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Recommendation on Stable IPv6 Interface Identifiers
draft-ietf-6man-default-iids-00

Abstract

Stateless Address Autoconfiguration (SLAAC) for IPv6 typically results in hosts configuring one or more stable addresses composed of a network prefix advertised by a local router, and an Interface Identifier that typically embeds a hardware address (e.g., an IEEE LAN MAC address). The security and privacy implications of embedding hardware addresses in the Interface Identifier have been known and understood for some time now, and some popular IPv6 implementations have already deviated from such schemes to mitigate these issues. This document recommends [I-D.ietf-6man-stable-privacy-addresses] as the default scheme for the generating stable IPv6 addresses and recommends against embedding hardware addresses in IPv6 Interface Identifiers.

Status of this Memo

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1. Introduction

[RFC4862] specifies Stateless Address Autoconfiguration (SLAAC) for IPv6 [RFC2460], which typically results in hosts configuring one or more "stable" addresses composed of a network prefix advertised by a local router, and an Interface Identifier (IID) [RFC4291] that typically embeds a hardware address (e.g., an IEEE LAN MAC address).

The security and privacy implications of embedding a hardware address in an IPv6 Interface ID have been known for some time now, and are discussed in great detail in [I-D.ietf-6man-ipv6-address-generation-privacy]; they include:

- Network activity correlation
- Location tracking
- Address scanning
- Device-specific vulnerability exploitation

Some popular IPv6 implementations have already deviated from the traditional stable IID generation scheme to mitigate the aforementioned security and privacy implications [Microsoft].

As a result of the aforementioned issues, this document recommends the implementation of an alternative scheme ([I-D.ietf-6man-stable-privacy-addresses]) as the default stable Interface-ID generation scheme, such that the aforementioned issues are mitigated.

NOTE: [RFC4291] defines the "Modified EUI-64 format" for Interface identifiers. Appendix A of [RFC4291] then describes how to transform an IEEE EUI-64 identifier, or an IEEE 802 48-bit MAC address from which an EUI-64 identifier is derived, into an interface identifier in the Modified EUI-64 format.

2. Terminology

Stable address:
An address that does not vary over time within the same network (as defined in [I-D.ietf-6man-ipv6-address-generation-privacy].

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. Generation of IPv6 Interface Identifiers

Nodes SHOULD NOT employ IPv6 address generation schemes that embed the underlying hardware address in the Interface Identifier. Namely, nodes SHOULD NOT generate Interface Identifiers with the schemes specified in [RFC2464], [RFC2467], and [RFC2470].

Nodes SHOULD implement and employ [I-D.ietf-6man-stable-privacy-addresses] as the default scheme for generating stable IPv6 addresses with SLAAC.

4. IANA Considerations

There are no IANA registries within this document. The RFC-Editor can remove this section before publication of this document as an RFC.

5. Security Considerations

This document recommends [I-D.ietf-6man-stable-privacy-addresses] as the default scheme for generating IPv6 stable addresses with SLAAC, such that the security and privacy issues of Interface IDs that embed hardware addresses are mitigated.

6. Acknowledgements

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7. References

7.1. Normative References

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[RFC2464] Crawford, M., "Transmission of IPv6 Packets over Ethernet Networks", RFC 2464, December 1998.

[RFC2467] Crawford, M., "Transmission of IPv6 Packets over FDDI Networks", RFC 2467, December 1998.

[RFC2470] Crawford, M., Narten, T., and S. Thomas, "Transmission of IPv6 Packets over Token Ring Networks", RFC 2470, December 1998.

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7.2. Informative References

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