PMIPv6 Overview
(draft-singh-netlmm-protocol-02.txt)

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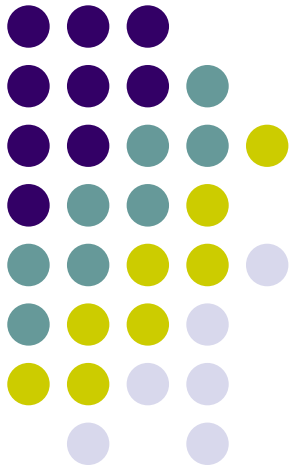
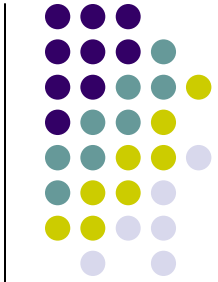
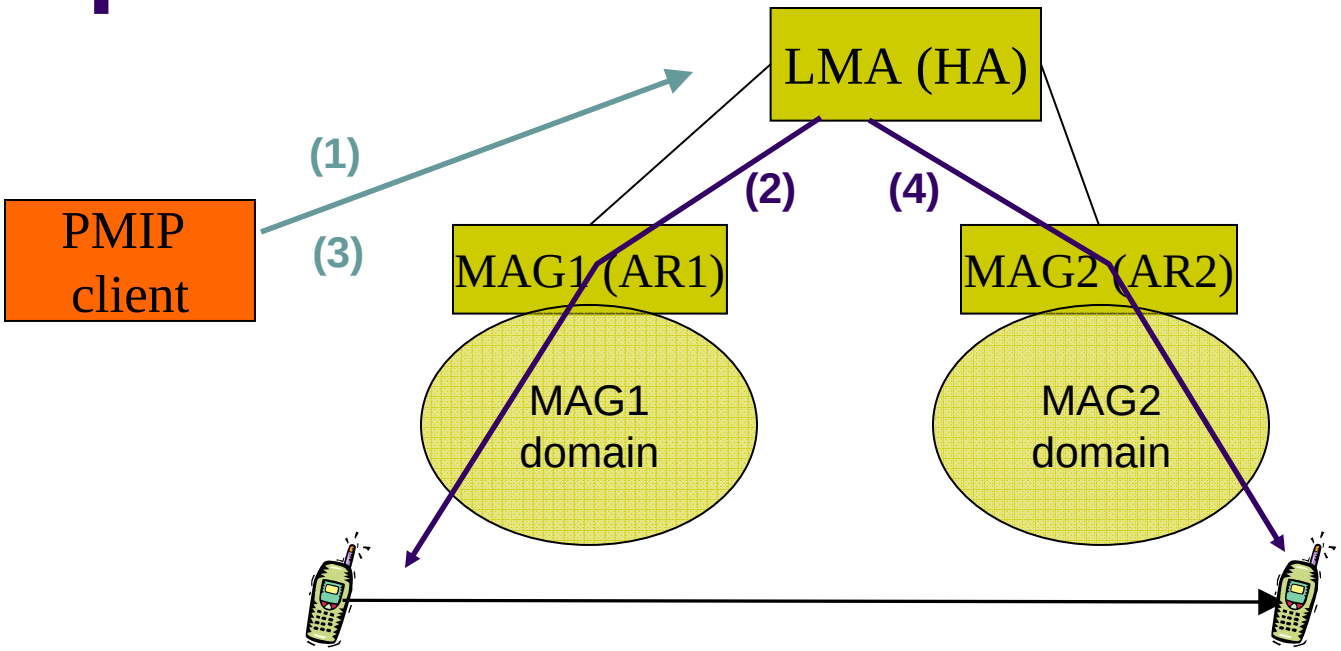


Outline



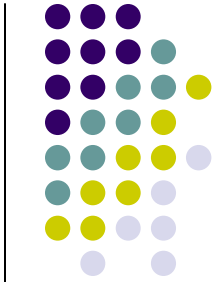
- Basic Operation
- Initial Attachment
- Inter-MAG Handoff
- Supported features
- Comparison of two architectural concepts
  - PMIP client Anchoring (standalone PMIP client)
  - PMIP client Relocation
- Summary

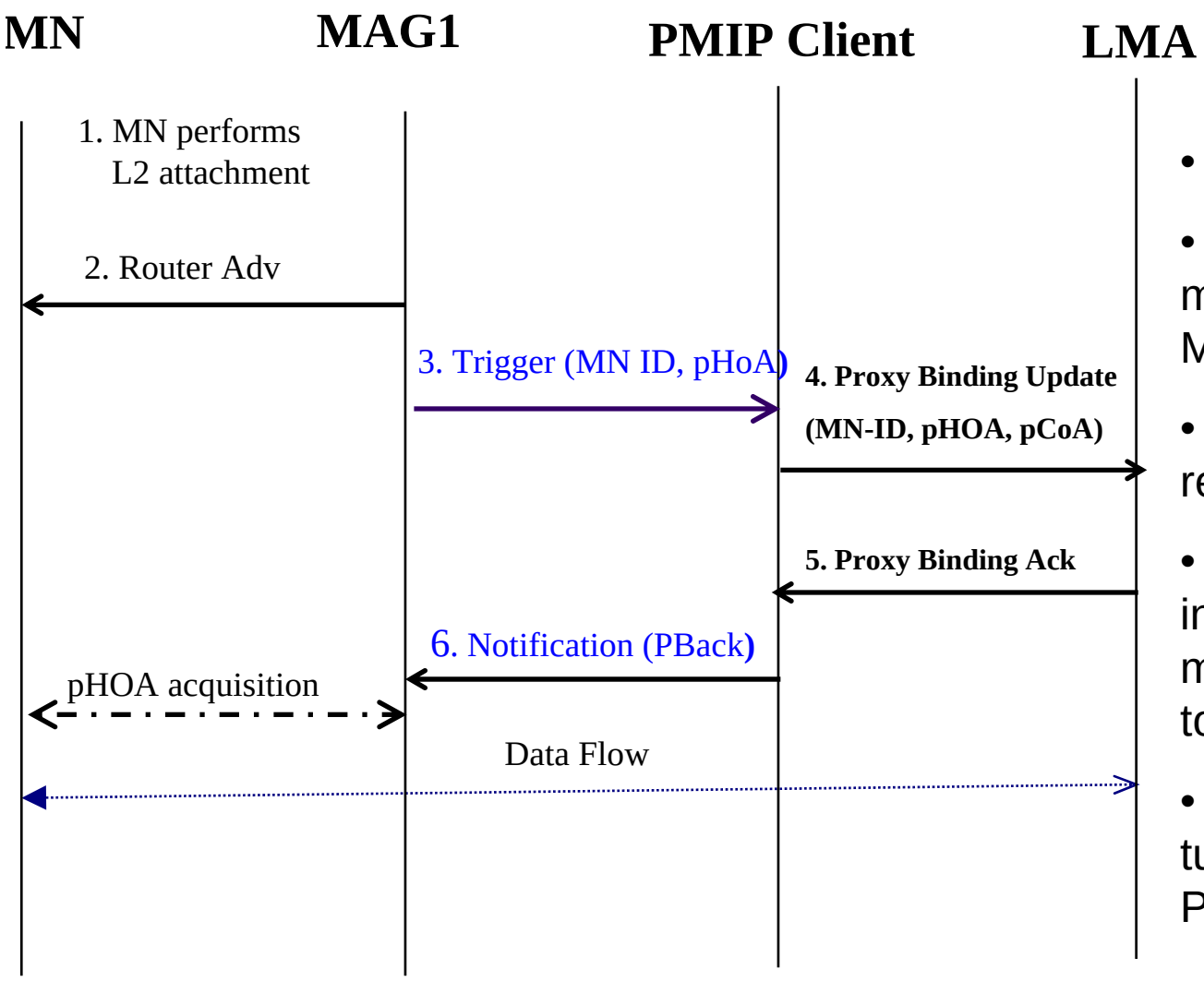
Basic operation



- When MN connects to MAG1 domain, PMIP client sends BU to the LMA/HA on behalf of MN
  - BU indicates the CoA acquired for the MN in the MAG1 domain
- When MN moves to MAG2 domain, PMIP client remains anchored:
  - The same PMIP client sends the new BU to the LMA/HA indicating the new CoA in the MAG2 domain

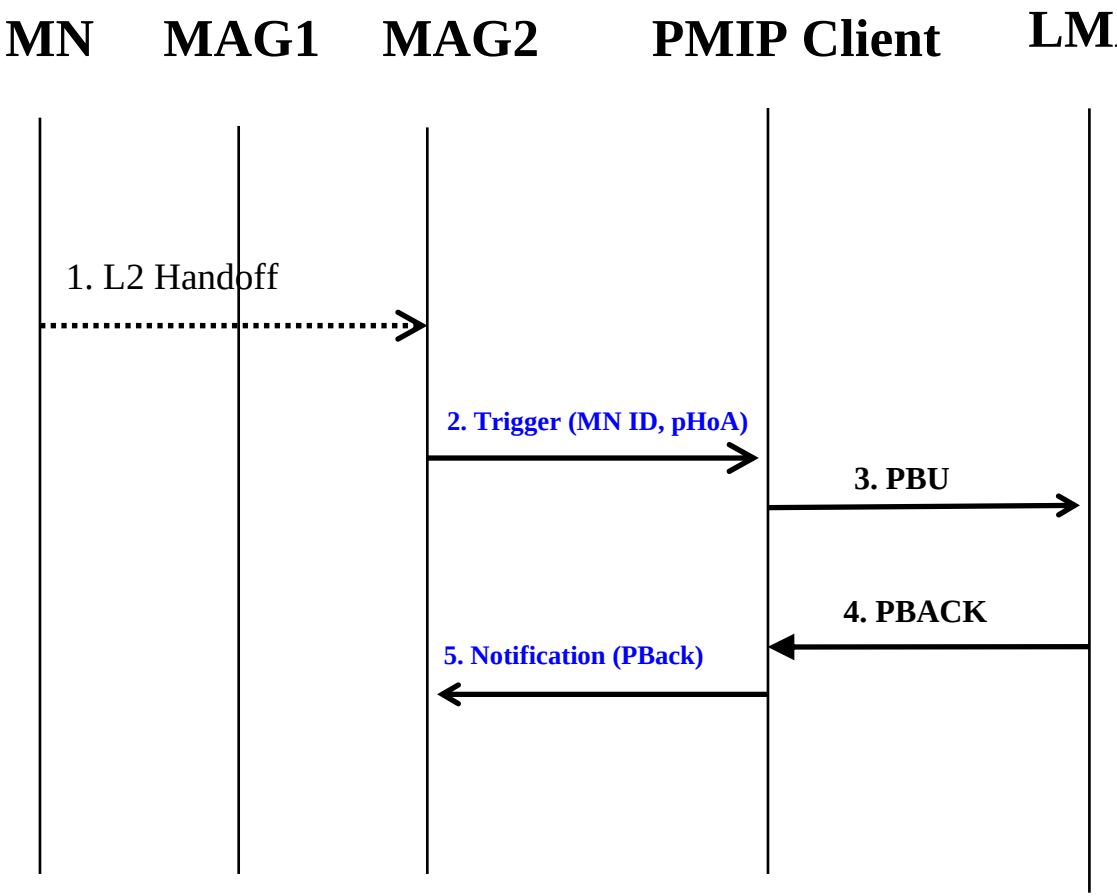
Initial Attachment





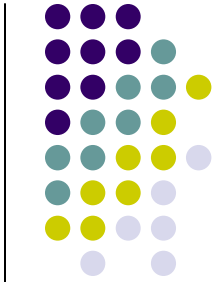
- MN performs L2 attachment
- MAG sends TRIGGER message to PMIP client after MN attaches to it.
- PMIP client sends PBU and receives PBACK from LMA
- PMIP client embeds BACK inside a NOTIFICATION message and sends that back to MAG.
- MAG creates appropriate tunnel state based upon PBACK message

Inter-MAG Handoff



- MN handoffs from MAG1 to MAG2
- MAG2 sends TRIGGER message to PMIP client after MN attaches to it.
- PMIP client sends PBU and receives BACK from LMA
- PMIP client embeds PBACK inside a NOTIFICATION message and sends that back to MAG.
- MAG creates appropriate tunnel state based upon BACK message

Supported features of PMIPv6 draft



- Initial attachment
- Intra-LMD handoff
- **Separation of PMIP client and MAG functionality**
  - **Standalone PMIP client**
  - **MAG-PMIP client interaction**
  - **Re-use of RFC 3775 HA as LMA**
- Security association between PMIP client and LMA
- Features discussed in appendix
  - pHoA assignment by LMA under stateful and stateless address configuration
  - AAA mechanism for establishing per-MN SA
  - Context Transfer and data forwarding between MAGs for seamless handoff
  - PMIP client relocation
  - IPv4 data tunneling inside IPv6
  - Usage of per-MN prefixes

Architectural view of PMIP client

- **Standalone PMIP Client** (aka PMIP client anchoring):
  - PMIP client is allocated during initial attachment
  - PMIP client can be co-located on MAG or any centralized entity that is aware of mobility management
  - Stays anchored on the same node while mobile moves from one MAG to other
- **PMIP Client relocation:**
  - PMIP client is co-located on MAG
  - PMIP client moves with mobile node from one MAG to other during handoff

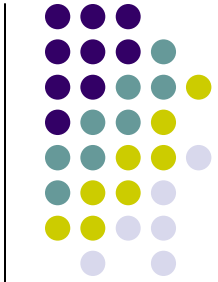
Comparison of two architectural concepts

PMIP client Anchoring	PMIP client Relocation
Allows standalone PMIP client	PMIP client moves from one MAG to other with mobile node
Supports clean separation of data forwarding (tunneling / de-tunneling) and control plane (BU/BACK) functionality o Enables centralization of control plane and distribution of data plane o Enables co-location of PMIP client on a node that is better protected than MAG (edge router) from various security attacks o Enables co-location of PMIP client functionality on node where better mobility management triggers (e.g., L2 triggers) are available	Not supported.
Simplifies service management (e.g., billing) by providing single service triggering point.	Complicate service management due to introduction of multiple service triggering points.

Comparison of two architectural concepts

PMIP client Anchoring	PMIP Client Relocation
• IPSEC SA between MAG and LMA is only established during initial attachment. • No need to allocate IPSEC SA during handoff	• There may be need to establish IPSEC SA during handoff.
LMA is not required to authorize MAG during every handoff. This provides following benefits: ❖ Less load on AAA server ❖ Efficient handoff signaling ❖ Seamless handoff etc.	LMA needs to authorize MAG during every handoff before processing PBU message received from a MAG. This has following downsides: ❖ Extra load on AAA server ❖ Additional handoff signaling ❖ Seamed handoff

Comparison of two architectural concepts



PMIP client Anchoring	PMIP Client Relocation
Possible to re-use RFC 3775 compliant HA as LMA. No change in MIPv6 behavior if per-MN security association is used between MN and HA.	Not possible to re-use MIPv6 compliant HA. At least some of the following modifications are required in HA behavior: • Time stamp extension in BU needed for resequenencing of BU messages • HA logic will have to be modified to ignore BU sequence number processing for PMIP BU messages • Additional modifications will be required in
Time synchronization between MAG and LMA not needed.	Time synchronization between MAG and LMA needed to enable re-sequencing of BU messages by LMA . This may be problematic if LMA and MAG are not in same domain.

Summary

- Draft-singh describes PMIP client anchoring, but also allows PMIP client relocation as corner case
- Draft-sgundave describes PMIP client relocation aspect. .
  - Possible to enhance draft-sgudave to support PMIP client anchoring by borrowing ideas described in draft-singh
- The basic concepts of both drafts PMIP client anchoring (e.g., standalone PMIP client) and PMIP client relocation are useful in a given deployment
- An IETF base PMIPv6 solution that supports both PMIP client anchoring and PMIP client relocation would enhance the deployment of NETLMM solution