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Reserved IPv6 Interface Identifier for Proxy Mobile IPv6

Abstract

Proxy Mobile IPv6 (RFC 5213) requires that all mobile access gateways use a fixed link-local address and a fixed link-layer address on any of their access links that they share with mobile nodes. This requirement was intended to ensure that 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, coordination across vendors and manual configuration of these addresses on all of the mobility elements in a Proxy Mobile IPv6 domain are required. This document attempts to simplify this operational requirement by making a reservation for special addresses that can be used for this purpose. This document also updates RFC 5213.

Status of This Memo

This is an Internet Standards Track document.

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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 mobile access gateways in a Proxy Mobile IPv6 domain use a fixed link-local address and a fixed link-layer address on any of their access links that they share with the mobile nodes. This essentially ensures that a mobile node, after performing a 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. This is proving to be an operational challenge in deployments involving multi-vendor equipment. To address this problem, this specification makes the following two reservations.

1. This specification reserves one Ethernet unicast address, 00-00-5E-00-52-13, for use with 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, 0200:5EFF:FE00:5213. This interface identifier is a modified EUI-64 interface identifier generated from the allocated Ethernet unicast address 00-00-5E-00-52-13. This reserved IPv6 interface identifier SHOULD be used by all of the mobile access gateways in a Proxy Mobile IPv6 domain on all of the access links that they share 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-related [RFC4861] communication with the mobile node.

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

3. IANA Considerations

- o This specification reserves one Ethernet unicast address, 00-00-5E-00-52-13, for Proxy Mobile IPv6. This address has been reserved in the registry "IANA Ethernet Address Block - Unicast Use".
- o This specification reserves an IPv6 interface identifier, 0200:5EFF:FE00:5213, for Proxy Mobile IPv6 [RFC5213] in the registry "Reserved IPv6 Interface Identifiers" [RFC5453]. This interface identifier is a modified EUI-64 interface identifier generated from the allocated Ethernet unicast address 00-00-5E-00-52-13, as specified in Appendix A of [RFC4291].

4. Security Considerations

All of the security considerations specified in [RFC5213] and [RFC5844] continue to apply to the mobility elements in a Proxy Mobile IPv6 domain when those elements conform to this specification. Specifically, the issues related to the use of fixed link-local and link-layer addresses as 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 result 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 of the configured addresses from a single domain to a multi-domain environment. Future work may be needed to address these issues.

5. Acknowledgements

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6. References

6.1. Normative References

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6.2. Informative References

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