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Mobile IPv6 Experimental Messages
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Abstract

This document defines a new experimental Mobility header message and a mobility option that can be used for experimental extensions to the Mobile IPv6 protocol.

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1. Introduction

When experimenting with a protocol or defining a new extension to a protocol, one needs either a protocol number, a new message or an option to carry the information related to the experiment. Most implementations end up using unassigned values for the new messages. Many times this creates problems when the same value is assigned through the IETF standards action, by IANA or if the implementation gets deployed with these messages. Therefore it is considered a good practice to set aside some messages for experimental purposes. The need for experimental messages is shown in [3].

This document defines new messages for experimenting with extensions to the Mobile IPv6 protocol. These messages should be strictly used for experiments. Experiments that are successful should be standardized in the IETF. An implementation MUST NOT be released or deployed with the experimental messages.

This document defines a new Mobility Header message, the Experimental Mobility message that can be sent at any time by the mobile node, the home agent or the correspondent node. Since Mobility Header messages cannot be combined and sent in one packet, there is always only one Mobility Header message in any Mobile IPv6 packet. Home agent or correspondent node implementations that do not recognize the mobility message type, discard the message and send Binding Error message as described in [2], with the Status field set to 2 (unrecognized MH Type value). Mobile nodes that do not recognize the mobility message type should discard the message and send an ICMP Parameter problem with code 0.

This document also defines a new mobility option, the Experimental Mobility option, which can be carried in any Mobility Header message. Mobility options, by definition, can be skipped if an implementation does not recognize the mobility option type [2].

The messages defined in this document can also be used for NEMO

implementations [4].

2. Terminology

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 [1].

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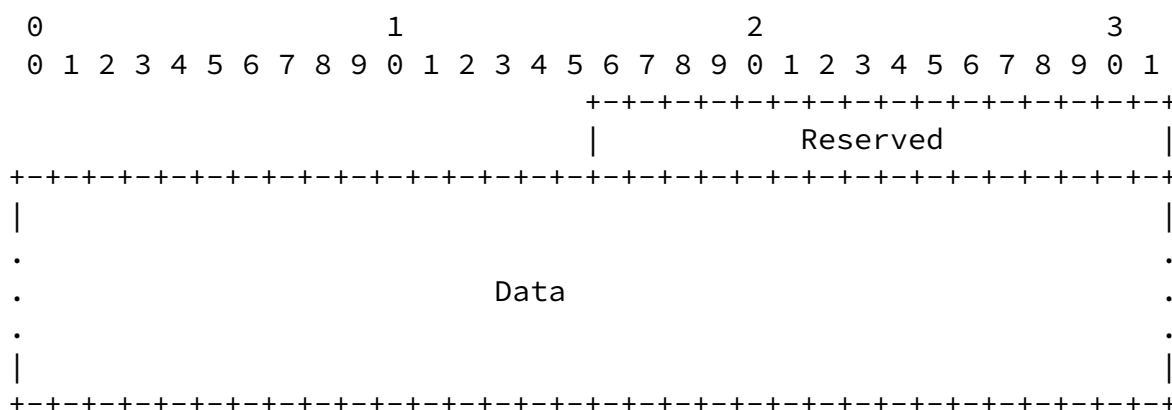
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3. Experimental Mobility Header message

The following illustrates the message format for the Experimental Mobility Header message. The 'MH Type' field in the Mobility Header indicates that it is an Experimental Mobility Header message.

If no data is present in this message, padding is not necessary and since the first 8 octets are excluded while calculating the length of the message, the 'Header Len' field in the Mobility Header is set to 0.



Reserved

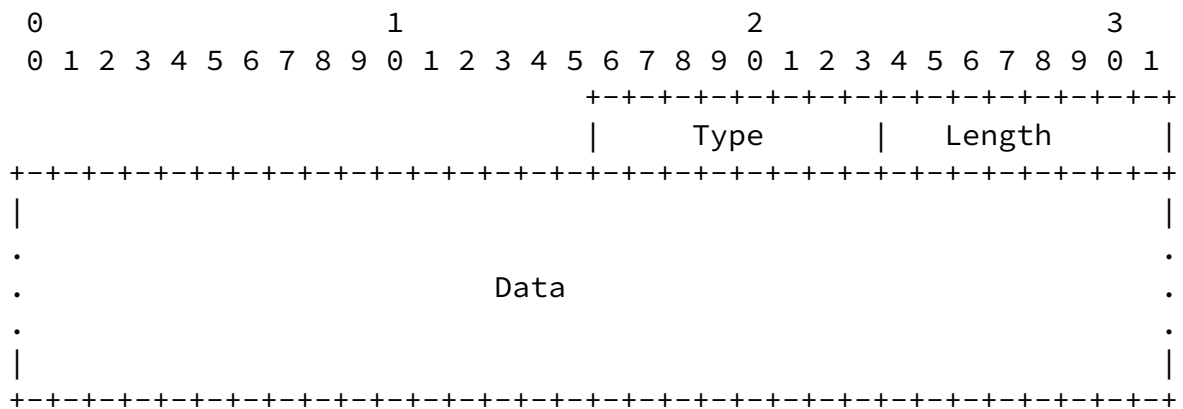
A 16-bit reserved field set to zero by the sender and ignored by the receiver.

Data

Data specific to the experimental protocol extension. The total length is indicated by the 'Header Len' field in the Mobility Header.

4. Experimental Mobility Option

The Experimental mobility option can be included in any Mobility Header message. If the Mobility Header message includes a Binding Authorization Data option [2], then the Experimental Mobility Option should appear before the Binding Authorization Data option.



Type

A 8-bit field indicating that it is an experimental mobility option.

Length

A 8-bit indicating the length of the option in octets excluding the Type and Length fields.

Data

Data related to the experimental protocol extension.

[5.](#) Security Considerations

Protection for the Experimental Mobility Header message and mobility option depends on the experiment that is being carried out and the kind of information that is being carried in the messages. If these messages carry information that should not be revealed on the wire or that can affect the binding cache entry at the home agent or the correspondent node, they should be protected in a manner similar to Binding Updates and Binding Acknowledgements.

[6.](#) IANA Considerations

The Experimental Mobility Header message defined in [Section 3](#), should have the type value allocated from the same space as the 'MH Type' field in the Mobility Header [\[2\]](#).

The Experimental mobility option defined in [Section 4](#), should have the type value allocated from the same space as Mobility Options [\[2\]](#).

[7.](#) Acknowledgements

The author would like to thank Jari Arkko and Basavaraj Patil with whom the contents of this document were discussed first.

[8.](#) References

[8.1.](#) Normative References

- [1] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [2] Johnson, D., Perkins, C., and J. Arkko, "Mobility Support in IPv6", [RFC 3775](#), June 2004.

[8.2.](#) Informative References

- [3] Narten, T., "Assigning Experimental and Testing Numbers Considered Useful", [BCP 82](#), [RFC 3692](#), January 2004.
- [4] Devarapalli, V., Wakikawa, R., Petrescu, A., and P. Thubert, "Network Mobility (NEMO) Basic Support Protocol", [RFC 3963](#), January 2005.

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