IPv4 Support for Proxy Mobile IPv6

draft-ietf-netlmm-pmip6-ipv4-support-01.txt

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Overview

- IPv4 support for PMIPv6
- Two features for IPv4 support
  - IPv4 Home Address Mobility Support
    - transport can be either IPv4 or IPv6
  - IPv4 Transport Support
- This specification follows DSMIP [draft-ietf-mip6-nemo-v4traversal]
IPv4 Home Address Mobility Support

- Supporting IPv4 only and dual-stack MN

- IPv4 Home Address Assignment
  - Statically assignment
  - Dynamic assignment
    - From LMA
    - From DHCP-Server

- PBU/PBA extension for supporting options specified in DSMIP
IPv4 HoA assignment from LMA

- MAG SHOULD support DHCP server functionalities
  - IPv4 HoA is retrieved from LMA by PBU/PBA

- Possible Issue
  - When MN roams to new MAG2 and renews its address to MAG1, DHCP server is now changed to MAG2. Server ID is changed to the MAG2's IP address.
  - MAG2 SHOULD discard DHCP request (unicast) meant for the previous MAG and forces MN into DHCP REBINDING state (from DHCP RENEWING)

Server identifier is changed from MAG1 to MAG2
**IPv4 HoA assignment from DHCP-Server**

- **MAG SHOULD** support DHCP Relay function
  - All the DHCP messages are exchanged between MN and DHCP-Server through MAG (DHCP Relay)
- When MN changes it attached MAG and renews the address, it can unicast the DHCP request to the DHCP server.
- **MAG can learn the assigned IPv4 HoA** while relaying DHCP offer from DHCP Server to MN

![Diagram of DHCP process]
PBU/PBA formats

Proxy Binding Update

IPv6 header (src=PCoA, dst=LMAA)
Mobility header
-BU /*P flag is set*/
Mobility Options
-HNP* /*IPv6 home address*/
-BA/*P flag is set*/
-TSO*
-IPv4-HAO
-NAI

*HNP: Home Network Prefix Option
*TSO: Time Stamp Option
IPv4 Transport Support

- Supporting all the features specified in DSMIP
  - NAT support
  - TLV negotiation (for the next version)
- No protocol modifications to DSMIP
IPv4 Transport Support

IPv4 header (src=IPv4-proxy-CoA, dst=IPv4-LMAA)
UDP header
  IPv6 header (src=v6MAG*, dst-LMAA)
  Mobility header
    -BU /*P flag is set*/
    Mobility options
      -HNP* /*IPv6 home address*/
      -TSO*
      -IPv4-HAO /*if IPv4 HoA is required*/
      -NAI /* NAI Option */

*HNP: Home Network Prefix Option
*TSO: Time Stamp Option
*v6MAG: IPv6 address assigned to the mobile access gateway.
*NAI: NAI Option

Proxy Binding Update

IPv4 header (src=IPv4-LMAA, dst=IPv4-proxy-CoA)
UDP header /*Only if NAT is detected*/
IPv6 header (src=LMAA, dst=v6MAG)
Mobility header
  -BA /*P flag is set */
  Mobility Options
    -HNP* /* IPv6-MN-HoA */
    -TSO*
    -IPv4-ACK /* Only if IPv4 HoA is required */
    -NAT-DET /* Only if NAT is detected */
    -NAI /* NAI Option */

*HNP: Home Network Prefix Option
*TSO: Time Stamp Option
*v6MAG: IPv6 address assigned to the mobile access gateway.