

Network Working Group
Internet-Draft
Intended status: Standards Track
Expires: May 21, 2016

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November 18, 2015

Segment Routing IPv6 Prefix-SID
draft-previdi-isis-ipv6-prefix-sid-00

Abstract

This document defines the Segment Routing IPv6 Prefix-SID in the IPv4/IPv6 Extended Reachability Attribute Flags TLV. The new flag is used for advertising the capability to handle the IPv6 Segment Routing header for the prefix that has the flag attached.

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](#)].

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[1.](#) Introduction

With Segment Routing (SR)[[I-D.ietf-spring-segment-routing](#)], a node steers a packet through an ordered list of instructions, called segments. Segments are identified through Segment Identifiers (SIDs) that are advertised by routing protocols. The IS-IS extensions for SR information advertisement are defined in [[I-D.ietf-isis-segment-routing-extensions](#)].

Segment Routing can be directly applied to the IPv6 dataplane through the use of the Segment Routing Header defined in [[I-D.previdi-6man-segment-routing-header](#)].

[2.](#) SRv6 Prefix SID

When SR is applied to the IPv6 dataplane, Segment Identifiers (SIDs) are regular IPv6 addresses that are advertised in routing protocols. When SR is used over IPv6 dataplane, it is desirable to identify which of the prefixes originated by a node can be used as SIDs compared to any other prefix that the node advertises.

[[I-D.ietf-isis-prefix-attributes](#)], defines the IPv4/IPv6 Extended Reachability Attribute Flags TLV. This document defines the following new flag:

S6-Flag (bit 3).

SRv6 Prefix-SID flag: when set, the router indicates that the prefix this flag is attached to can be used as an IPv6 Prefix-SID.

The S6-Flag may also be set in conjunction with the Node-Flag (Bit 2) if the prefix does also identifies the node in the topology.

In the case where the prefix has a shorter mask-length than 128 or when the prefix does not identify the node (e.g.: assigned to a physical interface instead of a loopback) the S6-Flag MAY be set and the N-flag MUST NOT be set.

When a prefix is flagged as a SRv6-Prefix-SID, the originating router MUST support the IPv6 Segment Routing Header (SRH) and its procedures described in [[I-D.previdi-6man-segment-routing-header](#)]. Therefore the originating router MUST set the H-flag in the SR-Capability SubTLV as defined in [[I-D.ietf-isis-segment-routing-extensions](#)].

A router receiving the advertisement of the IPv6 prefix with the S6-Flag set MUST check whether the originator has set the H-flag in its SR-Capability SubTLV if present in the receiving router link state database.

The S6-Flag has relevance only for IPv6 prefixes. When processing IPv4 prefixes, the S6-Flag MUST be ignored.

3. IANA Considerations

This document introduces the SRv6-Prefix-SID flag in the Prefix Attribute Flags sub-TLV:

Name	Bit #
-----	-----
S6-Flag	3 (suggested value, to be assigned by IANA)

4. Security Considerations

This document doesn't introduce new security considerations.

5. Acknowledgements

The authors would like to thank Nagendra Kumar for his review of this document.

6. References

6.1. Normative References

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6.2. Informative References

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