LISP DEPLOYMENT DRAFT -05

(DRAFT-IETF-LISP-DEPLOYMENT-05.TXT)

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LISP Deployment Draft -05

“This document discusses the different scenarios for the deployment of the new network elements introduced by LISP”

• Diffs from -04
  • Fresh review
  • Reorganized references (Normative/Informative)

• Ask for WG Last Call
Deployment of Tunnel Routers

- **Customer Edge**
  - Common scenario

- **Provider Edge**
  - No changes at CE router

- **Split ITR/ETR**
  - Route packets according to the destination RLOC

- **Inter-Service Provider Traffic Engineering**
  - LISP between two ISPs (TE)

- **ITR/ETR behind NAT**
Map-Server and Resolvers

• Map-Servers:
  • Typically deployed by Mapping Service Providers (MSP)
    • EID Registrar
    • Third Parties
  • Recommend redundant Map-Servers

• Map-Resolvers
  • Close to the ITR that are servicing
  • Manual configuration of the RLOC of the Map-Resolver
  • Anycast RLOC
Proxy Tunnel Routers

- **PITR**
  - A site can delegate BGP announcement to a PITR
    - Aggressive aggregation
  - Keep announcing it(s) prefix(es)

- **PETR**
  - Unicast Reverse Path Forwarding (uRPF)
  - IPv4-to-IPv6 transition
Migration to LISP

- LISP+BGP
  - BGP prefix(es) announced by the xTR
- Mapping Service Provider (MSP) P-ITR Service
  - BGP prefix(es) announced by the PITR
- Proxy-ITR Route Distribution (PITR-RD)
  - BGP network of PITRs

<table>
<thead>
<tr>
<th>Phase</th>
<th>LISP+BGP</th>
<th>MSP+P-ITR</th>
<th>PITR-RD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early transition</td>
<td>No changes</td>
<td>Slower increase</td>
<td>Slower increase</td>
</tr>
<tr>
<td>Late transition</td>
<td>May decrease</td>
<td>Slower increase</td>
<td>Slower increase</td>
</tr>
<tr>
<td>LISP Internet</td>
<td></td>
<td>Considerable Decrease</td>
<td></td>
</tr>
</tbody>
</table>
Step-by-Step Example BGP to LISP Migration Procedure

- Short manual + Checklist of stub-network migrating to LISP
  - Assumes PITR scenario

1. Customer Pre-Install and Pre-Turn-up Checklist
2. Customer Activating LISP Service
3. Cut-Over Provider Preparation and Changes
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BACKUP SLIDES

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Proxy-ITR Requirements

- Keep Interworking Independent of any given mapping system
  - They should use map-resolver/map-server interface

- Provide for consistent origin of EID-routes in accordance with existing Internet best practices
  - The design should not break SIDR, or AS-Path filtering on provider routers

- Allow for policy between P-ITR operators to be reflected in the announcement of EID-Routes into the DFZ, without requiring a central arbitration AS

- Provide for troubleshooting when encapsulation failure prevents communication
Proxy-ITR Requirements

- Permit origination changes to be reflected in large number of Proxy ITRs
  - Every PITR deployed shouldn’t have to be modified when the origin of one EID prefix is changed

- Allow for Proxy-ITR only transit providers to exist
  - The design should not preclude providers who want to offer Proxy ITRs but not mapping services

- Keep the design simple as possible, change as little as necessary
  - Use existing tools and protocols, don’t change the way SP’s work or expect changes to the LISP protocol or mapping system to support this
Proxy-ITR Route Origination

- **EID Route Server** is a router that either propagates routes learned from other EID Route Servers, or it originates EID Routes. The EID-Routes that it originates are those that it is authoritative for. It propagates these routes to Proxy-ITRs within the AS of the EID-Route-Server.

- **EID-Route** is a prefix originated via the Route Server of the mapping service provider, it the Mapping Service Provider, or Proxy Service Provider, may aggregate it if it has multiple customers inside a single netblock (like we do with 153.16.0.0/16 today)
  
  - This prefix is propagated to other PITRs both within the MSP and to other PITR operators it peers with
Proxy-ITR Route Origination

- A EID Route Server distributes routes to other domain’s servers via Multi-Hop eBGP to connect to other Autonomous Systems/PITR operators. This keeps the origin-AS of a given EID-Route consistent.
  - This means SIDR techniques could be applied to this technique
- An EID Route Server may be collocated with a map-server, or a Proxy ITR, but they act independently
Use BGP route servers to propagate EID-Routes to remote Proxy ITRs
Proxy ITR Route Origination

- Decoupling EID origination and propagation provides the following benefits
  - It can accurately reflect business relationships between the P-ITR operators due to explicit peering (which aids in troubleshooting as well)
  - It further decouples Proxy-ITRs from the ALT, using the MR and MS infrastructure just like site ITRs (less things attached to the ALT makes it easier to replace)
  - It only requires minor changes to PITR implementation, and none to existing Mapping systems.
LISP Customer Pre-install

- SP connections → RLOCs
- ‘show version’ → LISP support?
- Customize old config
- 1556 MTU if possible
- Prefix validation
- RLOC reachability check
- OOB router connectivity
Customer Activating LISP

- Load new configs customized by SP
- Soft shutdown of existing eBGP sessions
Provider Checklist

- Site config and active registration
- Add EID-space to map-cache on proxies
- BGP advertisments on proxies
- Test traffic