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Mobility API Extension for Distributed Mobility Management
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Abstract

In order to provide an appropriate level of mobility support that a mobile node may require for proper performance of various applications, it is important to enable applications to select addresses that will be managed properly by the mobility management infrastructure. Previous documents have enabled address selection on the basis of certain characteristics such as randomness, temporary usage, scope of validity, and so on. This document proposes new classes of addresses in addition to those already available, to enable an application to receive certain kinds of mobility support.

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1. Introduction

An extension to the socket API (see [RFC5014]) has been specified to allow an application to identify its preference among multiple source addresses. Furthermore, there are proposals ([I-D.draft-korhonen-6man-prfix-properties] and [I-D.draft-bhandari-dhc-class-based-prefix-04]) to extend router advertisement to carry property and class information for the advertised prefixes. Those proposals enable a mobile node to learn the property and class information for the prefix from the router advertisement message. This document proposes an extension to [RFC5014] which would add more prefix classes so that an application could select prefixes with properties that are important for distributed mobility management.

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 RFC 2119 [RFC2119].

3. Proposed Extension of RFC 5014

A socket API extension defined in [RFC5014] is used for IPv6 source address selection. An application can use this API to override the default source address selection mechanism for IPv6. Currently, the following types of source address selection preference are defined in [RFC5014]:

IPV6_PREFER_SRC_HOME /* Prefer Home address as source */

IPV6_PREFER_SRC_COA /* Prefer Care-of address as source */

IPV6_PREFER_SRC_TMP /* Prefer Temporary address as source */

IPV6_PREFER_SRC_PUBLIC /* Prefer Public address as source */

IPV6_PREFER_SRC_CGA /* Prefer CGA address as source */

IPV6_PREFER_SRC_NONCGA /* Prefer a non-CGA address as source */

This document proposes the addition of two new flags:

IPV6_PREFER_SRC_LOCAL_HNP /* Prefer a local home prefix */

IPV6_PREFER_SRC_REMOTE_HNP /* Prefer a remote home prefix */

The local home prefix may be preferred by applications which are likely to discontinue operations before the device travels to distant networks. On the other hand, a remote home prefix may be more suitable for continued operation over wide areas, but at potentially increased cost for mobiilty management.

4. Usage Example

This section gives usage examples for the new flags API extension.

Relevant distributed mobility management practices are discussed in [I-D.draft-ietf-dmm-best-practices-gap-analysis-01] and [I-D.draft-seite-dmm-dma-06]. The concept of dynamic anchoring concept is introduced, which means that the mobile node can have multiple mobility anchor points. Then, the mobile node can select a locally allocated IP address for newly launched applications for optimized routing. When the application continues communications while the mobile node moves to a new point of attachment, the mobile node can nevertheless stilluse the IP address allocated by previous anchor point for the on going communications. When the application terminates, the mobile node will release the IP address allocated by the previous anchor point.

In the dynamic anchoring scenario, the newly started application should use an IP address allocated by the local mobility anchor. The application can use IPV6_PREFER_SRC_LOCAL_HNP flag to select the local allocated IP address. For more long-lived communications, the application can use IPV6_PREFER_SRC_REMOTE_HNP flag to select the home address allocated by the previous mobility anchor to enable session continuity.

5. IANA Considerations

This document makes no request of IANA.

Note to RFC Editor: this section may be removed on publication as an RFC.

6. Security Considerations

TBD

7. Acknowledgements

TBD

8. References

8.1. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC5014] Nordmark, E., Chakrabarti, S., and J. Laganier, "IPv6 Socket API for Source Address Selection", RFC 5014, September 2007.

8.2. Informative References

[I-D.draft-bhandari-dhc-class-based-prefix-04] , "DHCPv6 class based prefix ", draft-bhandari-dhc-class-based-prefix-04 (work in progress), February 2013.

[I-D.draft-ietf-dmm-best-practices-gap-analysis-01] , "Distributed Mobility Management: Current practices and gap analysis ", draft-ietf-dmm-best-practices-gap-analysis-01 (work in progress), June 2013.

[I-D.draft-korhonen-6man-prfix-properties] , "IPv6 Prefix Properties", draft-korhonen-6man-prfix-properties (work in progress), February 2013.

[I-D.draft-seite-dmm-dma-06]
, "Distributed Mobility Anchoring", draft-seite-dmm-dma-06
(work in progress), Nov 2013.

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