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Internet Engineering Task Force (IETF)                    A. Rodriguez-Natal

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The LISP Canonical Address Format (LCAF) [RFC8060] defines the format
and encoding for different address types that can be used on
deployments of the Locator/ID Separation Protocol (LISP) [RFC9300]
[RFC9301].  However, certain deployments require specific format
encodings that may not be applicable outside of the use case for
which they are defined.  This document extends [RFC8060] to introduce
a Vendor-Specific LCAF that defines how organizations can create LCAF
addresses to be used only on particular LISP implementations.  This
document also updates [RFC8060] to specify the behavior when
receiving unrecognized LCAF types.

2.  Requirements Notation

   The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
   "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and
   "OPTIONAL" in this document are to be interpreted as described in
   BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all
   capitals, as shown here.

3.  Unrecognized LCAF Types

   [RFC8060] does not explain how an implementation should handle an
   unrecognized LCAF type.  This document updates [RFC8060] to specify
   that any unrecognized LCAF type received in a LISP control plane
   message MUST be ignored.  If all Locators are ignored, this is
   equivalent to a LISP control message with Locator Count = 0, as
   described in [RFC9301].  If an EID-Prefix only contains unrecognized
   LCAF types, the LISP control message MUST be dropped and the event
   MUST be logged.  (Here, "EID" refers to Endpoint Identifier.)

4.  Vendor-Specific LCAF

   The Vendor-Specific LCAF relies on using the IEEE Organizationally
   Unique Identifier (OUI) [IEEE.802] to prevent collisions across
   vendors or organizations using the LCAF.  The format of the Vendor-
   Specific LCAF is provided below.

```
    0                   1                   2                   3
    0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |           AFI = 16387         |     Rsvd1     |     Flags     |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |   Type = 255  |     Rsvd2     |             Length            |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |     Rsvd3     |   Organizationally Unique Identifier (OUI)   |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |                        Internal format...                    |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

                   Figure 1: Vendor-Specific LCAF

   The fields in the first 8 octets of the above Vendor-Specific LCAF
   are actually the fields defined in the general LCAF format specified
   in [RFC8060].  The Type field MUST be set 255, the value assigned by
   IANA to indicate that this is a Vendor-Specific LCAF; see Section 6.
   The Length field has to be set accordingly to the length of the
   internal format, plus the OUI, plus the Rsvd3 fields, as for
   [RFC8060].  The fields defined by the Vendor-Specific LCAF are as
   follows:

   Rsvd3:  This 8-bit field is reserved for future use.  It MUST be set
      to 0 on transmit and MUST be ignored on receipt.

   Organizationally Unique Identifier (OUI):  This is a 24-bit field
      that carries an OUI or Company ID (CID) assigned by the IEEE
      Registration Authority (RA) as defined by the IEEE Std 802
      [IEEE.802]

   Internal format:  This is a variable-length field that is left

undefined on purpose.  Each vendor or organization can define its
own internal format(s) to use with the Vendor-Specific LCAF.

The Vendor-Specific LCAF type SHOULD NOT be used in deployments where
different organizations interoperate.  However, there may be cases
where two (or more) organizations share a common deployment on which
they explicitly and mutually agree to use a particular Vendor-
Specific LCAF.  In that case, the organizations involved need to
carefully assess the interoperability concerns for that particular
deployment.  It is NOT RECOMMENDED to use an OUI not assigned to an
organization.

If a LISP device receives a LISP message containing a Vendor-Specific
LCAF with an OUI that it does not understand, it MUST drop the
message and it SHOULD create a log message.

## 5.  Security Considerations

This document enables organizations to define new LCAFs for their
internal use.  It is the responsibility of these organizations to
properly assess the security implications of the formats they define.
Security considerations from [RFC8060] apply to this document.

## 6.  IANA Considerations

Following the guidelines of [RFC8126], IANA has assigned the
following value for the Vendor-Specific LCAF from the "LISP Canonical
Address Format (LCAF) Types" registry (defined in [RFC8060]):

```
+=======+=====================+=====================+
| Value | LISP LCAF Type Name |      Reference      |
+=======+=====================+=====================+
|  255  |   Vendor Specific   | RFC 9306, Section 4 |
+-------+---------------------+---------------------+
```

Table 1: Vendor-Specific LCAF Assignment

## 7.  Normative References

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## Acknowledgments

## Authors' Addresses

Alberto Rodriguez-Natal
Cisco
Spain
Email: natal@cisco.com


Vina Ermagan
Google, Inc.
1600 Amphitheatre Parkway
Mountain View, CA 94043
United States of America
Email: ermagan@gmail.com


Anton Smirnov
Cisco
Diegem
Belgium
Email: asmirnov@cisco.com


Vrushali Ashtaputre
Cisco
San Jose, CA
United States of America
Email: vrushali@cisco.com


Dino Farinacci
lispers.net
San Jose, CA
United States of America
Email: farinacci@gmail.com