LISP Reliable Transport

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

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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
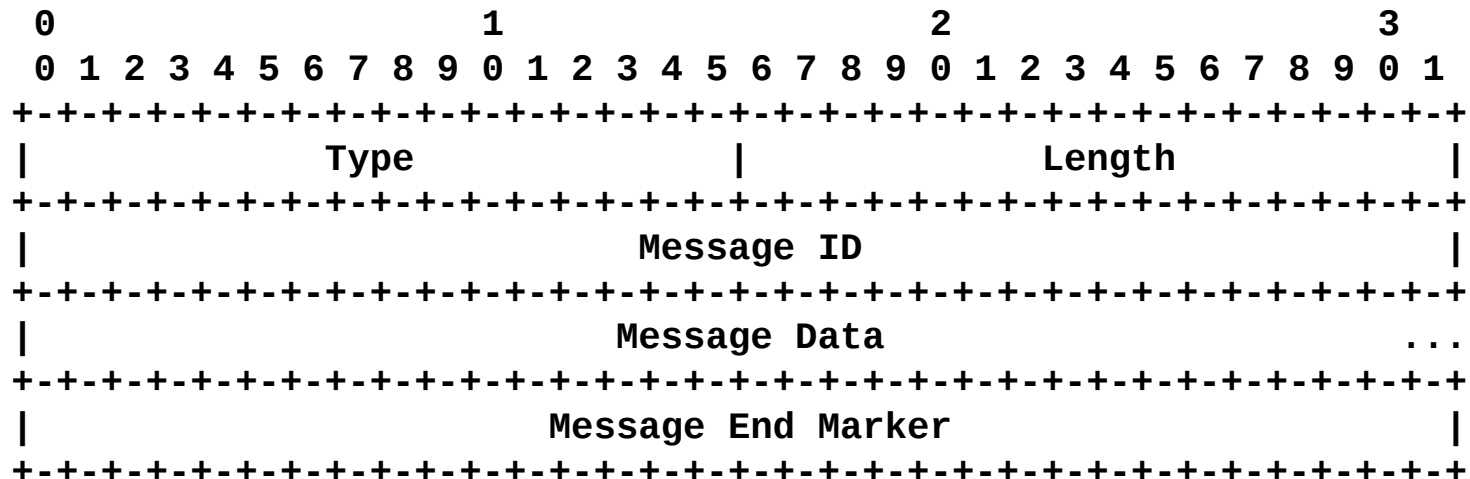
Current Periodic Registration

- 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                      |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
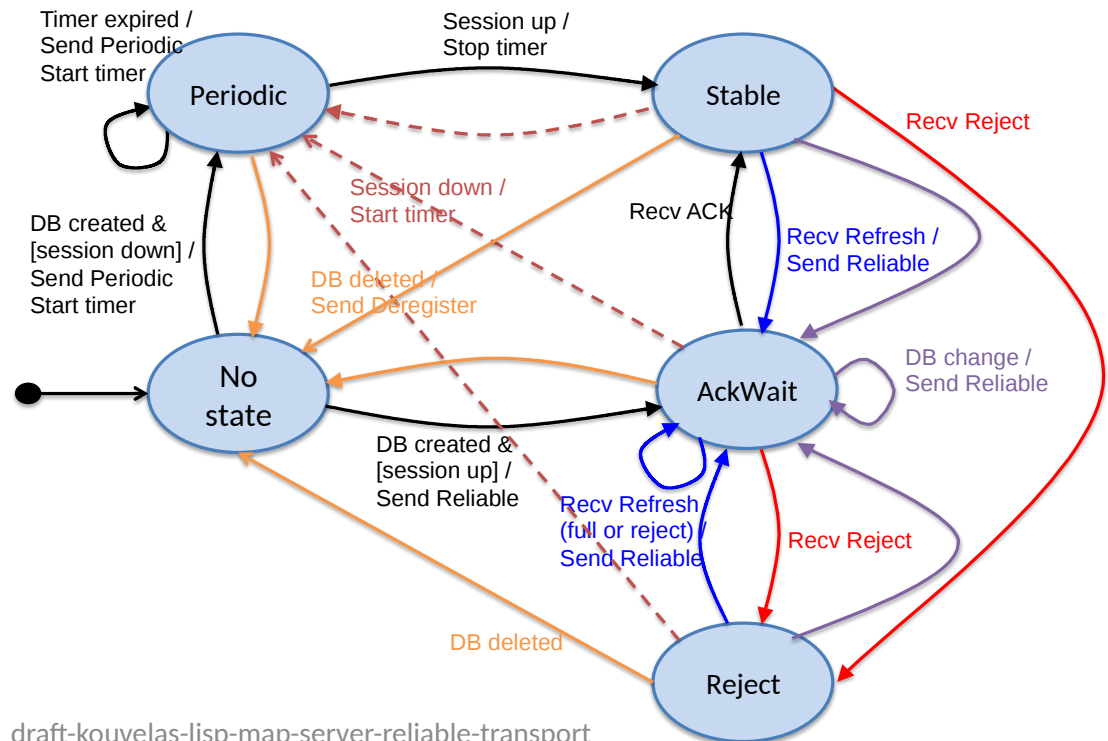
Reliable EID Registration

- 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!