LISP for ILA

draft-rodrigueznatal-ila-lisp-00

IETF 101 - London
Overview

• Identifier-Locator Addressing (ILA)
  • ID-LOC split data-plane leveraging IPv6 “address transformation”

• LISP can be used as control-plane for an ILA data-plane
  • Without changes in ILA or LISP architectures

• Current ILA-LISP spec based on draft-herbert-intarea-ila-00
Singleton addressing in ILA

Identifier to locator mapping and translation

Forwarding over underlay

Restore original prefix
Reference topology
Devices and Roles

- **MSMR**
  - Stores all mappings in the domain (or shard)

- **ILA-R**
  - Complete map-cache for the mappings in the domain (or shard)
  - Subscribed to the MSMR or co-located
  - Announcing anycast SIR prefix into the underlay
  - Default path for data packets

- **ILA-N**
  - Incomplete map-cache (population on demand)
  - Connected to endpoints
ILA Address Encoding in LISP

- ILA LCAF types
  - Explicit length
  - Explicit ILA meaning
  - Metadata bits

- Alternatively
  - Plain IPv6 encoding
## Mapping Resolution

### Identifier Resolution
- Retrieve Locator
- Basic Operation

### Endpoint Address Resolution
- Retrieve Identifier (and Locator)
- Virtualization
  - Tenant Prefix to VNID
- Non-Local Address
  - NLA to Identifier
Map-Request/Map-Reply

1. ILA-N
2. ILA-R
3. MSMR
4. ILA-N
5. ILA-N

- LISP signaling
- SIR traffic
- ILA traffic
Map-Notify

LISP signaling
SIR traffic
ILA traffic
Deployment Considerations

• Transport
  • UDP or TCP
• ILA-R and MSMR co-location (no need to subscribe)
• Pro-active mapping push to destination ILA-N
• Multiple ILA domains
• Checksum adjustment per locator
LISP Control-Plane for other Data-Planes

<table>
<thead>
<tr>
<th>Site Name</th>
<th>EID-Prefix or (S,G)</th>
<th>Registered</th>
<th>Last Registerer</th>
<th>Last Registered</th>
<th>First Registered</th>
<th>Registration Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRv6</td>
<td>[1545]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[1545]facebook'</td>
<td>[face:b00c::/64]</td>
<td>yes (dynamic)</td>
<td>[0]:127.0.0.1</td>
<td>0:00:19</td>
<td>3:57:26</td>
<td>p-s-l-t-r-m-n</td>
</tr>
<tr>
<td>[1545]2001:5:face:b00c::/64</td>
<td>yes (dynamic)</td>
<td>[0]:127.0.0.1</td>
<td>0:00:19</td>
<td>3:57:26</td>
<td>p-s-l-t-r-m-n</td>
<td></td>
</tr>
<tr>
<td>[1545]google'</td>
<td>[face:b00c::/64]</td>
<td>yes (dynamic)</td>
<td>[0]:127.0.0.1</td>
<td>0:00:19</td>
<td>3:57:26</td>
<td>p-s-l-t-r-m-n</td>
</tr>
<tr>
<td>ila</td>
<td>[1540]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[1540]2001:5:face:b00c::/128</td>
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<td>[0]:127.0.0.1</td>
<td>0:00:19</td>
<td>3:57:26</td>
<td>p-s-l-t-r-m-n</td>
<td></td>
</tr>
<tr>
<td>[1540]2001:5:face:b00c::/2/128</td>
<td>yes (dynamic)</td>
<td>[0]:127.0.0.1</td>
<td>0:00:19</td>
<td>3:57:26</td>
<td>p-s-l-t-r-m-n</td>
<td></td>
</tr>
<tr>
<td>[1540]Facebook-sir-prefixes'</td>
<td>[face:b00c::/64]</td>
<td>yes (dynamic)</td>
<td>[0]:127.0.0.1</td>
<td>0:00:19</td>
<td>3:57:26</td>
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</tr>
</tbody>
</table>

**ILA SIR-Prefix**

**IPv6 EID**

**lispers.net**

Scalable Open Overlay Networking

Site name: ila, EID-prefix: [1540]2001:5:face:b00c::1/128, registered: yes, dynamic
Description:
Last registerer: [0]:127.0.0.1, XTR-ID: 0xdead679b8de6b3a, site-ID: 0
First registered: 3:57:26, last registered: 0:00:19, auth-type: sla2, registration flags: p-s-l-t-r-m-n
Default registration timeout TTL: 180 seconds
Forcing proxy Map-Reply: yes
Forcing proxy Map-Reply for xTRs behind NATs: no
Send drop-action proxy Map-Reply to PTR: no
Proxy Map-Reply action: not configured
Allowed RLOC-set: any
Registered RLOC-set (replacement semantics):
[0]:127.0.0.1/32, [1]:2001:5:face:b00c::1/128, [2]:2001:5:face:b00c::2/128
Individual registrations: none

**ILA Locator**

**SRv6 SIDs**
Thanks!