LISP Site External Connectivity Update

draft-jain-lisp-site-external-connectivity

IETF 117 – San Francisco, USA
July 2023
What changed between 07 & 08:
Addressed review comments, added pub-sub
Dynamic External Connectivity for LISP Site

• When destination is ‘unknown’ or ‘known but not registered’ to LISP site

• Suggests LISP mechanisms to
  • register/update pETR to mapping system
  • request/subcribe for pETR
  • dynamically notify/publish pETR to ITR
  • specify pETR RLOC-set in map-reply
  • install/update map-cache with pETR at ITR
pETR Registration/Update

Same Map-Register procedures and record format as in [RFC9301] with the following contents:

- An "EID-Prefix" as an agreed upon or configurable "Distinguished Name" according to [I-D.ietf-lisp-name-encoding].


- Additional information MAY be encoded in vendor specific LCAF type [RFC9306] about the registering pETR such as,
  - performance matrix,
  - location,
  - resource availability,
  - local ETR information for the Mapping System to make preference decision.
pETR Request/Subscription

Same Map-Request procedures and record format as in [RFC9301] with the following contents:

• An "EID-Prefix" MAY be as an agreed upon or configurable "Distinguished Name" according to [I-D.ietf-lisp-name-encoding]

• **N-bit MAY be set as per [I-D.ietf-lisp-pubsub]**

• Additional information MAY be encoded in vendor specific LCAF type [RFC9306] about the requesting ITR such as,
  • performance matrix,
  • location
  • Source/ITR information to help make preference decision.
pETR Notification/Publication

With lisp-pubsub [I-D.ietf-lisp-pubsub], N-bit SHOULD be set in the Map-Request from ITR.

Whenever pETR gets updated in the mapping system, mapping system sends Map-Notify (Publication) messages to update ITRs.

Same Map-Notify procedures and record format as in [RFC9301] with the following contents:

- An "EID-Prefix" as an agreed upon or configurable "Distinguished Name" according to [I-D.ietf-lisp-name-encoding].
- TTL MAY be shorter than regular.
- Additional information MAY be encoded in vendor specific LCAF type [RFC9306] about the pETR RLOCs such as,
  - performance matrix,
  - location,
  - resource availability,
  - preferred RLOC(s) information to communicate preference
pETR Resolution

• When the Map-Server (or ETR) determines that the destination is external or unknown to the mapping system, it sends a Map-Reply containing the pETR information.

• Same Map-Reply procedures and record format as described in [RFC9301] for regular map-reply and negative-map-reply.

• This Map-Reply (for pETR) has the following contents:
  • EID-Prefix MAY be same as Distinguished Name in map-request OR an EID-Prefix calculated as non-LISP "hole" per the procedures in [RFC9301] for negative map-reply
  • RLOC count MUST be non-zero.
  • Each locator in the RLOC-set MAY be encoded as per [I-D.ietf-lisp-vpn] for VPN environments.
  • TTL MAY be shorter than regular map-reply.
  • Additional information MAY be encoded in vendor specific LCAF type [RFC9306] about the mapping.
pETR Map-Cache Update

• On receiving pETR Map-Notify/Map-Reply from the mapping system, ITR MAY install/update map-cache and encapsulate the packets to pETR RLOCs as per [RFC 9300]. This can be implemented as follows,

  • ITR SHOULD configure the known EID-blocks in its map-cache to always generate Map-Request for known EIDs. These would be more specific map-cache entries than “hole” EID-Prefix or default map-cache entries.

  • On receiving pETR Map-Notify/Map-Reply, ITR MAY install/update following map-cache entries with pETR RLOCs,
    • “hole” prefix [RFC9301] map-cache entry to encapsulate the packets to pETR RLOCs
    • default map-cache entry to encapsulate the packets to pETR RLOCs.
Example Use Case: Default-pETR

- Map-register/map-notify for ‘default-pETR’ (default path)
  - An "EID-Prefix" as an agreed upon or configurable "Distinguished Name" according to [I-D.ietf-lisp-name-encoding].
  - pETR RLOCs can be redundant (primary-backup) or load balancing (active-active) based on priority & weight as in regular RLOCs

- Map-request/Subscribe for ‘default-pETR’ (default path) at boot up before traffic hits OR map-request/Subscribe for destination when traffic hits at ITR
  - An "EID-Prefix" MAY be as an agreed upon or configurable "Distinguished Name" according to [I-D.ietf-lisp-name-encoding] OR destination EID
  - Additional information MAY be encoded in vendor specific LCAF type [RFC9306] about the source

- Map-Reply/Publish containing the pETR information
  - EID-Prefix MAY be same as Distinguished Name in map-request OR calculated as non-LISP "hole" per the procedures in [RFC9301] for negative map-reply (with non-zero RLOC)
  - Additional information MAY be encoded in vendor specific LCAF type [RFC9306] about the mapping
Next Steps

• Request for WG adoption
Comments, Questions?