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**Retransmitted Message Identification Option for Proxy Mobile IPv6
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Abstract

The Proxy Mobile IPv6 base protocol does not provide any mechanism

for the receiver of a mobility signaling message to determine if the received message is the original message or a retransmitted message of an earlier sent message. The absence of such a semantic in some cases results in inefficient processing of the signaling messages and will lead to additional processing load and network traffic.

This document defines a new mobility option, Retransmitted Message Identification option for use in Proxy Binding Update and Proxy Binding Acknowledgement messages. This option enables the mobility entities to use proper message identifiers and retransmit markings on the signaling messages.

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1. Introduction

The Proxy Mobile IPv6 protocol [[RFC-5213](#)] does not provide the ability for the sender of a signaling message to mark retransmitted messages with a proper tag, so the receiver can differentiate between the original message to a retransmitted message. This semantic is important for the receiver to determine when to ignore processing a retransmitted packet, or for various other reasons.

This document defines a new mobility option, Retransmitted Message Identification (RMI) option, that can be used by a local mobility anchor and a mobile access gateway for exchanging message and retransmit identifiers. Following explains how the option helps in detecting retransmitted messages.

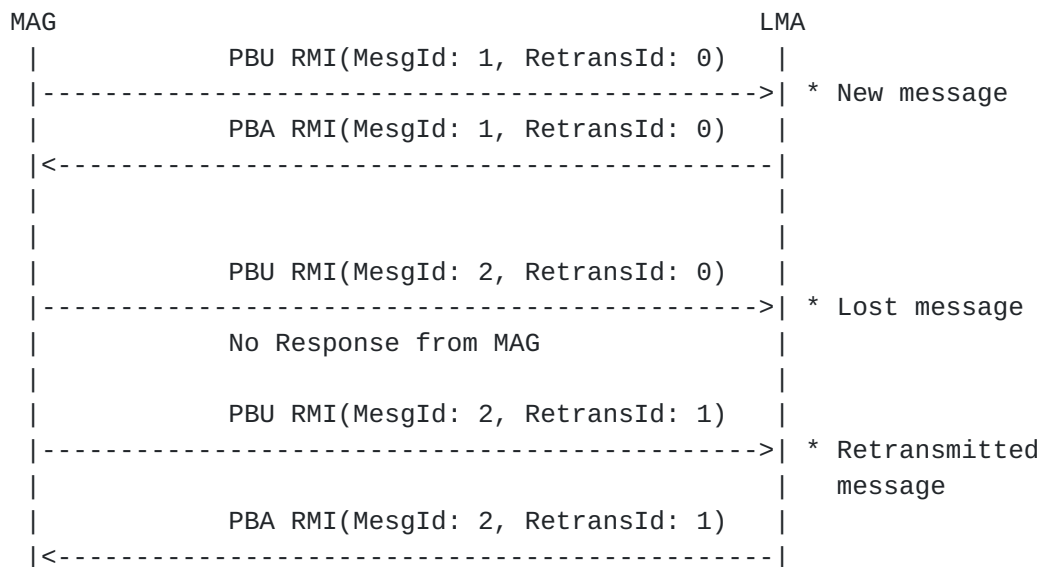


Figure 1: RMI Option Usage

2. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC 2119](#) [[RFC-2119](#)].

3. Signaling and other Considerations

The following are the signaling considerations with respect to

supporting the retransmitted message identification capability.

- o The mobile access gateway can choose to enable the retransmitted message identification feature by including the Retransmitted Message Identification (RMI) option ([Section 4.0](#)) in the Proxy Binding Update that it sends to the local mobility anchor. The configuration variable, EnableRetransmittedMessageIdentification, can be used for controlling this aspect.
- o For constructing the RMI option, each newly generated message MUST have a unique message identifier (mid). This identifier is specified in the mid field of the RMI option. The retransmit identifier (rid) for the initial message will be set to value of zero, this is specified in the rid field of the RMI option. The mobile access gateway can maintain this message identifier as a monotonically increasing counter maintained on a per packet basis for each mobile node's session.
- o The mobile access gateway may retransmit a Proxy Binding Update message if it did not get a response to the previously transmitted request. When retransmitting a message, the message identifier in the RMI option MUST remain fixed and the retransmit identifier MUST be increased by one. All other content in the message including the options MUST be identical, except the sequence number and the value in the Time Stamp option which can be different.
- o The conceptual Binding Update List entry data structure maintained by the mobile access gateway, described in [Section 6.1](#) of [RFC-5213], MUST be extended to store the last sent message identifier and the retransmit identifier.
- o The local mobility anchor MUST include the RMI option in the Proxy Binding Acknowledgement message, if the same option was present in the received Proxy Binding Update. Otherwise, it MUST NOT include the option. When this option is included in the message, the message identifier and the retransmit identifier MUST be set to the option values present in the request.
- o If the local mobility anchor does not support the RMI option, it SHOULD ignore the option and continue processing the rest of the Proxy Binding Update message. The absence of the RMI option in the Proxy Binding Acknowledgement indicates that the sender does not support the Retransmitted Message Identification capability and in such case the mobile access gateway MUST NOT include the RMI option in the subsequent Proxy Binding Update messages that it sends to that local mobility anchor.

- o If the local mobility anchor receives a Proxy Binding Update message while in the middle of processing a request (such as waiting for response from AAA) with the same message identifier, but with a different retransmit identifier, the message MUST be silently ignored.
- o The conceptual Binding Cache entry data structure maintained by the local mobility anchor, described in [Section 5.1 of \[RFC-5213\]](#), MUST be extended to store the last received message identifier and the retransmit identifier.

4. Retransmitted Message Identification (RMI) Option

A new option, Retransmitted Message Identification (RMI) option is defined for using it in Proxy Binding Update and Proxy Binding Acknowledgement messages exchanged between a local mobility anchor and a mobile access gateway. This option is used for carrying message and retransmission identifiers.

The alignment requirement for this option is 4n.

This flag indicates whether or not the mobile access gateway should include the retransmitted message identification option in the mobility signaling messages that it sends to the local mobility anchor.

The default value for this flag is set to FALSE, indicating that the mobile access gateway MUST NOT include this option in any of the Proxy Binding Update messages.

When the value for this flag is set to TRUE, the mobile access gateway MUST include this option in all the Proxy Binding Update messages.

6. IANA Considerations

This specification defines a new Mobility Header option, the Retransmitted Message Identification option. This option can be carried in mobility header messages. This option is described in [Section 4.0](#). The Type value for this option needs to be assigned from the same numbering space as allocated for the other mobility options, as defined in [\[RFC-3775\]](#).

7. Security Considerations

The Retransmitted Message Identification option defined in this specification is for use in mobility signaling messages, Proxy Binding Update and Proxy Binding Acknowledgement messages. This option is carried like any other mobility header option as specified in [\[RFC-3775\]](#) and does not require any special security considerations. The required security mechanisms specified in the base Proxy Mobile IPv6 protocol [\[RFC-5213\]](#) for protecting these signaling messages are sufficient when carrying these mobility options.

8. Acknowledgements

The authors would like to thank Venkatesh Gota, Ashwin Kabadi and Vojislav Vucetic on the discussions related to the similar semantics present in GTP and making the motivation for this work stronger.

9. References

9.1. Normative References

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9.2. Informative References

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