IPv4 Support for Proxy Mobile IPv6
draft-ietf-netlmm-pmip6-ipv4-support-01.txt

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1858
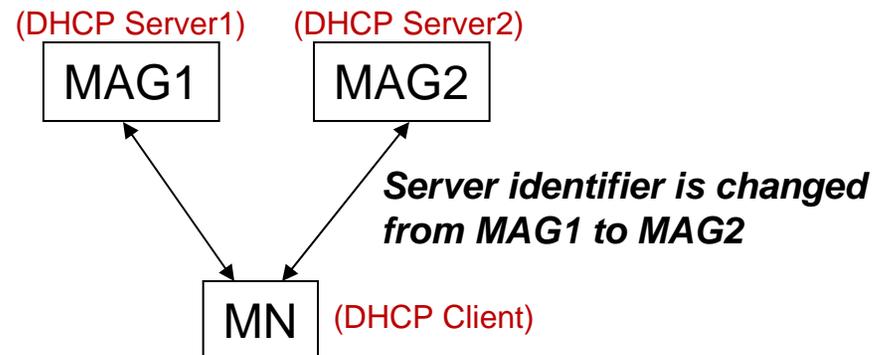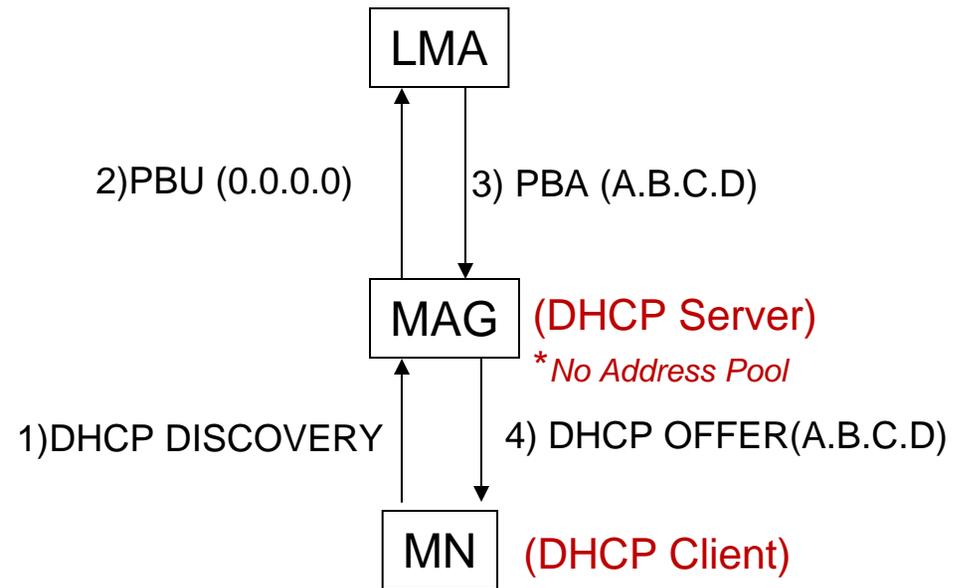CALAMVS
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Overview

- 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 discards DHCP request (unicast) meant for the previous MAG and forces MN into DHCP REBINDING state (from DHCP RENEWING)*

LMA

2)PBU (0.0.0.0)   3) PBA (A.B.C.D)

MAG   (DHCP Server)
*No Address Pool

1)DHCP DISCOVERY   4) DHCP OFFER(A.B.C.D)

MN   (DHCP Client)

(DHCP Server1)   (DHCP Server2)
MAG1   MAG2

Server identifier is changed from MAG1 to MAG2

MN   (DHCP Client)

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

LMA

DHCP Server

3)PBU   4) PBA

MAG   (DHCP Relay)

1)DHCP DISCOVERY   2) DHCP OFFER(A.B.C.D)

MN   (DHCP Client)
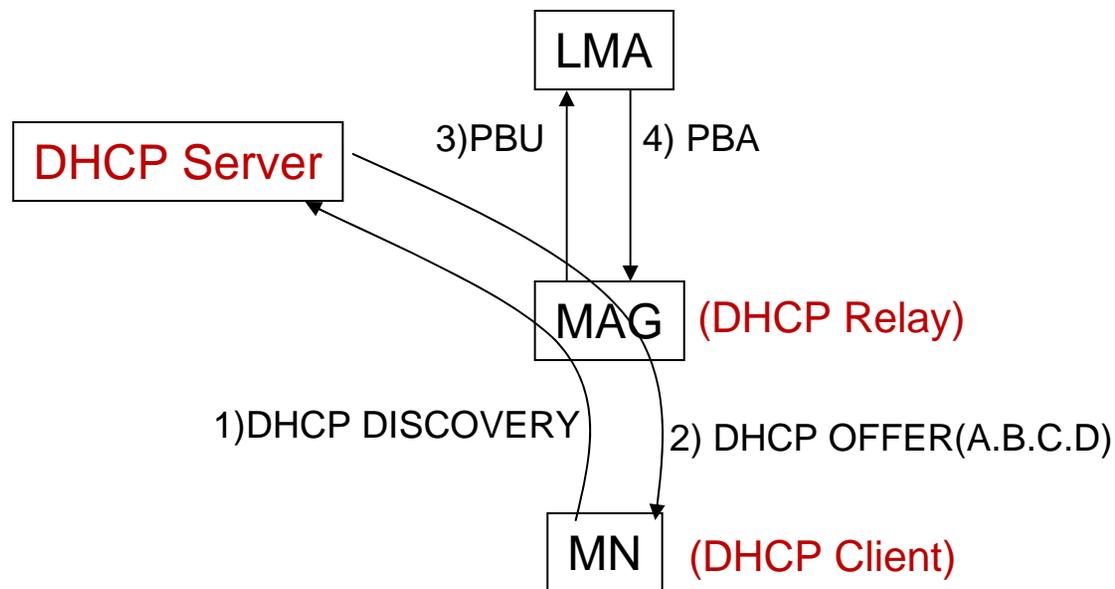
PBU/PBA formats

```
IPv6 header (src=PCoA, dst=LMAA)
    Mobility header
        -BU /*P flag is set*/
    Mobility Options
        -HNP* /*IPv6 home address*/
        -TSO*
        -IPv4-HAO
        -NAI
*HNP: Home Network Prefix Option
*TSO: Time Stamp Option
```

Proxy Binding Update

Proxy Binding Ack

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

Proxy Binding Update

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

Proxy Binding Ack

```
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.
```