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            **LISP EID Block Management Guidelines**
            **draft-ietf-lisp-eid-block-mgmnt-06.txt**

Abstract

   This document proposes a framework for the management of the LISP EID
   Prefix.  The framework described relies on hierarchical distribution
   of the address space, granting temporary usage of sub-prefixes of
   such space to requesting organizations.

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## 1.  Requirements Notation

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT",
"SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this
document are to be interpreted as described in [RFC2119].

## 2.  Introduction

The Locator/ID Separation Protocol (LISP - [RFC6830]) and related
mechanisms ([RFC6831], [RFC6832], [RFC6833], [RFC6834], [RFC6835],
[RFC6836], [RFC6837]) separates the IP addressing space into two
logical spaces, the End-point IDentifier (EID) space and the Routing
LOCator (RLOC) space.  The first space is used to identify
communication end-points, while the second is used to locate EIDs in
the Internet routing infrastructure topology.

The document [I-D.ietf-lisp-eid-block] requested an IPv6 address
block reservation exclusively for use as EID prefixes in the LISP
experiment.  The rationale, intent, size, and usage of the EID
address block are described in [I-D.ietf-lisp-eid-block].

This document proposes a management framework for the registration of
EID prefixes from that block, allowing the requesting organisation
exclusive use of those EID prefixes limited to the duration of the
LISP experiment.

## 3.  Definition of Terms

This document does not introduce any new terms related to the set of
LISP Specifications ( [RFC6830], [RFC6831], [RFC6832], [RFC6833],
[RFC6834], [RFC6835], [RFC6836], [RFC6837]).  To help the reading of
this document the terminology introduced by LISP is summarized in
Appendix A.

## 4.  EID Prefix Registration Policy

The request registration of EID prefixes MUST be done under the
following policies:

1.  EID prefixes are made available in the reserved space on a
    temporary basis and for experimental uses.  The requester of an
    experimental prefix MUST provide a short description of the
    intended use or experiment that will be carried out (see
    Section 6).  If the prefix will be used for activities not
    documented in the original description, the renewal of the

registration may be denied.

2.  EID prefix registrations SHOULD be renewed on a regular basis to
    ensure their use by active participants in the experiment.  The
    registration period is proposed to be 12 months.  Registration
    renewal SHOULD NOT cause a change in the registered EID prefix.
    The conditions of registration renewal should no different to the
    conditions of registration.

3.  It is preferable not to reuse EID prefixes whose registration is
    expired.  When an EID prefix registration is removed from the
    registry, then the reuse of the EID prefix in a subsequent
    registration on behalf of a different end user should be avoided
    where possible.  If the considerations of overall usage of the
    EID block prefix requires reuse of a previously registered EID
    prefix, then a minimum delay of at least one week between removal
    and subsequent registration SHOULD be applied by the registry
    operator.

4.  All registrations of EID prefixes cease at the time of the
    expiration of the reserved experimental LISP EID Block.  The
    further disposition of these prefixes and the associated registry
    entries is to be specified in the announcement of the cessation
    of this experiment.


## 5.  EID Prefixes Registration Requirements

All EID prefix registrations MUST respect the following requirements:

1.  All EID prefix registrations MUST use a globally unique EID
    prefix.

2.  If there is more than one registry operator, all operators MUST
    use the same registry management policies and practices.

3.  The EID Prefix registration information as specified in
    Section 6, MUST be collected upon initial registration and
    renewal, and made publicly available though interfaces allowing
    both retrieval of specific registration details (search) and
    enumeration of the entire registry contents (e.g., [RFC7481],
    whois, http, or similar access methods).

4.  The registry operator MUST permit the delegation of EID prefixes
    in the reverse DNS space to holders of registered EID prefixes.

5.  Anyone can obtain an entry in the EID prefix registry, on the
    understanding that the prefix so registered is for the exclusive

use in the LISP experimental network, and that their registration details (as specified in Section 6) are openly published in the EID prefix registry.

## 6.  EID Prefix Request Template

The following is a basic request template for prefix registration so to ensure a uniform process.  Such a template is inspired by the IANA Private Enterprise Number online request form (http://pen.iana.org/pen/PenApplication.page).

Note that all details in this registration become part of the registry, and will be published in the LISP EID Prefix Registry.

The EID Prefix Request template MUST at minimum contain:

1.  Organization (In case of individuals requesting an EID prefix this section can be left empty)

    (a)  Organization Name

    (b)  Organization Address

    (c)  Organization Phone

2.  Contact Person (Mandatory)

    (a)  Name

    (b)  Address

    (c)  Phone

    (d)  Fax (optional)

    (e)  Email

3.  EID Prefix Request (Mandatory)

    (a)  Prefix Size

        +  Expressed as an address prefix length.

   (b)  Prefix Size Rationale

   (c)  Lease Period

        +  Note Well: All EID Prefix registrations will be valid
           until the earlier date of 12 months from the date of
           registration or 31 December 2017.

        +  All registrations may be renewed by the applicant for
           further 12 month periods, ending on 31 December 2017.

        +  According to the 3+3 year experimentation plan, defined
           in [I-D.ietf-lisp-eid-block], all registrations MUST end
           by 31 December 2017, unless the IETF community decides to
           grant a permanent LISP EID address block.  In the latter
           case, registrations following the present document policy
           MUST end by 31 December 2020 and a new policy (to be
           decided - see Section 7) will apply starting 1 January
           2021.

   4.  Experiment Description

   (a)  Experiment and Deployment Description

   (b)  Interoperability with existing LISP deployments

   (c)  Interoperability with Legacy Internet

   5.  Reverse DNS Servers (Optional)

   (a)  Name server name:

   (b)  Name server address:

   (c)  Name server name:

   (d)  Name server address:

   (Repeat if necessary)


## 7.  Policy Validity Period

   Policy outlined in the present document is tied to the existence of
   the experimental LISP EID block requested in
   [I-D.ietf-lisp-eid-block] and valid until 31 December 2017.

   If the IETF decides to transform the block in a permanent allocation,

the LISP EID block reserved usage period will be extended for three
years (until 31 December 2020) so to give time to the IETF to define,
following the policies outlined in [RFC5226], the final size of the
EID block and create a transition plan, while the policy in the
present document will still apply.

Note that, as stated in [I-D.ietf-lisp-eid-block], the transition of
the EID block into a permanent allocation, has the potential to pose
policy issues (as recognized in [RFC2860], section 4.3) and hence
discussion with the IANA, the RIR communities, and the IETF community
will be necessary to determine appropriate policy for permanent EID
prefix management, which will be effective starting 1 January 2021.


## 8.  Security Considerations

This document does not introduce new security threats in the LISP
architecture nor in the Legacy Internet architecture.

For accountability reasons, and in line with the security
considerations in [RFC7020], each registration request MUST contain
accurate information on the requesting entity (company, institution,
individual, etc.) and valid and accurate contact information of a
referral person (see Section 6).


## 9.  IANA Considerations

This document provides only management guidelines for the reserved
LISP EID prefix requested in [I-D.ietf-lisp-eid-block].

There is an operational requirement for an EID registration service
that ensures uniqueness of EIDs according to the requirements
described in Section 5.  Furthermore, there is an operational
requirement for EID registration service that allows a lookup of the
contact information of the entity that registered the EID.

IANA and RIPE NCC agreed for the latter to run such service on behalf
of the former, for the duration of the experiment and following the
procedures outlined in Section 10.


## 10.  Procedures to be followed by RIPE NCC

RIPE NCC will provide the registration service following the EID
Prefix Registration Policy (Section 4) and the EID Prefix
Registration Requirements (Section 5) provided in this document.  The
request form provided by RIPE NCC will include at least the

information from the template in Section 6.  RIPE NCC will make
publicly available all received requests.  While this document does
not suggests any minimum allocation size, RIPE NCC is allowed to
introduce such minimum size for menagement purposes.

## 11.  Acknowledgments

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## Appendix A.  LISP Terms

   LISP operates on two name spaces and introduces several new network
   elements.  This section provides high-level definitions of the LISP
   name spaces and network elements and as such, it must not be
   considered as an authoritative source.  The reference to the
   authoritative document for each term is included in every term
   description.

   Legacy Internet:  The portion of the Internet that does not run LISP
      and does not participate in LISP+ALT or any other mapping system.

   LISP site:  A LISP site is a set of routers in an edge network that
      are under a single technical administration.  LISP routers that
      reside in the edge network are the demarcation points to separate
      the edge network from the core network.  See [RFC6830] for more
      details.

    Endpoint ID (EID):  An EID is a 32-bit (for IPv4) or 128-bit (for
      IPv6) value used in the source and destination address fields of
      the first (most inner) LISP header of a packet.  A packet that is
      emitted by a system contains EIDs in its headers and LISP headers
      are prepended only when the packet reaches an Ingress Tunnel
      Router (ITR) on the data path to the destination EID.  The source
      EID is obtained via existing mechanisms used to set a host's
      "local" IP address.  An EID is allocated to a host from an EID-
      prefix block associated with the site where the host is located.
      See [RFC6830] for more details.

   EID-prefix:  A power-of-two block of EIDs that are allocated to a
      site by an address allocation authority.  See [RFC6830] for more
      details.

   EID-Prefix Aggregate:  A set of EID-prefixes said to be aggregatable
      in the [RFC4632] sense.  That is, an EID-Prefix aggregate is
      defined to be a single contiguous power-of-two EID-prefix block.
      A prefix and a length characterize such a block.  See [RFC6830]
      for more details.

   Routing LOCator (RLOC):  A RLOC is an IPv4 or IPv6 address of an
      egress tunnel router (ETR).  A RLOC is the output of an EID-to-
      RLOC mapping lookup.  An EID maps to one or more RLOCs.
      Typically, RLOCs are numbered from topologically aggregatable
      blocks that are assigned to a site at each point to which it

   attaches to the global Internet; where the topology is defined by
   the connectivity of provider networks, RLOCs can be thought of as
   Provider Aggregatable (PA) addresses.  See [RFC6830] for more
   details.

 EID-to-RLOC Mapping:  A binding between an EID-Prefix and the RLOC-
   set that can be used to reach the EID-Prefix.  The general term
   "mapping" always refers to an EID-to-RLOC mapping.  See [RFC6830]
   for more details.

Ingress Tunnel Router (ITR):  An Ingress Tunnel Router (ITR) is a
   router that accepts receives IP packets from site end-systems on
   one side and sends LISP-encapsulated IP packets toward the
   Internet on the other side.  The router treats the "inner" IP
   destination address as an EID and performs an EID-to-RLOC mapping
   lookup.  The router then prepends an "outer" IP header with one of
   its globally routable RLOCs in the source address field and the
   result of the mapping lookup in the destination address field.
   See [RFC6830] for more details.

Egress Tunnel Router (ETR):  An Egress Tunnel Router (ETR) receives
   LISP-encapsulated IP packets from the Internet on one side and
   sends decapsulated IP packets to site end-systems on the other
   side.  An ETR router accepts an IP packet where the destination
   address in the "outer" IP header is one of its own RLOCs.  The
   router strips the "outer" header and forwards the packet based on
   the next IP header found.  See [RFC6830] for more details.

Proxy ITR (PITR):  A Proxy-ITR (PITR) acts like an ITR but does so on
   behalf of non-LISP sites which send packets to destinations at
   LISP sites.  See [RFC6832] for more details.

Proxy ETR (PETR):  A Proxy-ETR (PETR) acts like an ETR but does so on
   behalf of LISP sites which send packets to destinations at non-
   LISP sites.  See [RFC6832] for more details.

Map Server (MS):  A network infrastructure component that learns EID-
   to-RLOC mapping entries from an authoritative source (typically an
   ETR).  A Map Server publishes these mappings in the distributed
   mapping system.  See [RFC6833] for more details.

Map Resolver (MR):  A network infrastructure component that accepts
   LISP Encapsulated Map-Requests, typically from an ITR, quickly
   determines whether or not the destination IP address is part of
   the EID namespace; if it is not, a Negative Map-Reply is
   immediately returned.  Otherwise, the Map Resolver finds the
   appropriate EID-to-RLOC mapping by consulting the distributed
   mapping database system.  See [RFC6833] for more details.

The LISP Alternative Logical Topology (ALT):  The virtual overlay
   network made up of tunnels between LISP+ALT Routers.  The Border
   Gateway Protocol (BGP) runs between ALT Routers and is used to
   carry reachability information for EID-prefixes.  The ALT provides
   a way to forward Map-Requests toward the ETR that "owns" an EID-
   prefix.  See [RFC6836] for more details.

ALT Router:  The device on which runs the ALT.  The ALT is a static
   network built using tunnels between ALT Routers.  These routers
   are deployed in a roughly-hierarchical mesh in which routers at
   each level in the topology are responsible for aggregating EID-
   Prefixes learned from those logically "below" them and advertising
   summary prefixes to those logically "above" them.  Prefix learning
   and propagation between ALT Routers is done using BGP.  When an
   ALT Router receives an ALT Datagram, it looks up the destination
   EID in its forwarding table (composed of EID-Prefix routes it
   learned from neighboring ALT Routers) and forwards it to the
   logical next-hop on the overlay network.  The primary function of
   LISP+ALT routers is to provide a lightweight forwarding
   infrastructure for LISP control-plane messages (Map-Request and
   Map-Reply), and to transport data packets when the packet has the
   same destination address in both the inner (encapsulating)
   destination and outer destination addresses ((i.e., a Data Probe
   packet).  See [RFC6830] for more details.


## Appendix B.  Document Change Log

   Version 06 Posted August 2015.

   o  Fixed Authors addresses and typo in section 10.

   Version 05 Posted July 2015.

   o  Added explicit text about RIPE NCC providing the registration
      service during the temporary experiment.

   Version 04 Posted December 2014.

   o  Added two clarification sentences to address the comments of E.
      Lear and D. Saucez during WG LC.

   Version 03 Posted October 2014.

   o  Re-worded the document so to avoid confusion on "allocation" and
      "assignement".  The document now reffers to "registration".  As
      for comments by G. Huston and M. Binderberger.

Version 02 Posted July 2014.

o  Deleted the trailing paragraph of Section 4, as for discussion in
   the mailing list.

o  Deleted the fees policy as of suggestion of G. Huston and
   discussion during 89th IETF.

o  Re-phrased the availability of the registration information
   requirement avoiding putting specific numbers (previously
   requiring 99% up time), as of suggestion of G. Huston and
   discussion during 89th IETF.

Version 01 Posted February 2014.

o  Dropped the reverse DNS requirement as for discussion during the
   88th IETF meeting.

o  Dropped the minimum allocation requirement as for discussion
   during the 88th IETF meeting.

o  Changed Section 7 from "General Consideration" to "Policy Validity
   Period", according to J. Curran feedback.  The purpose of the
   section is just to clearly state the period during which the
   policy applies.

Version 00 Posted December 2013.

o  Rename of draft-iannone-lisp-eid-block-mgmnt-03.txt.


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