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Update Notifications for Proxy Mobile IPv6  
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Abstract

Proxy Mobile IPv6 (PMIPv6) is a network based mobility management protocol that enables IP mobility for a host without requiring its participation in any mobility-related signaling. This document proposes a mechanism for the Local Mobility Anchor to asynchronously notify the Mobile Access Gateway about changes related to the mobility session.

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PMIPv6 Update Notifications

October 2012

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Internet-Draft

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## 1. Introduction

Proxy Mobile IPv6 [[RFC5213](#)] describes the protocol operations to maintain reachability and session persistence for a Mobile Node (MN) without the explicit participation from the MN in signaling operations at the Internet Protocol (IP) layer. In order to facilitate such network-based mobility, the PMIPv6 protocol defines a Mobile Access Gateway (MAG), which acts as a proxy for the Mobile IPv6 [[RFC6275](#)] signaling, and the Local Mobility Anchor (LMA) which acts similar to a Home Agent. The setup of the mobility session is initiated by the MAG by sending a PBU message and confirmed by the LMA in the PBA message. Once the mobility session is set up for a given lifetime, the LMA has no mechanism to inform the MAG about changes to the mobility session or any parameters related to the mobility session.

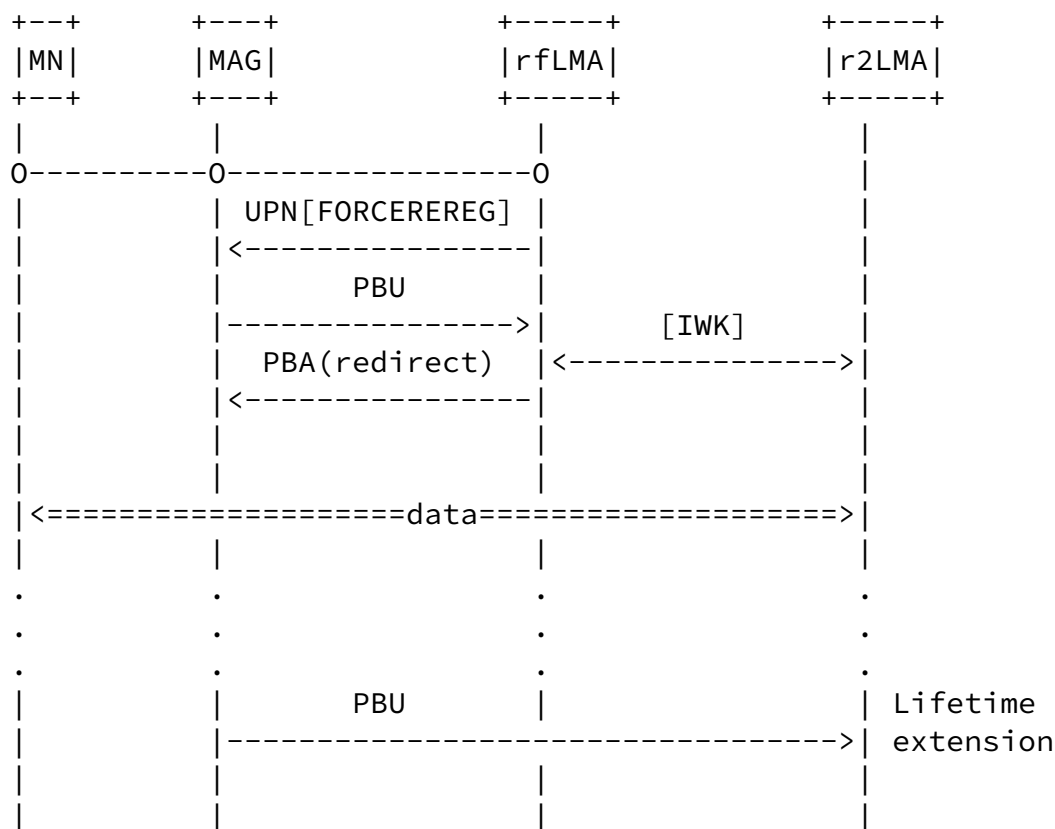
One such scenario where such a mechanism is needed is when the LMA wants to inform the MAG that it needs to reregister. It is possible to achieve a similar effect by using a much shorter lifetime for the mobility sessions but in several networks this results in an unacceptable, and mostly unnecessary, increase in the signaling load and overhead.

This document defines a new mobility header message for performing notifications and a corresponding mobility header message for the MAG to acknowledge the notification. While it is possible to use an existing mobility header type for this purpose, for instance the PMIPv6 Heartbeat message [[RFC5847](#)], the existing messages do not provide the required semantics. e.g. The Heartbeat message does not provide a reason why it was sent.

## 2. Example use case

Consider an use case where an LMA (r1LMA) wants to move over one or more mobility sessions from a given MAG to a different LMA (r2LMA)

using [RFC6463]. e.g. In order to allow planned maintenance. The LMA could send an update notification to the MAG to force a re-registration for one or more MNs. The MAG tries to register and gets a redirect from the rLMA towards the r2LMA.



### 3. LMA Behavior

The LMA sends the Update Notification message in response to a condition that is specified in the Notification Reason field. If the LMA requires an acknowledgement from the MAG concerning the UPN



Sequence Number: A monotonically increasing integer. Set by the LMA and retained for retransmissions.

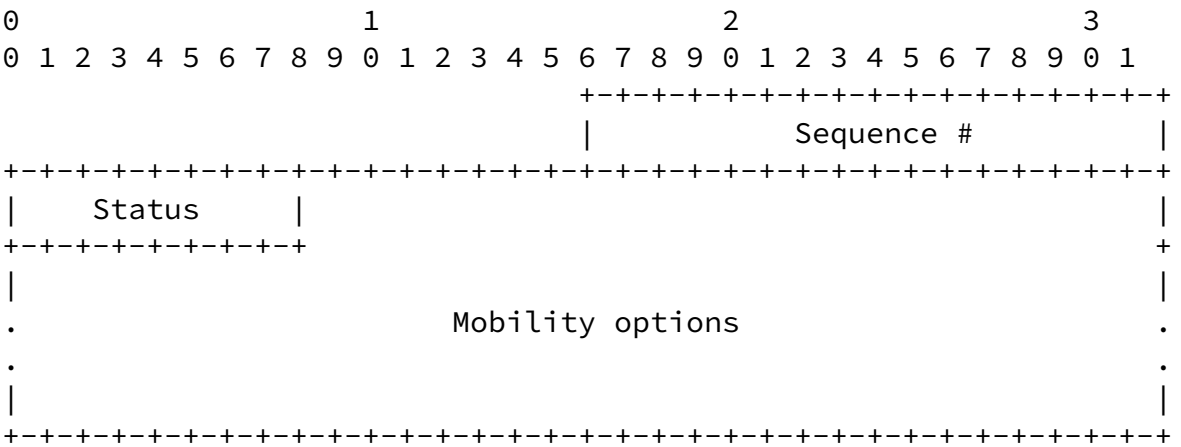
Acknowledgement Requested (A): If this bit is set, the MAG MUST send an UPA message in response to the received UPN message.

Notification Reason: Contains the code corresponding to the reason that caused the LMA to send the Update Notification to the MAG. This field does not contain any structure and MUST be treated as an enumeration.

Mobility Options: Contains a set of mobility options for the MAG to act upon. The set of mobility options that can be present in the message is related to the Notification Reason field in the message.

5.2. Update Notification Acknowledgement(UPA)

The MAG sends an UPA message to a LMA in order to acknowledge that it has received an UPN message with the A bit set.



Sequence Number: Copied from the UPN message being acknowledged.

Status: Specifies the result of the MAG's processing of the UPN message. The status codes between 0 and 127 signify successful processing of the UPN message and codes between 128 and 255 signify that an error occurred during processing of the UPN message.

Mobility Options: Contains a set of mobility options used to provide context to the LMA. The set of mobility options that can be present in the message is related to the Status field in the message.

## 6. Security Considerations

The protocol specified in this document uses the same security association as defined in [[RFC5213](#)] for use between the LMA and the MAG to protect the UPN messages. Support for integrity protection using IPsec is REQUIRED, but support for confidentiality is NOT REQUIRED .

## 7. IANA Considerations

The Update Notification message require a single Mobility Header Type (TBA1) from the Mobility Header Types registry at <http://www.iana.org/assignments/mobility-parameters>

The Update Notification Acknowledgement message require a single Mobility Header Type (TBA2) from the Mobility Header Types registry at <http://www.iana.org/assignments/mobility-parameters>

This document creates a new registry for Notification Reasons. The

allocation policy for this field is First Come, First Served.

This document creates a new registry for Status codes in the UPA message. The allocation policy for this field is First Come, First Served.

## 8. Acknowledgements

The authors would like to thank Basavaraj Patil, Rajeev Koodli and other members of netext working group for their valuable comments to improve this document.

## 9. References

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