LISP Reliable Transport

draft-kouvelas-lisp-map-server-reliable-transport

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IETF 100, Singapore
Background

• Replaced draft-kouvelas-lisp-reliable-transport
• That was last presented at IETF91
• Main change since then is addition of scope field in the refresh procedure
Current Periodic Registration

- Periodic UDP communication between xTR and Map-Server to maintain soft state
- Practical concerns in experimentation with new LISP use cases that have large number of EID records (database redistribution & mobility)
- Constant communication load on LISP control plane. Scaling issue with 1000s of records per xTR
- Lack of flow control for communication spanning multiple network hops
Reliable Transport Alternative

• Establish TCP or SCTP based reliable session between the xTR and the Map-Server
• Use session to communicate EID to RLOC registrations and mapping notifications
• Optional alternative to UDP based registration (existing UDP mechanism must be supported)
• Single session between LISP peers can support additional future applications
• TLV message based exchange to support protocol extensibility
TLV Message Format

• 16 bit type and length
• Message-ID used by the receiver to identify the message in replies or notification messages
• End maker allows receiver to validate correct message parsing

0                   1                   2                   3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|             Type              |             Length            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                           Message ID                          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                          Message Data                       ...
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                       Message End Marker                      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
Reliable EID Registration

• Registration message identical to UDP registration
• Positive or negative acknowledgement to provide explicit feedback to the xTR
• Ability for MS to request selective refresh of information to deal with configuration changes
• Mapping notifications are no longer needed for registration acknowledgement and just convey latest (potentially merged) Map-Server view of the mapping
Map-Server Operation

• Received registrations create/update or delete mapping registration state (no timeout)
• Registration state is not discarded when session goes down (falls back to timer based expiration)
• Registrations are rejected if
  – Authentication fails
  – EID prefix is not configured
  – Mapping locator set not allowed
• Refresh issued to ETR to obtain initial state and to re-request specific prefixes on configuration change. Scope field determine the set of registrations being refreshed.
• Mapping Notification message sent when the mapping for a prefix for which notifications are requested changes
ETR Operation

- ETR in periodic UDP registration mode until a reliable transport session is established with the MS
- While in reliable transport mode registrations are only sent in response to refresh requests by the MS
Conclusion

• Use reliable transport session between xTR and MS for reliable flow-controlled communication
• Eliminate periodic messaging to improve scaling
• Messages based on extensible TLV format
• Minor extension to EID registration mechanism to work over reliable transport (alternative to UDP registrations)
• Session re-usable for other LISP applications
• Existing implementations have been very effective in large LISP deployments
LISP WG Adoption

• We would like to ask for adoption by the LISP WG!