       Reserved IPv6 Interface Identifier for Proxy Mobile IPv6
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Abstract

   Proxy Mobile IPv6 [RFC5213] requires all the mobile access gateways
   to use a fixed link-local and link-layer addresses on any of its
   access links that it shares with the mobile nodes. This was intended
   to ensure a mobile node does not detect any change with respect to
   its layer-3 attachment even after it roams from one mobile access
   gateway to another. In the absence of any reserved addresses for
   this use, it requires coordination across vendors and the manual
   configuration of these addresses on all the mobility elements in a
   Proxy Mobile IPv6 domain. This document attempts to simplify this
   operational requirement by making reservation for special addresses
   that can be used for this purpose and it also updates RFC 5213.

Status of this Memo

   This Internet-Draft is submitted in full conformance with the
   provisions of BCP 78 and BCP 79.

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   This Internet-Draft will expire on June 17, 2012.

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1. Introduction

   Proxy Mobile IPv6 [RFC5213] is a network-based mobility management
   protocol that enables IP mobility support for a mobile node without
   requiring its participation in any mobility-related signaling. The
   mobility elements in the network ensure that the mobile node does not
   detect any change with respect to its layer-3 attachment even after
   it roams from one mobile access gateway to another and changes its
   point of attachment in the network. All the mobile access gateways
   in a Proxy Mobile IPv6 use a fixed link-local address and a fixed
   link-layer address on any of its access links that they share with
   the mobile nodes. This essentially ensures a mobile node after
   performing an handoff does not detect any change with respect to the
   IP network configuration.

   Although the base Proxy Mobile IPv6 specification [RFC5213] requires
   the use of a fixed link-local and a fixed link-layer address, it did
   not reserve any specific addresses for this purpose and this is
   proving to be a operational challenge in deployments involving multi-
   vendor equipment. To address this problem, this specification makes
   the following two reservations.

   1. This specification reserves one single Ethernet unicast address,
       (IANA-TBD1), for the use of Proxy Mobile IPv6. This reserved
       link-layer address SHOULD be used by the mobile access gateway in
       a Proxy Mobile IPv6 domain, on all of the access links that it
       shares with the mobile nodes. The protocol configuration
       variable, FixedMAGLinkLayerAddressOnAllAccessLinks [RFC5213],
       SHOULD be set to this reserved address. The mobile access
       gateway can use this address in all packet communication with the
       mobile node on the access links. Considerations from [RFC5342]
       apply with respect to the use of Ethernet parameters in IETF
       protocols. This address is allocated from the registry, "IANA
       Ethernet Address block - Unicast Use".

   2. This specification reserves an IPv6 interface identifier, (IANA-
       TBD2). This interface identifier is a modified EUI-64 interface
       identifier generated from the allocated Ethernet unicast address
       (IANA-TBD1). The reserved IPv6 interface identifier SHOULD be
       used by all the mobile access gateways in a Proxy Mobile IPv6
       domain on all of the access links that it shares with the mobile
       nodes. The protocol configuration variable,
       FixedMAGLinkLocalAddressOnAllAccessLinks [RFC5213], SHOULD be set
       to the link-local address generated using this reserved IPv6
       interface identifier. The mobile access gateway can use this
       link-local address generated using this reserved IPv6 interface
       identifier in all Neighbor Discovery [RFC4861] related
       communication with the mobile node.

2. Conventions & Terminology

2.1. Conventions

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].

2.2. Terminology

All the mobility related terms used in this document are to be
interpreted as defined in the base Proxy Mobile IPv6 specifications
[RFC5213], [RFC5844]. All the IPv6 addressing related terminology is
to be interpreted as specified in [RFC4291].

3. IANA Considerations

This document requires the following two IANA actions.

o Action-1: This specification reserves one single Ethernet unicast
   address, (IANA-TBD1), for Proxy Mobile IPv6. This address needs
   to be reserved from the block. "IANA Ethernet Address block -
   Unicast Use".

o Action-2: This specification reserves an IPv6 interface identifier
   (IANA-TBD2) for Proxy Mobile IPv6 [RFC5213] from the registry,
   "Reserved IPv6 Interface Identifiers" [RFC5453]. This interface
   identifier is a modified EUI-64 interface identifier generated
   from the allocated Ethernet unicast address (IANA-TBD1) as
   specified in Appendix A of [RFC4291].

4. Security Considerations

All the security considerations specified in [RFC5213], and [RFC5844]
continue to apply to the mobility elements in a Proxy Mobile IPv6
domain, when enabled to conform to this specification. Specifically,
the issues related to the use of fixed link-local and link-layer
address documented in section 6.9.3 of the base Proxy Mobile IPv6
specification are equally relevant here. In some sense, the
reservations made in this specification results in the use of the
same set of link-local and link-layer address values beyond a single
Proxy Mobile IPv6 domain, thereby expanding the scope of the existing
problem related to asserting ownership on the configured addresses
from a single domain to multi-domain. Future work may be needed to
address these issues.

5. Acknowledgements

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6. References

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