Multicast Source Mobility Support in PMIPv6 Network draft-zhang-multimob-msm-02

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Outline

◆ **Background**

◆ **Analysis & Solutions**

- ➢ **ASM**
  - • **LMA-based scheme**
  - • **MAG-based scheme**
- ➢ **SSM**
  - • **LMA-based scheme**
  - • **MAG-based scheme**

◆ **LMA-based vs. MAG-based**

◆ **Extensions of PMIPv6**

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Background

◆**New Charter in the multimob group**

　　◆**Related goals**

Mechanisms needed to support multicast source mobility. Both any source multicast and source specific multicast source mobility will be covered.

　　◆**Related milestones**

　　　　◆**Nov 2011: Initial version of document on PMIPv6 multicast source mobility solution**

　　　　◆ **Nov 2012: Submit PMIPv6 multicast source mobility solution to IESG for publication as Internet Standard**

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Analysis & Solutions

RFC 5213: **On receiving a packet from a mobile node connected to its access link, <u>to a destination that is not directly connected</u>, the packet MUST be forwarded to the local mobility anchor through the bi-directional tunnel established between itself and the mobile node's local mobility anchor.**

◆**LMA-based scheme**:

Packets sent out from the MN are directed to the LMA firstly and then transmitted to the receivers

◆**MAG-based scheme:**

Packets sent out from the MN are directly transmitted from the MAG to the receivers.

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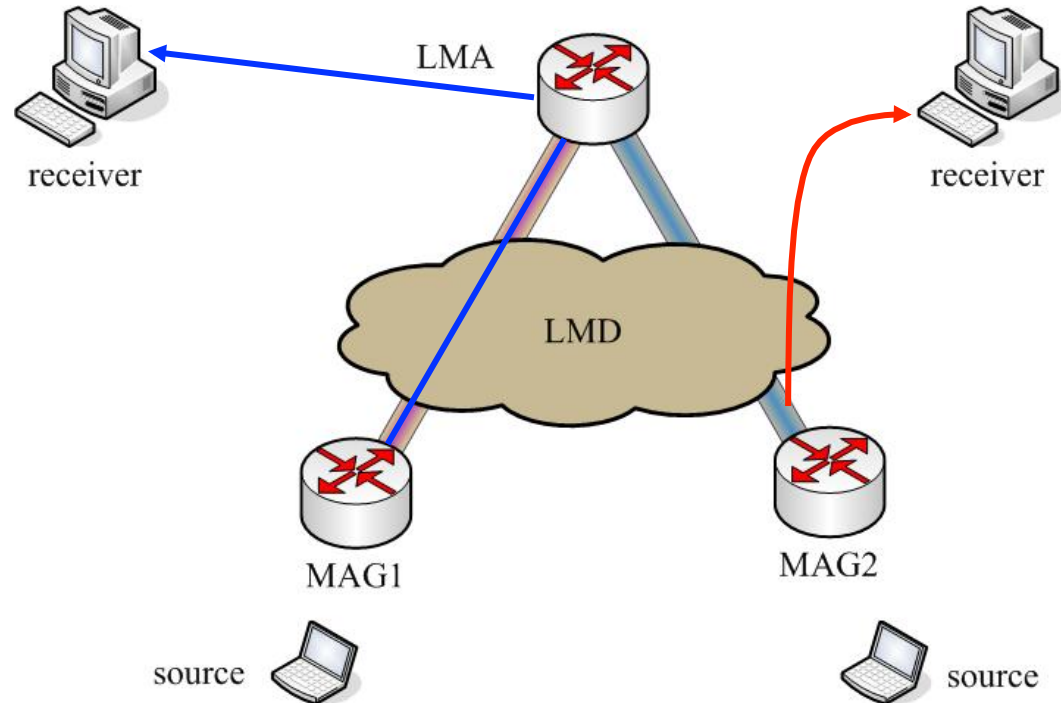
ASM (Any Source Multicast)

◆ **LMA-based scheme**

◆ **MAG-based scheme**

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SSM(Source-Specific Multicast)
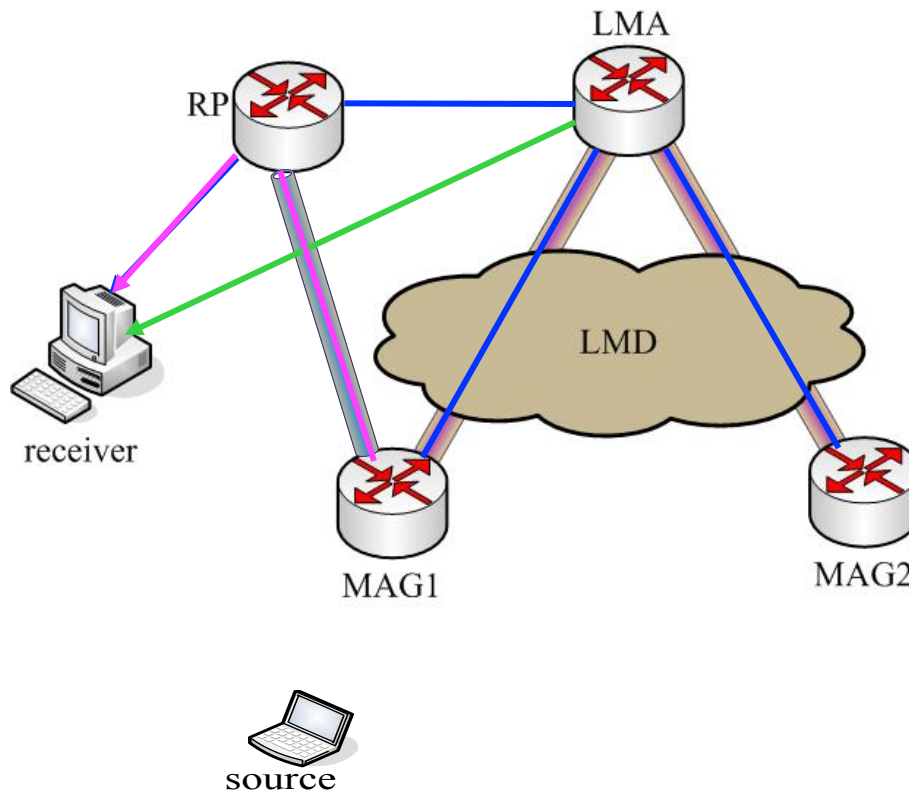
◆ **LMA-based scheme**

◆ **MAG-based scheme**

    ➢ **Passive approach**

    ➢ **Active approach**

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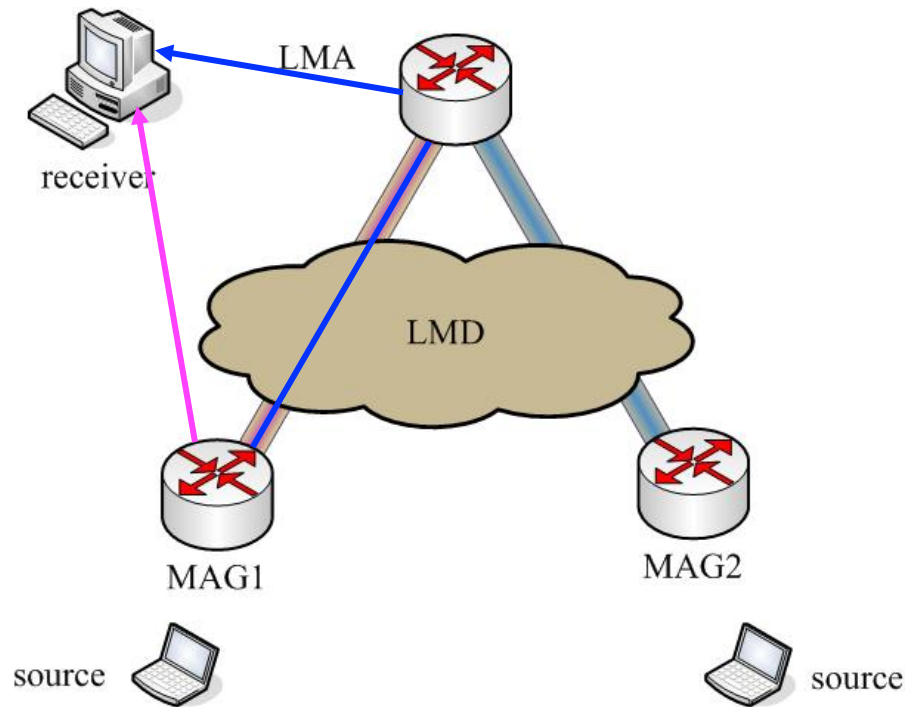
LMA-based vs. MAG-based

			PMIPv6 Extension	PIM-SM Extension	Handover Delay	Handover Overhead	Path
ASM	LMA-based	RPT	/	/	low	low	worst
		SPT	/	/	low	low	medium
	MAG-based	RPT	MAG	/	low	low	better than LMA-based RPT
		SPT	MAG/LMA	MR & receiver DR	high	high	best
SSM	LMA-based		/	/	low	low	medium
	MAG-based		MAG/LMA	MR & receiver DR	high	high	best

- ◆ **MAG-based SPT**
  - ➢ **Optimal path**
  - ➢ **Unstable & high handover delay and overhead**
  - ➢ **It needs to extend multicast routing protocol and difficult to implement.**
- ◆ **LMA-based schemes**
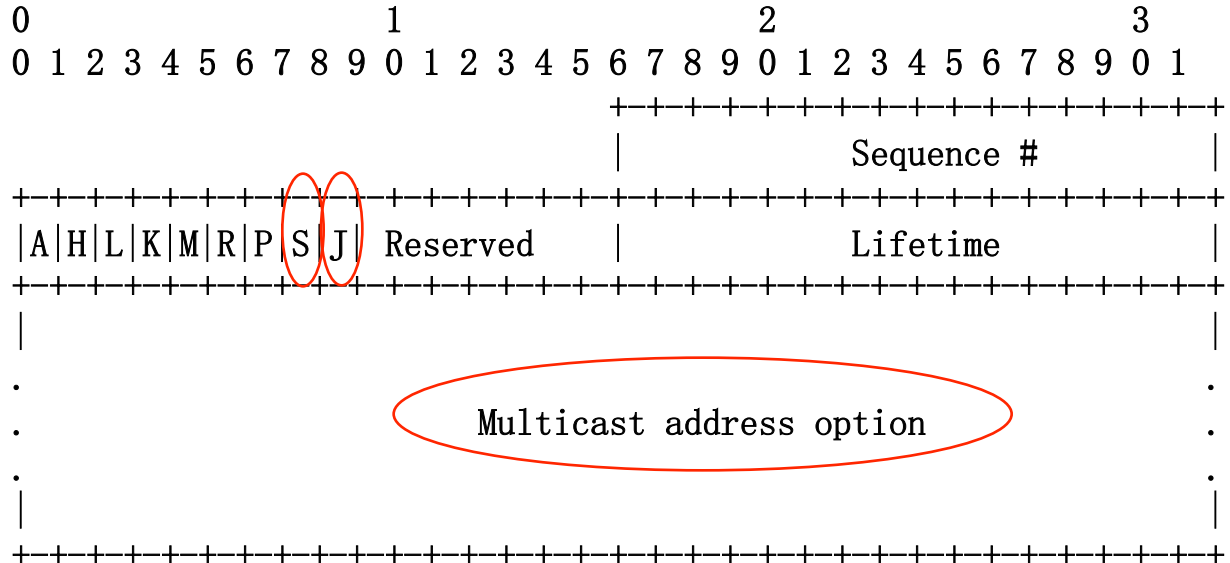 - ➢ **Simpler for implementation than other schemes**
  - ➢ **Suboptimal path**
- ◆ **MAG-based RPT**
  - ➢ **It's path is better than the LMA-based RPT in ASM**
  - ➢ **It requires a little extensions at the MAG**

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Extensions of PMIPv6 (1/3)

1. Notify the multicast source-related information in PMIPv6 network
2. Negotiate the multicast support capability between the MAG and the LMA

◆ **PBU**

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
                                +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
                                |           Sequence #          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|A|H|L|K|M|R|P|S|J|  Reserved   |            Lifetime           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                                                               |
.                                                               .
.                    Multicast address option                   .
.                                                               .
|                                                               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
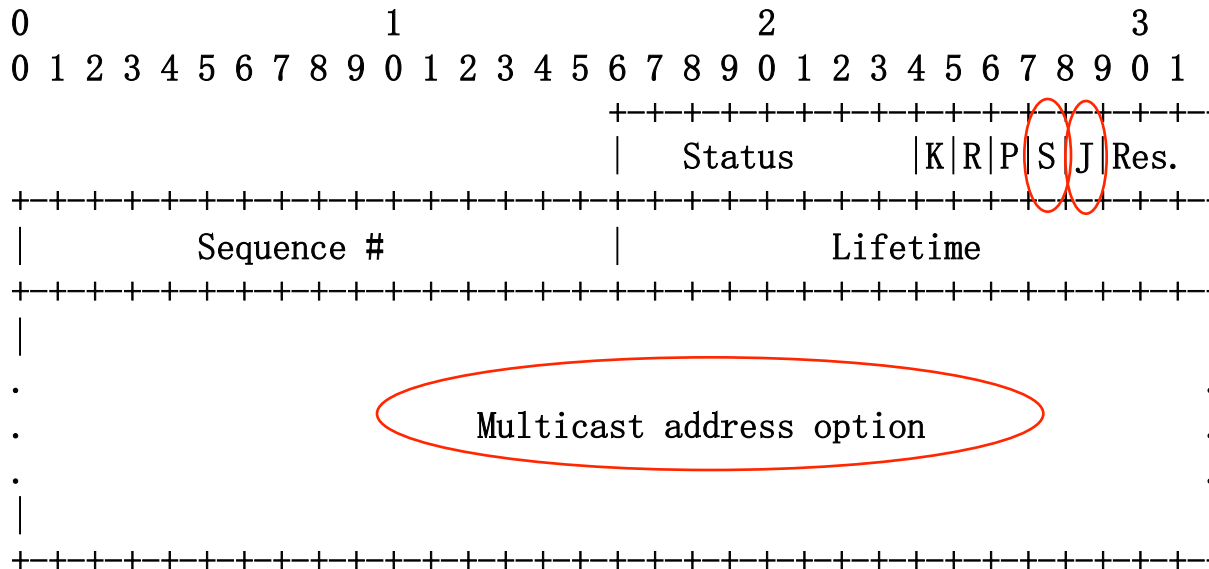
❖ **S flag**: identify the MN is a multicast source
❖ **J flag:** identify the MAG is able to support the MAG-based scheme
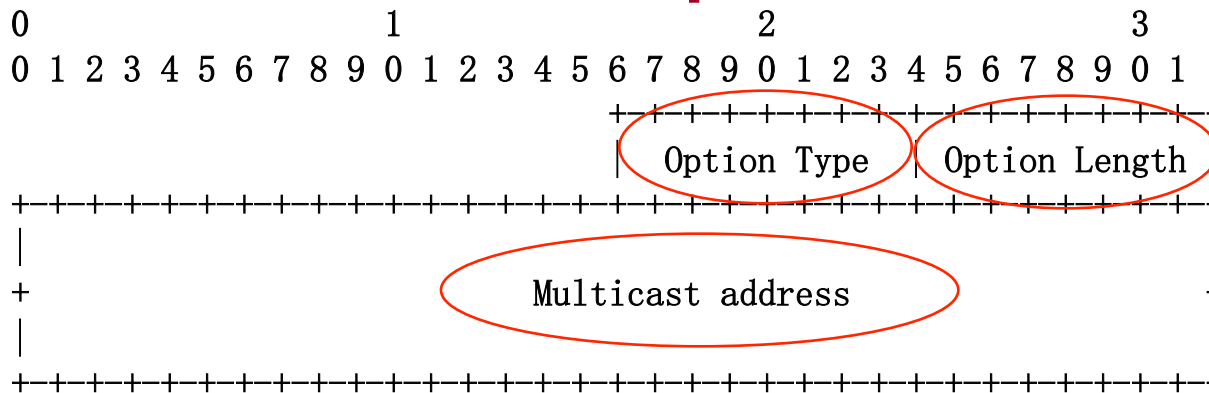❖ **Multicast address option**: the related multicast address

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◆ **PBA**

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
                                +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
                                |    Status     |K|R|P|S|J|Res. |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|          Sequence #           |            Lifetime           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                                                               |
.                                                               .
.                  Multicast address option                     .
.                                                               .
|                                                               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

❖ **S flag and Multicast address option**: identify the MN is a multicast source and the related multicast address

❖ **J flag:** MAG-based tree is allowed by LMA

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◆ Multicast address option

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
                                +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
                                |   Option Type  |  Option Length |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                                                               |
+                       Multicast address                       +
|                                                               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

- ❖ **Option Type**: TBD
- ❖ **Option Length:** 8-bit unsigned integer indicating the length of the option in octets
- ❖ **Multicast address:** The multicast address related to the multicast session provided by the MN

Q & A

Thank You!

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