LISP Map Server Reliable Transport
draft-kouvelas-lisp-map-server-reliable-transport-06

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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

MS

ETR
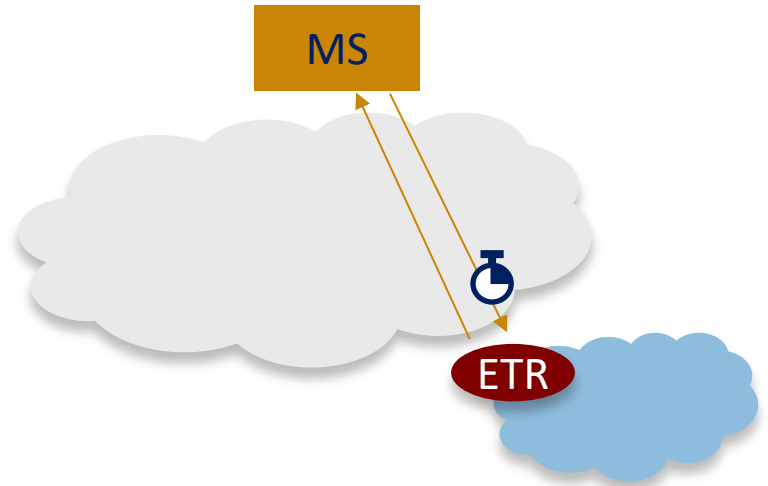
Reliable Transport operation

- 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

MS

ETR refreshes all registrations with MS

Registration refresh

ETR
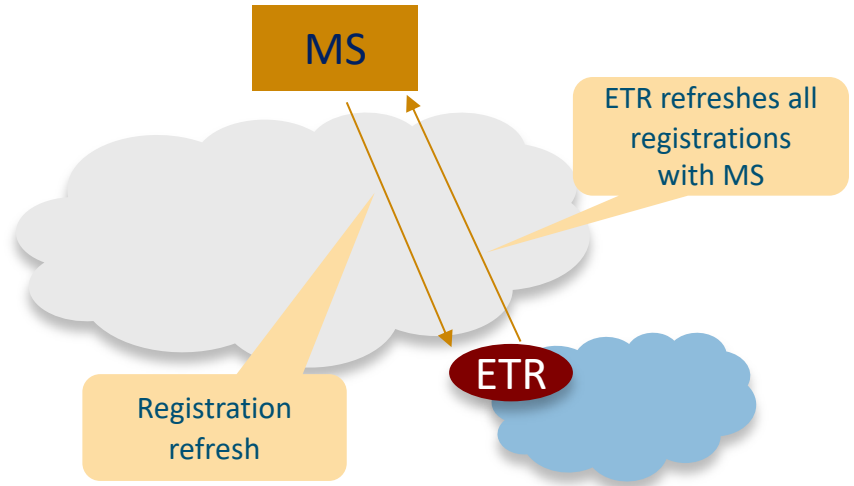
Reliable Transport operation

- 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.
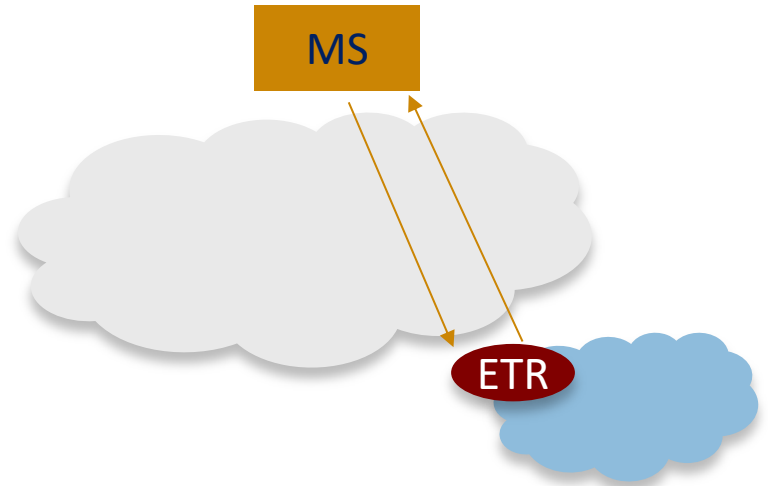
Reliable EID registration

- 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
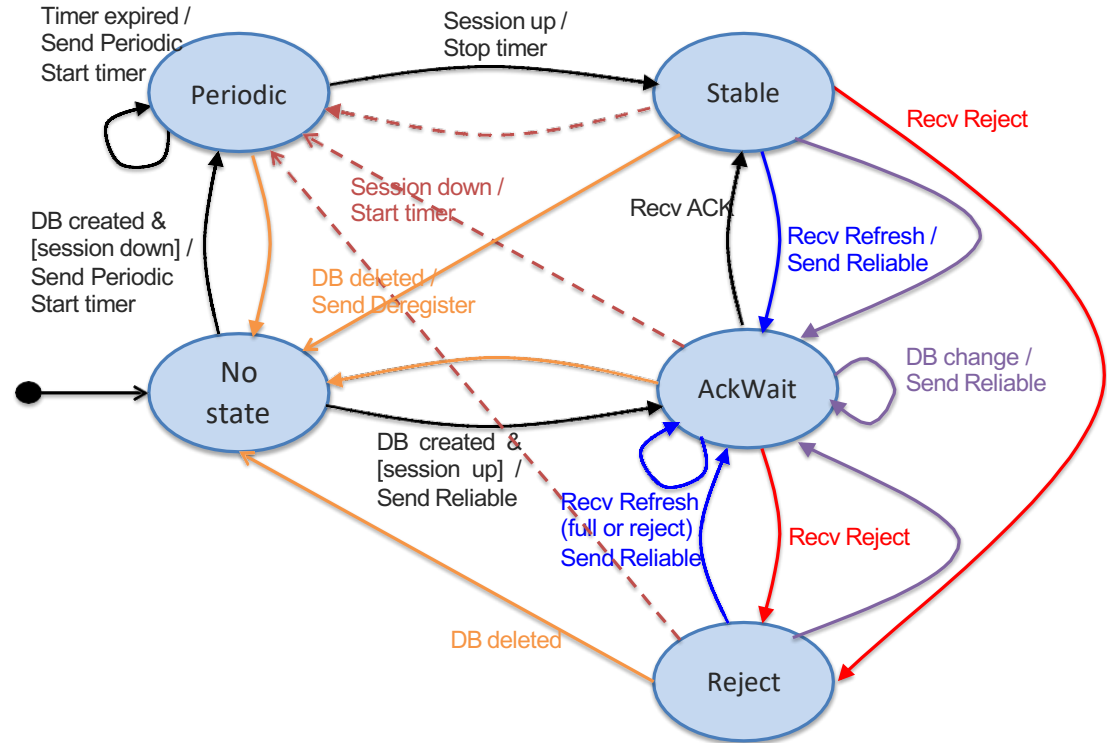
Implementation notes

- 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