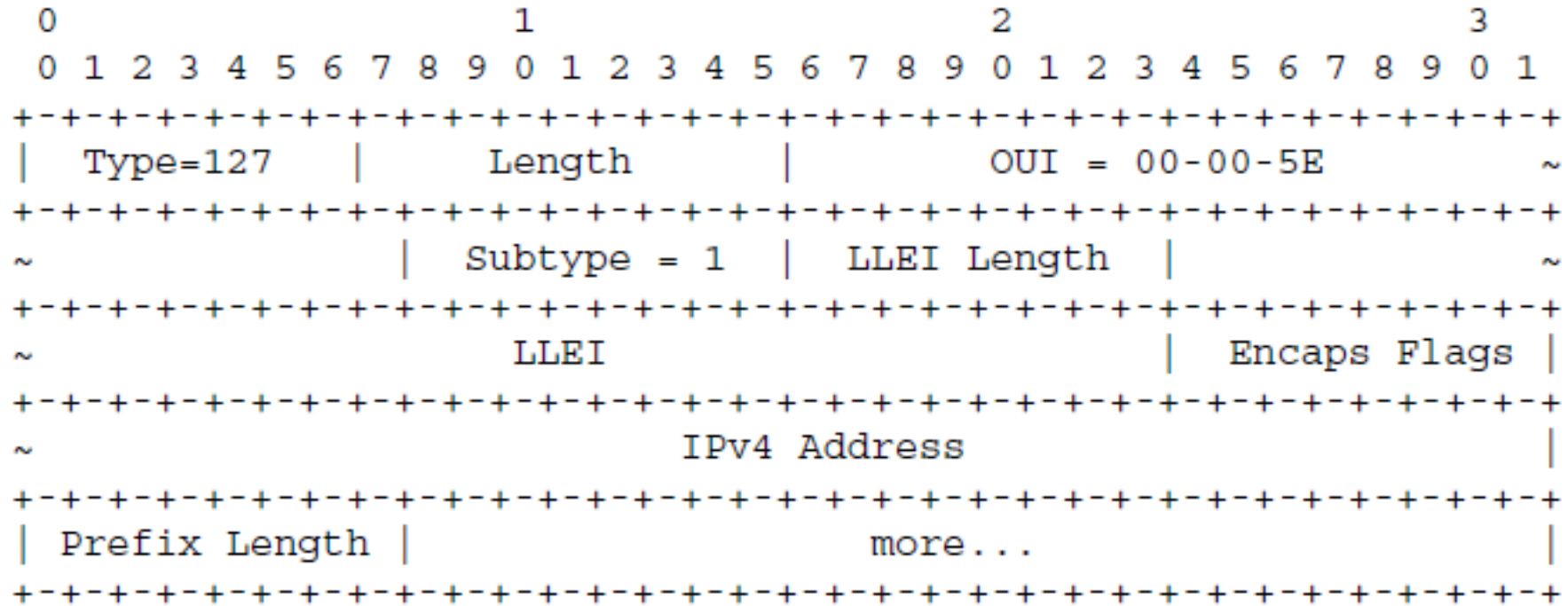


Figure 3 IPv4 Announcement TLV

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

IPv6 Announcement TLV

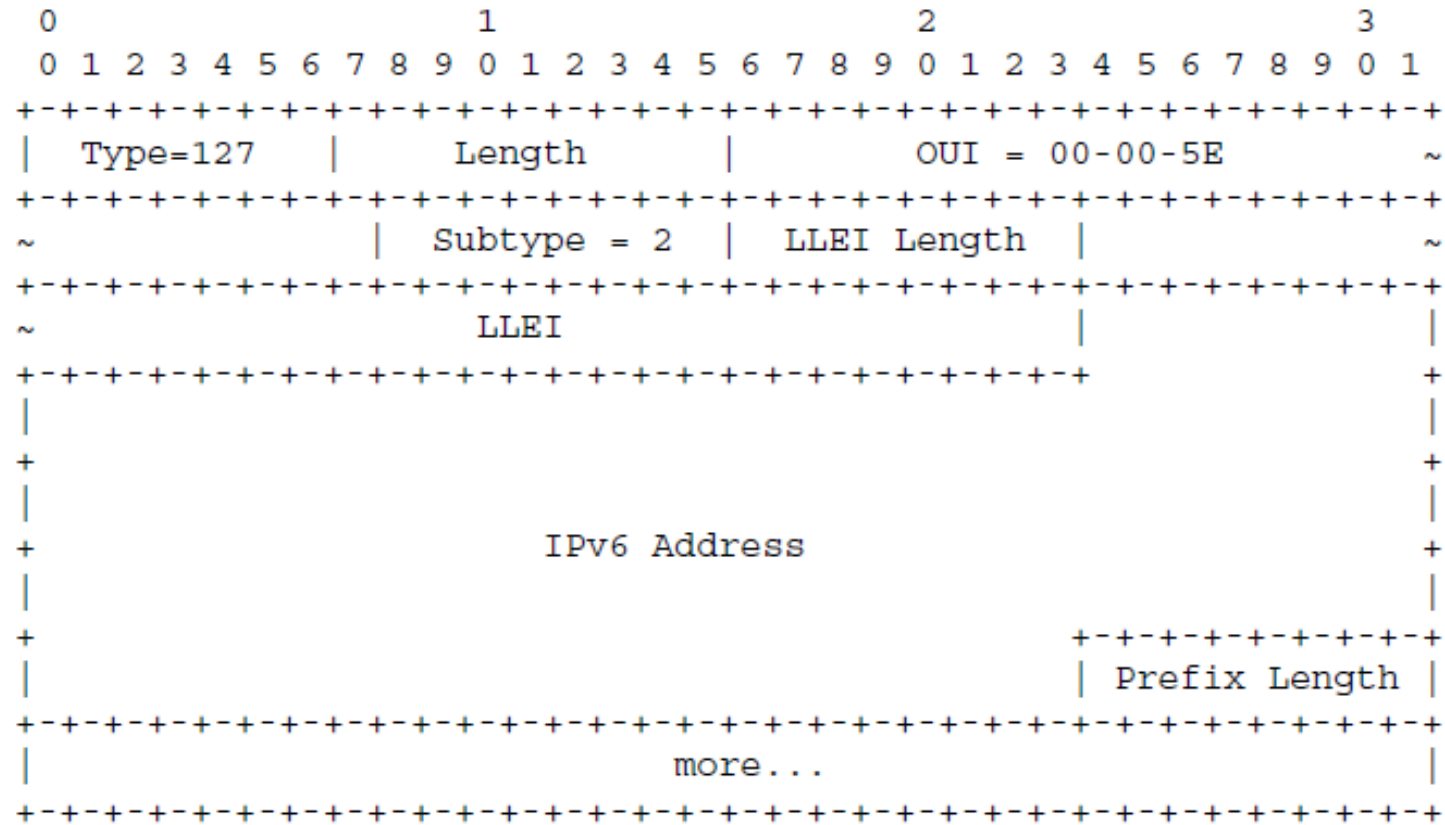


Figure 5 IPv6 Announcement TLV

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

MPLS IPv4 Announcement TLV

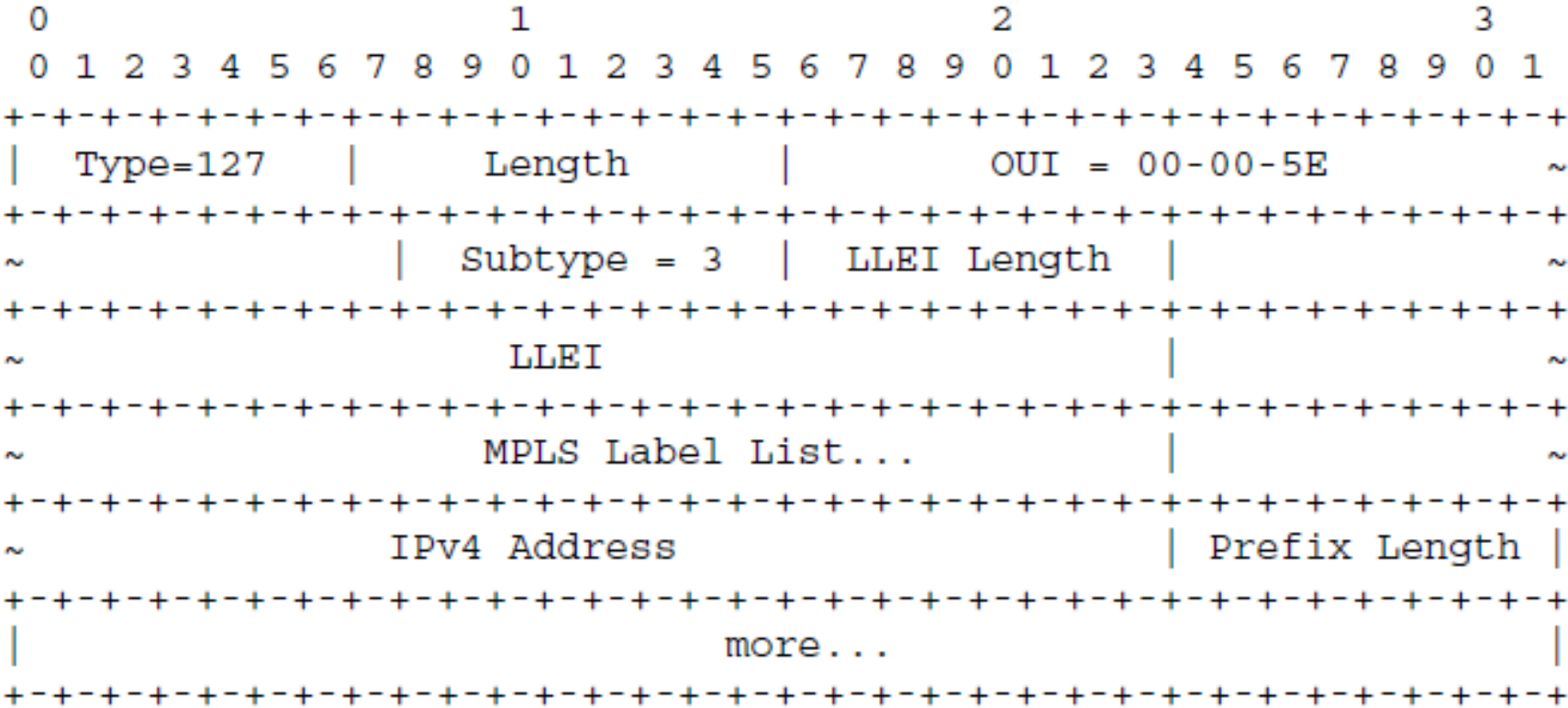


Figure 6 MPLS IPv4 Announcement TLV

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

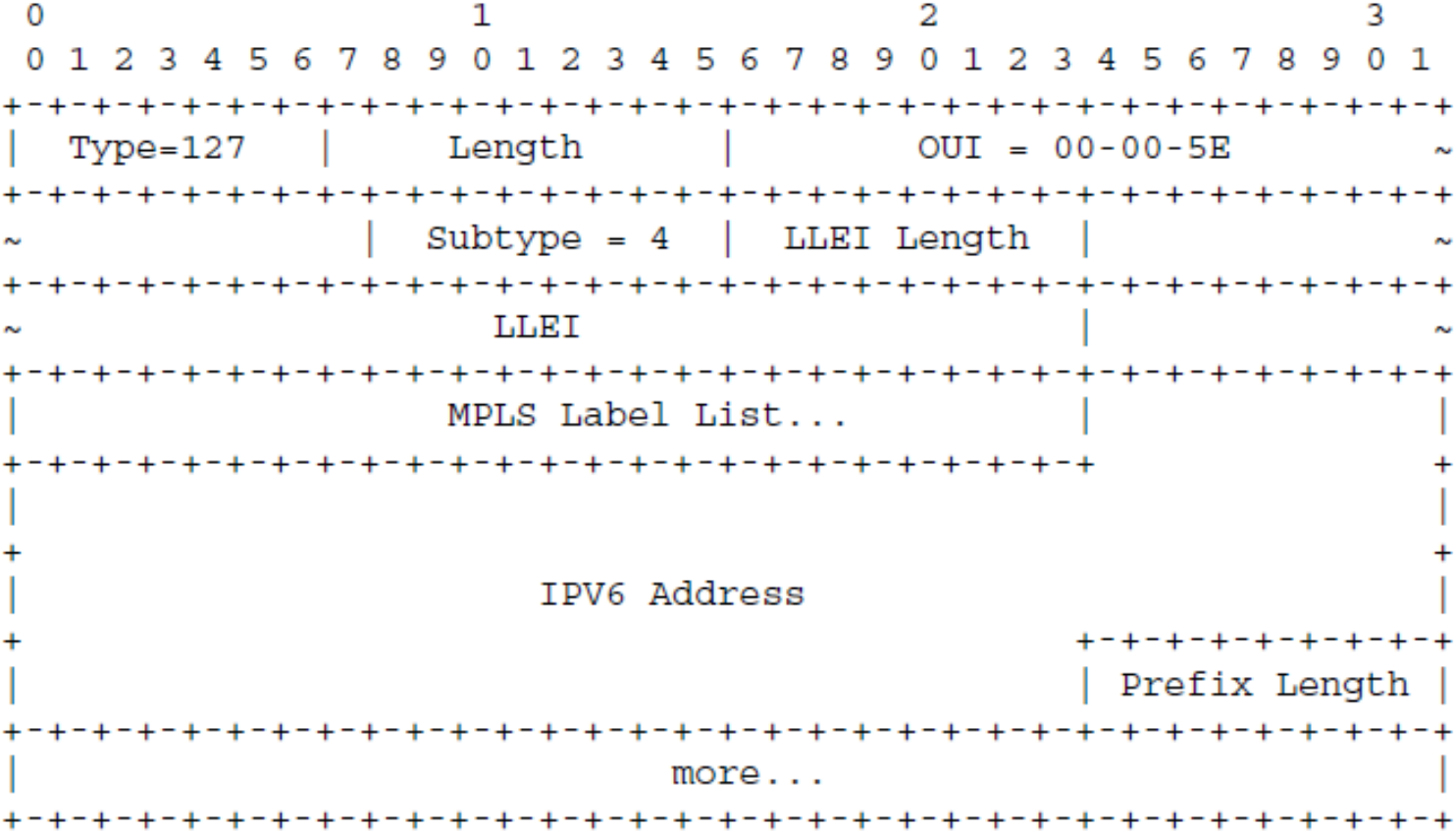


Figure 8 MPLS IPv6 Announcement TLV

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.