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**Zero valid lifetimes on point-to-point links  
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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.

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## [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In some cases, it is useful for the network to inform the host that a given prefix is no longer valid or will shortly no longer be valid.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 disruption 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 \[RFC4862\]](#):



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**

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.
- [RFC4862] Thomson, S., Narten, T., and T. Jinmei, "IPv6 Stateless Address Autoconfiguration", [RFC 4862](#), DOI 10.17487/RFC4862, September 2007, <<https://www.rfc-editor.org/info/rfc4862>>.

##### **6.2. Informative References**

- [RFC6459] Korhonen, J., Ed., Soininen, J., Patil, B., Savolainen, T., Bajko, G., and K. Iisakkila, "IPv6 in 3rd Generation Partnership Project (3GPP) Evolved Packet System (EPS)", [RFC 6459](#), DOI 10.17487/RFC6459, January 2012, <<https://www.rfc-editor.org/info/rfc6459>>.

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