Background

• The LISP Map-Server Reliable transport is extensively used in deployments

• 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
From Periodic Registration to Reliable Transport

- Periodic UDP communication between xTR and Map-Server to maintain soft state
- Practical concerns in experimentation with some of LISP use cases with 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
From Periodic Registration to Reliable Transport

• 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)
Reliable Transport operation

- An ETR starts with the periodic UDP registration
- The periodic UDP registration is maintained until an optional reliable session is established
Once the session is established the MS sends a registration refresh message to the ETR

The ETR refreshes all registrations with the MS

From that instant, registrations are considered active as long as the session is up, and the ETR does not need to re-send them periodically

Reliable Transport operation
Reliable Transport operation

• The MS can reject registrations when it is not ready, or configuration or policy does not allow them.

• The registration-refresh message can be used to notify the ETR about MS changes that may allow new registration attempts.

• The registration-refresh message can be scoped (all, IID, specific EID prefix) to trigger specific refreshes.
Reliable EID registration

• Registration message identical to UDP registration

• Use 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 (registration-refresh)

• 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.
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.
Implementation notes

- Implementation has been running for a while now with stable code and has been very effective supporting large deployments.

- The implementation revealed that only minor extensions are needed to support the EID registration procedure (including message reuse) to run over a reliable transport.

- The specification allows running over any reliable transport.
Next Steps

• The Authors would like to request adoption of the document by the WG.
Comments, Questions