LISP for the Mobile Network

draft-farinacci-lisp-mobile-network-01

IETF LISP WG Singapore
November 2017

Dino Farinacci, Padma Pillay-Esnault, Uma Chunduri
High-Level Goals

• Greatly **Simplify** the Mobile Network:
  • To meet new latency and bandwidth demands (*VR/AR*)
  • To address newer and more demanding applications (*IoT*)

• Pull Based Mapping Database System **Control-Plane**:
  • To Scale and Secure Mobility
  • To Reduce OpEx through Incremental Deployability

• Dynamic Encapsulating Overlay Based **Data-Plane**:
  • Address Management greatly simplified
  • Fast Mobility Handoffs
  • Roaming across Mobile Networks and WiFi
How it Works

- UEs are assigned EID addresses
- eNodeBs and pGWs are LISP xTRs with RLOC addresses
- LISP Mapping System runs anywhere in EPC
- Encapsulation occurs over EPC and not the RAN
- Encapsulation format is GTP or LISP but real-time setup (not static)
- The Underlay is the existing or next-gen EPC core IP network
- The Overlay runs over the EPC and the Internet
Example Packet Flow

EPC does not route EIDs

No packet overhead on RAN

Green = EIDs
Green Node = Unmodified Host
Green Arrow = Not Encapsulated

Red = RLOCs
Red Node = LISP xTR
Red Arrow = Encapsulated
Example Packet Flow

Green = EIDs
Green Node = Unmodified Host
Green Arrow = Not Encapsulated

Red = RLOCs
Red Node = LISP xTR
Red Arrow = Encapsulated

UE to non-EID Server
Example Packet Flow

pGWs don't need to be in the encapsulated data path

Green = EIDs
Green Node = Unmodified Host
Green Arrow = Not Encapsulated

Red = RLOCs
Red Node = LISP xTR
Red Arrow = Encapsulated
Mobility Example

UE roams to eNodeB

Green = EIDs
Green Node = Unmodified Host
Green Arrow = Not Encapsulated

Red = RLOCs
Red Node = LISP xTR
Red Arrow = Encapsulated

pGWs track current location of UEs without the EPC core storing UE state
Mobility Example

Mapping System notifies pGWs about new UE location without EPC knowing or caring

UE roams to eNodeB

UEs never change their IP address (EID)

Green = EIDs
Green Node = Unmodified Host
Green Arrow = Not Encapsulated

Red = RLOCs
Red Node = LISP xTR
Red Arrow = Encapsulated
Abstract

This specification describes how the LISP architecture and protocols can be used in a LTE/5G mobile network to support session survivable EID mobility. A recommendation is provided to SDOs on how to integrate LISP into the mobile network.

Plan is to evolve this design in 3GPP, IETF, ETSI and ITU at the same time!