**The Mobility Agent Configuration Option to PPP IP Control Protocol
(IPCP)
draft-patel-mobileip-pppext-00.txt**

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Abstract

   This document specifies a new option to the IP Control Protocol
   (IPCP) which can be used by mobile nodes to allow more efficient use
   of PPP along with the mobile-IP protocol. The new option allows the
   mobile IP peers to negotiate the use of mobile IP protocol over a
   PPP link. This option allows a requesting peer to determine if the
   responding peer is capable of and willing to perform either home or
   foreign agent functions of mobile IP. As part of this transaction,
   the requesting peer provides its own IP address to the responding
   peer and requests a care-of address from the responding peer.

[1]. Introduction

Mobile-IP [1] allows mobile nodes to move from one point of
attachment within the Internet to another, and defines mechanisms by
which a home agent on the mobile node's home network can send packets
to the mobile node. PPP [3] offers a popular means by which mobile
nodes may attach to the Internet, often by creation of links using
telephone hookups. Mobile-IP requires that the mobile node acquire a
care-of address at every new point of attachment when it is away from
its home network.

In this document, a mobility agent is defined to be either a home
agent or a foreign agent, as those terms are defined in [1].

There are two ways in which a mobile IP host might communicate with
the rest of the network as a dial-in client over a PPP link.

1. The mobile node could be able to decapsulate datagrams sent to
   its care-of address, and

2. The dial-in server could be capable of being the foreign or home
   agent for the mobile IP peer.

If, as in (1), the mobile IP host is capable of assigning a new
care-of address to one of its interfaces and decapsulating datagrams
sent to that care-of address, it could obtain an address through
the IP Address option of IPCP and use that as care-of address. No
changes are required in IPCP for this mode of operation.

However, if as in (2) the mobile IP host cannot, or does not choose
to, decapsulate datagrams sent to its care-of address, it must
determine whether its peer (e.g., the dial-in server) is capable of
serving as a home or foreign agent for the mobile node. In order to
do that, the mobile IP host will use the Mobility Agent Configuration
option proposed in this document to notify the server of its home
address. The responding peer will indicate if it can act as a home
agent or as a foreign agent for the mobile node. In the latter case,
it will also provide a care-of address to the mobile node.

This document specifies an option to IPCP [2, 3], which is an
integral part of the PPP protocol suite, to allow the mobile node
determine if its peer is a mobility agent, and possibly to obtain
a care-of address useful with the mobile-IP protocol, when it
negotiates with a PPP peer.

2. The Mobility Agent Configuration Option to IPCP

This configuration option enables a mobile node to negotiate with a
peer which is capable of being mobility agent. When a peer receives
the Mobility Agent Configuration option with a valid IP address, it
MUST respond in one of the following ways:

 a. Configure-Ack with its own IP address, meaning that the
    requesting peer is connected to its home subnet, and that the
    responding peer can act as a home agent.

    After the link is established, the responding peer MUST send
    a Mobile-IP Agent Advertisement, possibly in response to a
    Mobile-IP Agent Solicitation.

 b. Configure-Nak with a care-of address, meaning that the mobile
    node is not connected to its home subnet. However, the
    responding peer is capable of and is willing to act as a foreign
    agent for the requesting peer. The care-of address to be used by
    the requesting peer is included in the response.

    After the link is established, the responding peer MUST send
    a Mobile-IP Agent Advertisement, possibly in response to a
    Mobile-IP Agent Solicitation.

 c. Configure-Rej to indicate that the responding peer is not capable
    of being a mobile IP foreign/home agent or it does not implement
    this option.

The requesting peer may send requests with IP Address and the
Mobility Agent Configuration options at the same time. However,
if the Mobility Agent Configuration option is supported by the
responding peer, the requesting peer may not need to use the IP
address obtained using the IP Address option. Therefore, it is
recommended that a mobile IP peer first try the Mobility Agent
Configuration option and then the IP Address option, if necessary.

3. Format of the Mobility Agent Configuration Option

The format of the Mobility Agent Configuration Option is shown below.

```
 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      |    Length     |         IP Address ...
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   ...   IP Address (cont)      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

    Type   4

    Length   6

    IP Address   The four octet IP Address is the home address of
                  the mobile node which sends the Mobility Agent
                  Configuration option.

4. Security Considerations

Security considerations are not addressed in this document.

References

    [1] IETF Mobile-IP Working Group. IPv4 Mobility Support.
        ietf-draft-mobileip-protocol-12.txt - work in progress, September
        1995.

    [2] G. McGregor. The PPP Internet Procotol Control Protocol (IPCP).
        RFC 1332, May 1992.

    [3] G. McGregor and G. S. Pall. draft-ietf-pppext-ipcp-network-00.txt.
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