

Network Working Group
Internet-Draft
Intended status: Standards Track
Expires: December 9, 2007

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June 7, 2007

Client Initiated Selection of Proxy Mobility
draft-krishnan-netlmm-pmip-sel-00

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Abstract

Proxy MobileIPv6 describes a protocol solution for network based mobility management that relies on Mobile IPv6 signaling and reuse of home agent functionality. This document describes a mechanism by which a mobile node in a PMIPv6 network can signal to the network whether it would like to make use of the Proxy Mobility service.

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1. Requirements notation

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 [[RFC2119](#)].

[2.](#) Introduction

Proxy MobileIPv6 [[PMIPv6](#)] describes a protocol solution for network based mobility management that relies on Mobile IPv6 signaling and reuse of home agent functionality. A proxy mobility agent in the network which manages the mobility for a mobile node is the reason for referring to this protocol as Proxy Mobile IPv6. This protocol is targeted mainly towards mobile nodes that are incapable or unwilling to do their own mobility signaling. If a mobile node that wishes to do its own mobility signaling enters a PMIPv6 network it cannot do so since the PMIP domain makes the MN believe that it is in fact in its home network. This document describes a mechanism by which a mobile node in a PMIPv6 network can signal to the PMIPv6 network whether it would like to make use of the Proxy Mobility service or not.

3. Mechanism

According to [\[PMIPv6\]](#) the mobile node uses the Router Advertisements from the Access Router (which is the proxy mobility agent) to autoconfigure its address on the new link. The PMA receives a Router Solicitation from the MN and responds with a Router Advertisement containing the MN's home prefix. The proposed mechanism uses this Router Solicitation to signal to the PMA as to whether it requests the Proxy Mobility Service or not. For this purpose, this document creates a new flag bit in the IPv6 Router Solicitation called the C bit. A mobile node that utilises this mechanism and wants to perform its own signaling, MUST set the C bit to one. The PMA that receives it SHOULD respond with a Router Advertisement containing a topologically correct prefix for the link (i.e. Not the home prefix).

4. Changes to Router Solicitation Message Format

This document modifies the format of the Router Solicitation Message specified in [[RFC2461](#)] to look like the following

```

      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
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|      Type      |      Code      |      Checksum      |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|C|                                     Reserved                                     |
+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+---+
|  Options ...
+---+---+---+---+---+---+---+
ICMP Fields:
```

Type	133
Code	0
Checksum	The ICMP checksum. See [ICMPv6].
C	If this bit is set, it means that the sending MN would like to perform its own signaling.
Reserved	This field is unused. It MUST be initialized to zero by the sender and MUST be ignored by the receiver.

Figure 1: Router Solicitation Format

5. Backward Compatibility

MNs which are not aware of this specification will not set the C bit and hence the PMA would provide them with proxy mobility service. PMAs not aware of this bit when a client sets the C bit to 1 will ignore it as specified in [[RFC2461](#)]

The mechanism described in this document signals to the network infrastructure that the sending MN is capable of doing its own mobility signaling and does not wish to avail of the proxy mobility service. If a node is incapable of doing so, an on-link attacker can send a spoofed router solicitation and deny proxy mobility service to the node. The usage of SEND [[RFC3971](#)] would prevent this from happening.

7. Normative References

- [PMIPv6] Gundavelli, S., "Proxy Mobile IPv6",
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- [RFC2461] Narten, T., Nordmark, E., and W. Simpson, "Neighbor
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- [RFC3971] Arkko, J., Kempf, J., Zill, B., and P. Nikander, "SEcure
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Acknowledgment

Funding for the RFC Editor function is provided by the IETF Administrative Support Activity (IASA).