Integrating LISP and Segment Routing

draft-brockners-lisp-sr
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IETF 88
Great technology! I no longer need a driver’s license

Help! I can see smoke, but my dashboard shows no warnings...

How do I control where we’re going? Turning the steering wheel shows no impact...
Overlay Networks: Key Requirements

- Independent Endpoint addressing and large number of tenants supported
- Per-flow troubleshooting
  - Analyze which path a particular flow took
  - Determine which path a particular flow would take
- Topology-awareness in the overlay network
  - Traffic Engineering for Unicast and Multicast (traffic in the overlay should follow a specific path, e.g. latency optimized, ensure path-symmetry, …)
- Efficient and generic Network Transport/Fabric
  - No per-flow state kept in the Data-Center Fabric
  - Equal cost multipath load balancing
  - IPv6

E.g. LISP (VXLAN for L2 tenant scale solution)
E.g. Segment routing w/ IPv6;
Record traversed segments in packet header (e.g. IPv6 extension hdr)

E.g. Segment routing w/ IPv6; Flow forwarding state in packet header to perform TE

E.g. Segment routing w/ IPv6; Flow forwarding state in packet header
E.g. IPv6 transport network

Option: Combine SR and LISP: draft-brockners-lisp-sr-00 (could similarly be done for VXLAN)
Approach

• Combine Overlay and Transport network more closely by combining SR and LISP:
  – EID to RLOC mapping information extended with SR routing information.

• Extend LISP Canonical Address Format (LCAF) for traffic engineering (LCAF type 10).
Proposal

• Define new AFI for
  – Segment identification (SID) and
  – Path Tracing

• Enhance mapping system to:
  – Include Ordered list of Segment IDs to be visited in the underlay using the new AFI for SID in EID to RLOC lookup
  – Flags to enable underlay tracing in EID to RLOC lookup
Example

Mapping System

D-EID:D-RLOC – Segment route: SID:R2, SID:R3, SID:R4

RLOC for D-EID?
Next Steps

Authors appreciate the WG’s review and feedback
Integrate into “ietf-lisp-lcaf”?