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The SNAC Router Flag in ICMPv6 Router Advertisement Messages

Abstract

This document defines a new flag, the SNAC Router flag, in the Router Advertisement message that can be used to distinguish configuration information sent by Stub Network Auto-Configuring (SNAC) routers from information sent by transit routers.

Status of This Memo

This is an Internet Standards Track document.

This document is a product of the Internet Engineering Task Force (IETF). It represents the consensus of the IETF community. It has received public review and has been approved for publication by the Internet Engineering Steering Group (IESG). Further information on Internet Standards is available in Section 2 of RFC 7841.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at <https://www.rfc-editor.org/info/rfc10075>.

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1. Introduction

Per [Section 2.1](#) of [\[RFC2328\]](#), networks can either be transit or stub networks. Transit networks are those capable of carrying data traffic that is neither locally originated nor locally destined.

A Stub Network Auto-Configuring (SNAC) router is an autonomously configuring router that provides IP connectivity between one or more stub networks and one or more transit networks. A common example of a SNAC router is a device that attaches a 6LoWPAN-based network [\[RFC4919\]](#) to a home network, automatically providing IPv6 forwarding between the two networks without explicit operator configuration. This document defines a new IPv6 Neighbor Discovery Router Advertisement (RA) flag, the SNAC Router flag, which SNAC routers use to identify RAs sent by other SNAC routers.

Readers can refer to [\[AUTO-STUB\]](#) for an overview of a set of practices for automatically connecting IPv6 stub networks to transit networks.

2. SNAC Router Flag

The SNAC Router flag is bit 6 in the RA Flags Extension Option [\[RFC5175\]](#).

The SNAC Router flag bit with a value of '1' is reserved for use by SNAC routers. Receipt of an RA with that bit set to '1' indicates that the sending router is a SNAC router. Describing the exact triggers when a SNAC router sets this flag to '1' is out of scope for this document. An example of such considerations is documented in [\[AUTO-STUB\]](#).

Consistent with [Section 4.2](#) of [\[RFC4861\]](#), devices that do not operate as SNAC routers will not set the SNAC Router flag bit to '1', and devices that do not understand the SNAC Router flag will silently ignore it. This means that setting the flag bit to '1' or '0' should not change the behavior of such devices in any way (other than that it is permissible to log and cache the value of the flag bit as part of normal router advertisement processing, where applicable).

3. IANA Considerations

IANA has allocated a flag from the "IPv6 ND Router Advertisement Flags" registry in the "Internet Control Message Protocol version 6 (ICMPv6) Parameters" registry group [\[IANA-RA-FLAGS\]](#) as specified below:

RA Option Bit	Description	Reference
6	S - SNAC Router Flag	This Document

Table 1

4. Operational Considerations

In environments that implement RA-Guard [\[RFC7113\]](#) in a way that filters RAs sent by SNAC routers, devices on the transit network will never receive an RA with the SNAC Router flag bit set to '1'.

5. Security Considerations

How SNAC routers process RAs is dependent on the SNAC Router flag value.

The security considerations of IPv6 Neighbor Discovery are documented in [Section 11 \(Security Considerations\)](#) of [\[RFC4861\]](#). The addition of the SNAC Router flag does not change these considerations.

6. References

6.1. Normative References

- [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, <<https://www.rfc-editor.org/info/rfc4861>>.
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6.2. Informative References

- [AUTO-STUB]** Lemon, T., Hui, J., and E. Dijk, "Automatically Connecting Stub Networks to Unmanaged Infrastructure", Work in Progress, Internet-Draft, draft-ietf-snac-simple-13, 21 October 2026, <<https://datatracker.ietf.org/doc/html/draft-ietf-snac-simple-13>>.
- [IANA-RA-FLAGS]** IANA, "IPv6 ND Router Advertisement Flags", <<https://www.iana.org/assignments/icmpv6-parameters>>.
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