

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)
- Uberlay (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 IIDs, 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