Scope of the draft

• Methods for using a common control plane to concurrently support:
  • Layer 3 overlays with eid-mobility
    • EID-prefix mobility across sites
  • Layer 2 overlays with eid-mobility
    • Unicast and multi-destination
    • Non-IP and IP intra-subnet
    • LISP assisted ARP/ND resolution
L3 overlays

• Without mobility – RFC 6830 (6830bis/6833bis)

• With Mobility
  • ETRs register prefixes for their locally attached EIDs
  • Traffic between sites follows L3 rules defined in RFC 6830 (destination Lookups, L3 forwarding and TTL decrements)
  • When an EID changes location, we can use two approaches to trigger a refresh of stale map-caches:
    • Data-driven SMRs
    • Pubsub driven Map-notifies
L3 overlays and mobility

- ETRs register locally connected EIDs and traffic flow as in RFC 6830

Mapping-Database:
10.1.1.1/32 → RLOC A
10.2.2.2/32 → RLOC B

Map-cache:
10.2.2.2/32 → RLOC B
L3 overlays and mobility

- When an EID moves

Mapping-Database:
10.1.1.1/32 → RLOC A
10.2.2.2/32 → RLOC C

Map-cache:
10.2.2.2/32 → RLOC B

New site: Map-register with new ETR RLOC

Old site: Receives Map-Notify with new ETR RLOC

Away-entry 10.2.2.2/32
L3 overlays and mobility

- Updating stale map-caches

Option 2: Map-Notify sent to sites subscribed to prefix that just moved

Mapping-Database:
10.1.1.1/32 → RLOC A
10.2.2.2/32 → RLOC C

Option 1: Data driven SMR triggers a refresh of map-cache

Away-entry 10.2.2.2/32

Map-cache: 10.2.2.2/32 → RLOC C
L2 overlays

• Register MAC addresses as EIDs in the Mapping System (EID-AFI 6)

• L2 and L3 separation
  • Dedicate specific IIDs for L2 and L3 purposes
  • IID-scope MAC to RLOC mappings (map-caches and database mappings)
  • Use segmentation as specified in draft-ietf-lisp-vpn

• Definition of methods for
  • Unicast traffic handling (non-IP and intra-subnet traffic)
  • BUM traffic handling
  • LISP assisted ARP/ND support
  • Mobility support
L2 overlays and mobility

• Unicast mobility, similar procedures as in L3 case but within the IID scope of the L2 overlay

• Update of stale map-caches after a move:
  • Data-driven SMRs (using the away table)
  • Pubsub driven Map-Notify

• TTL handling in data-plane: TTL header of inner packet must remain unmodified
L2 overlays

- Support to broadcast and multicast traffic
- All participants in a L2 overlay (L2 IID) join a common group

When multicast underlay is supported

When multicast underlay is not available

Follow RFC8378:
All members Register
S: 0000-0000-0000/0
G: ffff-ffff-ffff/48
L2 overlays

- LISP Mapping System May be used to limit the amount of ARP/ND traffic in the network

- Dedicated IID can be used to register and resolve IP to MAC bindings:

  EID = <IID, IP> ----> RLOC = <MAC>
L2 xTR resiliency

(Work in progress)

• An ES-id identifies Multihomed L2 segments.

• All xTRs part of a multihoming group register the ES-id with the MS using:
  • set merge-request bit (to consolidate RLOC list of members)
  • set want-map-notify bit set (so that all xTRs are notified of the list of members)

• When needed
  • Designated Forwarder selected by the MS out of the consolidated RLOC list
  • Split Horizon: Based on Map-Notifies all xTRs maintain list of RLOCs of members of ES-id
L2 xTR resiliency

(Work in progress)

• Aliasing
  • EID are registered with ES-id
  • Use pubsub procedures (subscription to ES-id) so that members of the group are notified about new EIDs detected in segment
  • xTRs can then add these EIDs to their local database and send Map-Register

• Note: Should we use site-ID for this instead of a new ES-id tag?
Comments, Questions