Limited Private Address Support and Implementation notes

Reference: RFC3024

Samita Chakrabarti

Sun Microsystems, Inc.

samita@eng.sun.com

Basic Assumptions

- Private addresses as defined in RFC1918
- Private addresses are limited to mobile nodes
- Solution based on mobile IP rfc2002−bis and reverse tunneling rfc3024 only
- LPAS is useful for wireless cellular industry for short−term deployment of Mobile IP

Limited Private Address Support

Mobile node assumptions

- Must obtain reverse tunnel with registration
- A mobile node must have unique home address in it's home domain
- A mobile node with public co−located COA may use private home address via reverse tunnel
- Mobile node may never be home and is always visiting on a foreign network− example: cell phones

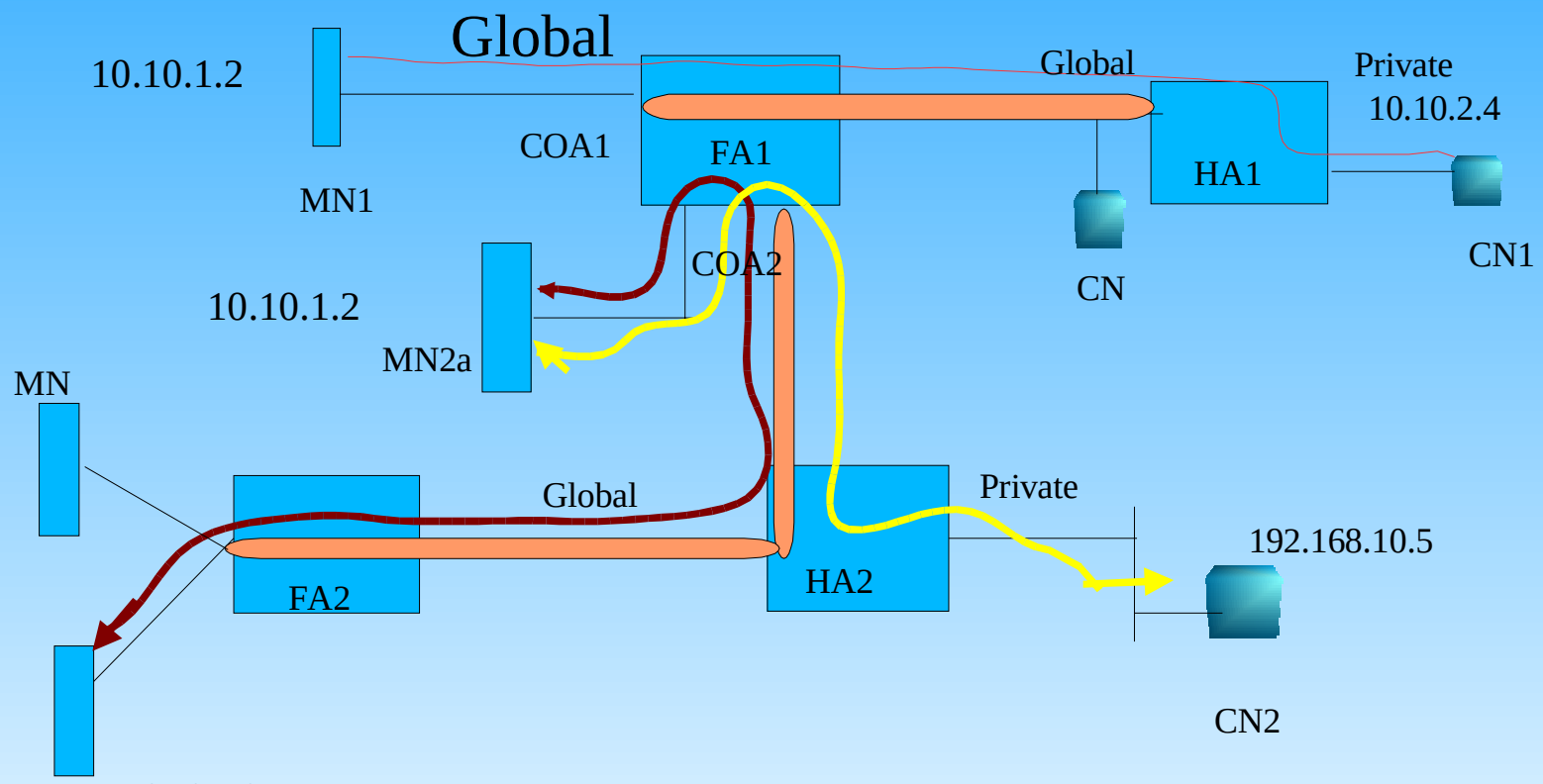
Limited Private Address Support

Foreign and Home agent basic requirements

- FA and HA must support reverse tunnel encapsulation/decapsulation
- FA's COA and HAA are publicly routable addresses and topologically connected by the forward and reverse tunnel
- If a FA supports reverse tunneling, then it must support limited private address scenarios

Scenarios

Private addressed mobile nodes are visiting : most common case



MN2a <----->Mn2b
MN1<------>CN1
MN1<------>CN
MN2a<----->CN2

MN1 and MN2a have same home address

Limitations

- These private MNs can only communicate to CNs in their home domain. Thus these MNs' access to global services may be limited. Solution to this is out of scope of discussion in this context.
- If a private MN registers with two different home agents using the same shared link via same COA of a FA, it should use different home addresses

Implementation Notes

- Hard to distinguish two overlapping private addresses using same shared link

  IP−address to ethernet addr mapping is ambiguous at FA for MN bound packets

  FA also needs to distinguish different reverse tunnel paths when data packets (MN−>CN) are received from same source address and interface

- Not a problem in 3G−wireless as it uses PPP interface between MN and FA

Implementation Notes

- FA can use ’forward tunnel’ interface index or HA address for outbound data to MN. Similarly for inbound packets incoming interface information can be used to distinguish two different MNs using same private addresses
- Handoff implementation may require special handling to handle overlapping private addressed MNs

Comments

- Sun has an imlementation for LPAS, any other implementation ?
- This information is in A.4 of reverse tunnel RFC. Recommends reverse tunnel imple−mentation must support limited private ad−dress scenarios at foreign agent.
- Reverse tunnel support means supporting LPAS—~~is~~ this clear enough ?

Questions ?