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**Home Info Discovery for Mobile IPv6 via ICMPv6 Router Advertisement
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Abstract

For Mobile IPv6 service, the mobile node first connects to an Access Router and obtain an IPv6 address to use it as a Care-of-Address. In many networks, the Access Router sends Router Advertisement to the mobile node to convey various information. If the Access Router has the knowledge of the mobile nodes home info such as home agent address, the Access Router can convey that info to the mobile node along with the Router Advertisement. This document proposes a method

that will allow the Access Router to include home info of the mobile node in the Router Advertisement message.

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1. Introduction and Scope

Mobile IPv6 service [[RFC3775](#)] requires the Mobile Node to acquire a Care-of Address (CoA) from the Access Router (AR) on the link where it is currently attached. Moreover, the MN needs to have knowledge of certain home network information such as address of the Home Agent and the related Home Link Prefix (for Home Address auto-configuration) prior to sending a Binding Update to register with the Home Agent.

As part of the network attachment procedure in the current point of attachment, the AR sends Router Advertisement (RA) (solicited or unsolicited) to the MN to assist it in auto configuration of CoA and to convey information about other link specific parameters [[RFC2461](#)], [[RFC2462](#)]. It is possible that the AR has knowledge of the MN's home network info at the time of sending the RA to the MN. Consider the case when the NAS and the AR are collocated and the NAS received the home network info such as HL prefix and the Home Agent address for the MN from the Home AAA as part of the authentication and authorization phase during layer 2 establishment. There may also be cases, where the AR has the knowledge of the MN's home info via provisioning or via other out of band methods.

Nevertheless, if the AR have the home network info for the MN it can pass it to the MN via the RA that it sends to the MN. This certainly speeds up the network connection setup process. This document defines the ICMPv6 options that will carry such info in the RA. The home info identified in the document are HL prefix and Home Agent address. The defined format of the option is generic enough to carry other information if needed in the future.

2. Terminology

The keywords "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](#)].

3. Solution Overview

When the link between the MN and AR becomes enabled i.e. the bearer path is open, the AR sends a Router Advertisement (RA) message to the MN. The RA message is defined in [[RFC2461](#)]. If the AR already has the MN's HL prefix and/or Home Agent address (either via pre-configuration or retrieved earlier during AAA exchange for the link establishment), it MUST include the same in corresponding options (described in [section 4](#)) in the Router Advertisement message.

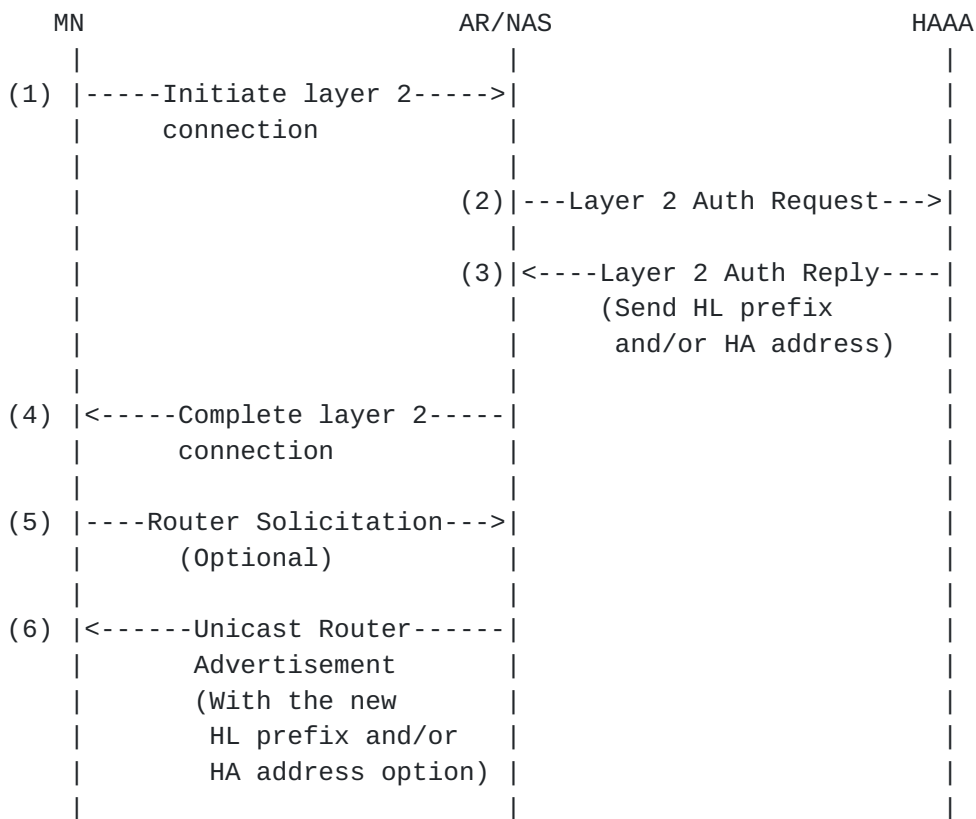


Figure 1. Message flow for the proposed method with HAAA assist

Description of the steps:

1. The MN and the NAS begins L2 setup. As part of the L2 authentication and authorization process, either PPP LCP or EAP over foo (where foo is specific link technology or PANA) is initiated.
2. The NAS exchanges AAA messages with the Home AAA (HAAA) to authenticate and authorize the MN.
3. The NAS receives successful authentication indication from the HAAA. As part of the authorization data, the HAAA sends HL prefix and/or Home Agent information to the NAS.
4. The NAS and the MN completes L2 establishment.
5. At this step, the MN MAY send a Router Solicitation message to begin L3 configuration process. However, this step is entirely optional as the AR is not always waiting for the MN to send this trigger to send an RA.

4. The ICMPv6 Options for Home Info

4.1 IPv6 Home Link Prefix Option

[illegible]

0 (Zero).

Checksum

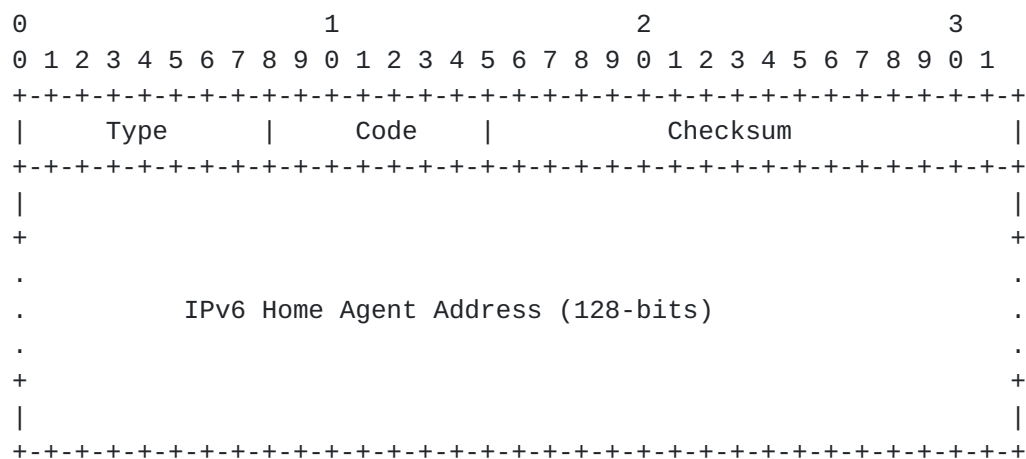
The ICMPv6 checksum.

IPv6 Address prefix of the Home-Link

The IPv6 prefix of the Home-Link assigned to the MN. The MN MAY auto-configure and Home Address (HoA) using this prefix.

4.2 Home Agent IPv6 Address Option

The Home Agent IPv6 Address info is sent via this option in the RA. The format of the option is as follows:



Type

A 8-bit field indicating the type of the option. To be assigned by IANA.

Code

0 (Zero).

Checksum

The ICMPv6 checksum.

IPv6 Address prefix of the Home-Link

The IPv6 Address of the Home Agent that is assigned to the MN.

5. Node Requirements

TBD.

5.1 Mobile Node Requirements

TBD.

5.2 Access Router/NAS Requirements

TBD.

6. Security Considerations

The MN MUST be able to trust the received RA from the Access Router. This is a basic requirement for establishing connectivity in an IPv6 network. There are no additional security concerns applicable to the solution proposed here.

7. IANA Considerations

The following Extension Types MUST be assigned by IANA:

IPv6 Home Link Prefix Option Type: TBD-1.

Home Agent IPv6 Address Option Type: TBD-2.

8. Acknowledgements

TBD.

9. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2460] Deering, S. and R. Hinden, "Internet Protocol, Version 6 (IPv6) Specification", [RFC 2460](#), December 1998.
- [RFC2461] Narten, T., Nordmark, E., and W. Simpson, "Neighbor Discovery for IP Version 6 (IPv6)", [RFC 2461](#), December 1998.
- [RFC2462] Thomson, S. and T. Narten, "IPv6 Stateless Address Autoconfiguration", [RFC 2462](#), December 1998.
- [RFC3775] Johnson, D., Perkins, C., and J. Arkko, "Mobility Support in IPv6", [RFC 3775](#), June 2004.

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