LISP Mobile Node

draft-meyer-lisp-mn-00.txt

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Agenda

- User and Network Goals for LISP MN
- Overview of the Solution
- Control and Data Plane operation while Roaming
- Summary
- Draft Disposition
- Q&A
User Goals

• Allow a MN to roam while keeping TCP connections alive

• Allow a MN to talk to MN while roaming when either can be a client or server
  – or p2p or ...

• Allow multi-homing on MN
  – MN can set ingress policies for reception of traffic
  – e.g., active-active with simultaneous v4 and v6 ingress flows

• Shortest path bidirectional traffic between MN and SN as well as between MN and MN
  – No triangle routing in data path
Network Goals

• No MN EID state in core
  - MN-based state only in Map-Server and ITRs (and PTRs) which are talking to MN
  - ➔ No /32 (/128) state in either the ALT or the DFZ control-planes

• Use existing LISP mapping system components as anchor points for LISP mobile nodes
  - In particular, the Map Server/Resolver infrastructure
  - Note that these components are not part of the data-plane
**Solution Overview**

- MN is a lightweight ITR and ETR for itself
- MN sends Map-Requests
- A MN may send Map-Replies
  - A MN can ask its Map-Server to “proxy Map-Reply” by setting the proxy-map-reply bit in its Map-Register messages
- All packets originated by MN are LISP encapsulated
  - Packets destined for non-LISP destinations are decapsulated by a Proxy ETR (PETR)
Solution Overview, cont.

• A **MN ALWAYS** Map-Registers with its provisioned Map-Server
  - That Map-Server is configured to advertise an aggregate covering the MN’s EID into the ALT
  - This allows the ALT to scale in the presence of mobile nodes since mobile node specific state is not propagated into the ALT

• For existing cachers (ITRs or PTRs)
  - Cachers respect MN’s (possibly lower) TTL
  - MN can SMR
  - MN can send Map-Request (with verifying Map-Request)
Roaming - Control Plane

(1) No matter where MN3 roams, MN1 and MN2 can find its locator by using the database mapping system.

(2) Only the Map-Server will store 153.16.1.1/32 state with the latest set of RLOCs.

(3) Data always travels on shortest path to and from MN.

Legend:
- EIDs -> Green, RLOCs -> Red
- 3G network -> 3.0.0.0/8
- 4G network -> 4.0.0.0/8
- BGP-over-GRE
- Map-Register
- BGP update

EID: 153.16.2.1

EID: 153.16.3.1

EID: 153.16.1.1

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Roaming - Data Plane

Map-Cache entry:
EID-prefix: 153.16.1.1/32
RLOC-set:
4.4.4.4, priority: 1, weight: 50
3.3.3.3, priority: 1, weight: 50

DNS entry:
mn.abc.com A 153.16.1.1

Legend: EIDs -> Green, Locators -> Red

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Summary

• Using the Map-Server/Map-Resolver service interface
  - We get scalable roaming with same LISP infrastructure used for multi-homing and route scaling
  - LISP sites talk to each other and MNs talk to each other over same infrastructure
• Anchor point architecture allows mobile nodes to be discovered in the control-plane
• Data-plane has no stretch and therefore no packet delivery latency
• Addressing scales routing because it maps to the physical topology
Routing must scale to support the mobile node Internet.

LISP map-server and ALT infrastructure are mechanisms to do this for stationary sites which change addresses.

Same infrastructure used when mobile nodes change addresses.

Therefore LISP MN is within the charter of LISP WG.
Q&A

Thanks!