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The AERO Address
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Abstract

IPv6 interfaces are required to have a link-local address that is unique on the link. Nodes normally derive a link local address through the use of IPv6 Stateless Address Autoconfiguration (SLAAC) along with Duplicate Address Detection (DAD). This document presents a method for a node to construct a link-local address that is assured to be unique on the link when the node has already received a delegated prefix. This is through the construction of a link-local address format known as the AERO address.

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 December 7, 2017.

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1. Introduction

IPv6 interfaces are required to have a link-local address that is unique on the link [RFC2460][RFC4861]. Nodes normally derive a link local address through the use of IPv6 StateLess Address Auto Configuration (SLAAC) along with Duplicate Address Detection (DAD) [RFC4862]. This document presents a method for a node to construct a link-local address that is assured to be unique on the link when the node has already received a delegated prefix. This is through the construction of a link-local address format known as the AERO address.

2. Terminology

The terminology in the normative references applies.

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 [RFC2119]. Lower case uses of these words are not to be interpreted as carrying RFC2119 significance.

3. The AERO Address

An AERO address is an IPv6 link-local address with an interface identifier based on a prefix that has been delegated to a node for its own exclusive use. AERO addresses begin with the prefix fe80::/64 and include in the interface identifier (i.e., the lower 64

bits) a 64-bit prefix taken from one of the node's delegated prefixes. For example, if the node receives the IPv6 prefix:

2001:db8:1000:2000::/64

it constructs its corresponding AERO addresses as:

fe80::2001:db8:1000:2000

After constructing the AERO address, the node can assign the address to the interface over which it received the prefix delegation. Since the prefix delegation is already known to be unique, the node need not use Duplicate Address Detection (DAD) to test the AERO address for uniqueness since no other node on the link will configure the same address.

AERO addresses can be constructed for any IPv6 prefix that is no longer than /64. For prefixes shorter than /64, the AERO address is constructed based on the lowest-numbered /64 prefix taken from the shorter prefix. For example, if the node received the IPv6 prefix:

2001:db8:1000:2000::/56

it constructs its corresponding AERO addresses as:

fe80::2001:db8:1000:2000

4. Intended Use Cases

The AERO address is intended for use by mobile networks that comprise a mobile router and a tethered network of "Internet of Things" devices that travel together with the router as a single unit. The mobile router assigns the AERO address to its upstream interface over which it receives a prefix delegation from a delegating router. The manner for receiving the delegated prefix could be through static configuration or some automated prefix delegation service.

Many other use case scenarios are possible (e.g., home networks) but the above case extends to multitudes of applications, e.g., a cell phone and its associated devices, an airplane and its on-board network, etc.

5. Implementation Status

Public domain implementations exist that use the AERO address format as described in this document.

6. IANA Considerations

This document introduces no IANA considerations.

7. Security Considerations

TBD

8. Acknowledgements

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9. References

9.1. Normative References

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[RFC4861] Narten, T., Nordmark, E., Simpson, W., and H. Soliman, "Neighbor Discovery for IP version 6 (IPv6)", RFC 4861, DOI 10.17487/RFC4861, September 2007, <http://www.rfc-editor.org/info/rfc4861>.

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9.2. Informative References

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