Zero valid lifetimes on point-to-point links
draft-zerorafolks-6man-ra-zero-lifetime-00

Abstract

This document allows implementations to accept low or zero valid lifetimes in Router Advertisement Prefix Information Options in cases where it is known that there can only be one router on the link.

Status of This Memo

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

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at https://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on January 1, 2019.

Copyright Notice

Copyright (c) 2018 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust’s Legal Provisions Relating to IETF Documents (https://trustee.ietf.org/license-info) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.
1. Introduction

Currently, Prefix Information Options in Router Advertisements cannot reduce the Valid Lifetime of an IPv6 address below 2 hours. This is due to an explicit restriction in Section 5.5.3 of [RFC4862]. The reason is to avoid a denial-of-service attack whereby a malicious attacker can cause a node’s addresses to expire prematurely by sending a Router Advertisement with a low Valid Lifetime.

1.1. Requirements Language

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. Cases when it is useful to reduce Valid Lifetime to zero

In some cases, it is useful for the network to inform the host that a given prefix is no longer valid or will shortly no longer be valid. One example is if the host has moved beyond the mobility scope of the prefix and the network will no longer deliver packets for that prefix to the host. The host can thus terminate any upper-layer connections using that prefix and notify applications that continued communication will require using a new source address.

In order to ensure uninterrupted communications and no disputation to applications, this should be done only if the host already has other IPv6 addresses of equivalent scope and sufficient Valid Lifetime.

3. Changes to RFC 4862

The following clause is added between points 1 and 2 of clause e, Section 5.5.3 of [RFC4862]:

---

Colitti & Kline Expires January 1, 2019 [Page 2]
2. If the link-layer guarantees that there is only one node on the link from which the host can receive Router Advertisements (e.g., if the link is a point-to-point link, such as a PPP link or a 3GPP link as defined in [RFC6459]), and the link has another prefix of the same scope with sufficient Valid Lifetime, set the valid lifetime of the corresponding address to the advertised Valid Lifetime.

4. IANA Considerations

This memo includes no request to IANA.

5. Security Considerations

The denial-of-service attack that motivated this restriction cannot be mounted on a link where no other devices can send Router Advertisements to the host.

6. References

6.1. Normative References


6.2. Informative References


Authors’ Addresses
Lorenzo Colitti
Google
Roppongi 6-10-1
Minato, Tokyo 106-6126
JP

Email: lorenzo@google.com

Erik Kline
Google
Roppongi 6-10-1
Minato, Tokyo 106-6126
JP

Email: ek@google.com