

# LISP Site External Connectivity Update

draft-jain-lisp-site-external-connectivity

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# What changed between 07 & 08: Addressed review comments, added pub-sub

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# 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/**subscribe** 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](#)].
- RLOC-set for pETR information. Each locator in the RLOC-set MAY be encoded as per [[I-D.ietf-lisp-vpn](#)] for VPN environments.
- 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](#)].
- RLOC-set for pETR information. 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.
- 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?