LISP Protocol Open Items: a Perspective from a Commercial Implementation

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Motivation

• A series of items have been discussed in the working group and are implemented and being used as part of LISP offering in commercial implementations

• Re-start discussions in the WG to progress the development of these documents

• Some of the documents are WG items but some of them are not WG items, yet
Documents in Scope of this discussion

WG items
- EID Mobility (draft-ietf-lisp-eid-mobility-07)
- LISP VPNs (draft-ietf-lisp-vpn-06)
- Vendor LCAF (draft-ietf-lisp-vendor-lcaf-09. Requested publication)
- Pub-sub (draft-ietf-lisp-pubsub-09. Requested publication)
- LISP-Yang model (draft-ietf-lisp-yang-15)

Non-WG items
- Reliable Transport (draft-kouvelas-lisp-map-server-reliable-transport-06)
- LISP DN (draft-farinacci-lisp-name-encoding-12)
- Overlay (draft-moreno-lisp-uberlay-04) (Addressed in Victor’s Presentation)
- NAT traversal (draft-ermagan-lisp-nat-traversal-19)
- Site External Connectivity (draft-jain-lisp-site-external-connectivity-03)
WG items: LISP VPNs and EID Mobility

• LISP VPNs and EID mobility drafts specify the basis of segmentation and the operation of mobility support in multiple LISP commercial offerings.

• **LISP VPNs** applies to the approach taken for L2 and L3 segmentation and describes the use of IID, XEIDs and operation of extranets

• **LISP EID mobility** describes the architecture, mechanisms and mobility options supported with different combinations of L2, L3, ARP/ND address families

• Both drafts provide detailed specifications with multiple areas of application: campus networks, DC solutions, IoT deployments and WAN and cloud extensions.
WG item: LISP VPNs

• Current version: draft-ietf-lisp-vpn-07
• Last discussed in IETF 98 (WG adoption).
• Latest updates
  • Cross-VRF hole calculation (negative map-replies)
• In summary
  • Addresses segmentation of the EID space (IID,XEID)
  • Control-plane, data-plane procedures. Unicast and Multicast
  • Methods for cross-VPN communication (extranets)
• Feedback from the group?
WG item: LISP EID Mobility

• Current version: draft-ietf-lisp-eid-mobility-08

• Last discussed in IETF 98 (WG adoption).
  • Small changes since then.

• In summary
  • Defines the use of L3 and L2 overlays to support EID mobility with a unified control-plane
  • It specifies MAC, IP, ARP/ND procedures and mobility variants (subnet extension with and without a L2 overlay)

• Outstanding items:
  • Should it include L2 multihoming/resiliency support?

• Feedback from the group?
Non-WG items

- Reliable Transport (draft-kouvelas-lisp-map-server-reliable-transport-06)
- LISP Distinguished Name Encoding (draft-farinacci-lisp-name-encoding-12)
- NAT traversal (draft-ermagan-lisp-nat-traversal-19)
- Site External Connectivity (draft-jain-lisp-site-external-connectivity-03)
Reliable Transport

- Current version: draft-kouvelas-lisp-map-server-reliable-transport-06

- Summary:
  - Proposes reliable transport interface (TCP, SCTP based) between xTRs and map-server (as an alternative to the soft-state approach using periodic UDP messages).
  - This interface can be used to transport EID record registrations and notifications. Map-Register and Map-Notify messages follow the same format as in UDP mode.
  - xTRs always support the UDP interface and will only switch to reliable transport mode when available.
  - A key message introduced is the registration refresh message where the MS can signal changes and trigger a registration refresh.
  - The specification is transport protocol independent.
Reliable Transport

• Reliable transport is extensively used in LISP commercial offerings

• Experimentation showed rapid benefits to scale deployments, and it’s been key to support operation at scale.
  • Deployment with large number of EIDs
  • Mobility at scale
  • Redistribution of database-mappings to interact with other systems

• In practical terms, since it proposes message reuse, it was implemented as an extension of the registration process
Reliable Transport

- Current version: draft-kouvelas-lisp-map-server-reliable-transport-06
- Last discussed in IETF 100
- Current status:
  - Parts of the draft have been simplified following discussions in the mailing list
  - Stable running code for some time now
- Outstanding items from last discussion:
  - Can we adopt alternative transports to support this (QUIC)?
- Next Steps:
  - Call for WG adoption?
LISP Distinguished Name Encoding

• Provides string/name based encoding of EIDs and RLOCs
• Self-documenting mappings as well as service/capability identification
• Used in practice to cover multiple use-cases
  • Identification/Presence of xTRs in the network (known string to announce presence of xTRs in the network)
    • e.g. “edge-rtr”
  • Policy distribution (name policy)
    • e.g. “policy-rtr01”, “policy/rtr01”
  • Capability/Service registration (names used to identify specific capabilities or services offered by xTRs)
    • e.g. “service/firewall”
LISP Distinguished Name Encoding

• Current version: draft-farinacci-lisp-name-encoding-12
• Last discussed in IETF 109
• Last updates:
  • Request to identify use-cases and discussions for working group adoption
  • Already used in commercial implementations.
  • WG discussion to frame the scope of use
  • How to ensure that names are distinguished? How to deal with collisions?
• WG adoption?
Other non-WG items

• NAT-Traversal
  • Recently discussed in IETF 109
  • Code running and validated for some time now and have solved many corner cases.
  • It allows extending commercial offering to domains such as home, cloud, small branch offices, public spaces
  • WG adoption? (alternative proposal exists)

• Site-external connectivity
  • Not introduced yet in a WG meeting
  • Implementation regulates access to external networks (internet access) in campus deployments
  • Draft specifies external connectivity as a registered service (using DN) and replaces negative-map-replies with complete mappings with a specific set of locators (RLOCs of exit routers in a lisp site)
Comments, Questions