LISP NAT Traversal

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Motivation

- NAT is a critical point for LISP-MN
- NAT Traversal Draft not covers some aspects:
  - SMR messages processing
  - Handover between NAT to no NAT
  - Change of RTRs
  - Path reachability
- OOR patch: If a device can be behind NAT, use an RTR
Map Cache update mechanisms:

- TTL-expiry: Requires really small TTL
  - High rate control messages
  - If both MN $\rightarrow$ battery drain
- SMR: No cache of remote ITRs only default cache entry
- Publish / Subscribe draft
  - Not part of RFC 6833
Map Cache update mechanisms: RTR

- Processing Encap Map Reg
  - To unregister RTR: Send Encap Map Reg with new mapping?

- SMR
  - Draft not specifies the behavior of the RTR receiving a SMR
  - Options:
    1. SMR proxy to the appropriates ITRs
    2. Update the mapping -> What happens with NAT state?
    3. Ignore
Map Cache update mechanisms: RTR SMR

EID → RLOC A

RLOC A

SMR (EID A)

EID → RLOC i (Pub)

EID A

RLOC i Priv

RLOC i Pub

MN
Map Cache update mechanisms: RTR SMR

EID → RLOC A

EID → RLOC A

RLOC A

EID A

SMR (EID A)

RLOC i Priv
RLOC i Pub
Handover: NAT to IPv6

EID A

MN

RLOC A (IPv4-NAT)

0.0.0.0/0 → RLOC B

EID A → RLOC A ' (Pub)

EID A → RLOC B

RLOC B (IPv4)

RTR

EID B

RLOC C (IPv4)
RLOC D (IPv6)

xTR
Handover: NAT to IPv6

- EID A can not SMR RTR
- Connection EID B to A broken

Possible solutions:
- RTR set of IPv4 and IPv6 RLOCs
- MS announce all them
- MN SMRs all RTRs learned from MS
Change RTR

- EID A
- EID B
- RTR - 1
- RTR - 2
- RTR - 3
- xTR

MN

RLOC i (IPv4-NAT)

RLOC A

RLOC B

RLOC C

0.0.0.0/0 → RLOC A

EID A → RLOC i' (Pub)

EID A → RLOC A

EID A → RLOC A
Change RTR

MN starts to use RTR 2

EID B -> RTR 1 -> RTR 2 -> MN
Change RTR

MN starts to use RTR 3

EID B -> RTR 1 -> RTR 2 -> RTR 3 -> MN

Possible solution:

SMR all learned RTRs
Option 1: If not data Map Notify received, stop registering RTR 2

Option 2: RTR 2 don’t reply probes for EID A
THANK YOU