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Updates to Anycast Property advertisement for OSPFv2 draft-ietf-lsr-anycast-flag-02

Abstract

Both SR-MPLS prefix-SID and IPv4 prefix may be configured as anycast and as such the same value can be advertised by multiple routers. It is useful for other routers to know that the advertisement is for an anycast identifier.

Each prefix is advertised along with an 8-bit field of capabilities,by using the flag flield in the OSPFv2 Extended Prefix TLV, but the definition of anycast flag to identify the prefix as anycast has not yet been defined.

This document defines a new flag in the OSPFv2 Extended Prefix TLV Flags to advertise the anycast property.

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1. Introduction

Both SR-MPLS prefix-SID and IPv4 prefix may be configured as anycast and as such the same value can be advertised by multiple routers. It is useful for other routers to know that the advertisement is for an anycast identifier.

[RFC7684] defines OSPFv2 Opaque LSAs based on Type-Length-Value (TLV) tuples that can be used to associate additional attributes with prefixes or links. The OSPFv2 Extended Prefix TLV that is contained in the OSPFv2 Extended Prefix Opaque LSA is used to advertise additional attributes associated with the prefix, but the definition of anycast flag to identify the prefix as anycast has not yet been defined.

This document updates [RFC7684], by defining a new flag in the OSPFv2 Extended Prefix TLV Flags [RFC7684] to advertise the anycast property.

1.1. Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

2. Use-case

In the absence of the N-flag, the node specific prefixes need to be identified from the anycast prefixs. A prefix that is advertised by a single node and without an AC-flag MUST be considered node specific.

3. Updates to Anycast Property advertisement for OSPFv2

The prefix may be configured as anycast and it is useful for other routers to know that the advertisement is for an anycast identifier.

[RFC7684] defines one-octet field contains flags applicable to the prefix, and it has been defines the below flags:

Value	Description	Reference
0x80	A	[RFC7684]
0x40	N	[RFC7684]
0x02	E-Flag	[RFC9089]

Table 1: OSPFv2 Extended Prefix TLV Flags

A new bit in OSPFv2 Extended Prefix TLV Flags[RFC7684] is defined to advertise the anycast property:

Value: TBD

Description:Anycast (AC-Flag)

When the prefix is configured as anycast, the AC-Flag SHOULD be set. Otherwise, this flag MUST be clear.

The AC-Flag and the N-bit MUST NOT both be set. If both N-flag and AC-Flag are set, the receiving routers MUST ignore the N-flag.

The AC-Flag MUST be preserved when re-advertising the prefix across areas.

The same prefix can be advertised by multiple routers, and that if at least one of them sets the AC-Flag in its advertisement, the prefix SHOULD be considered as anycast.

A prefix that is advertised by a single node and without an AC-flag MUST be considered node specific prefix.

4. Updates to Anycast Property advertisement for BGP-LS

[RFC9085] defines the Prefix Attribute Flags TLV carries IPv4 prefix attribute flags information, and the Flags field of this TLV is interpreted according to OSPFv2 [RFC7684]. This section extends the interpretation of the Flags field of the Prefix Attribute Flags TLV.

Flags:

* OSPFv2 flags correspond to the Flags field of the OSPFv2 Extended Prefix TLV defined in [RFC7684] and extended in this draft.

5. Acknowledgements

TBD.

6. IANA Considerations

This document requests allocation for the following registry.

6.1. OSPFv2 Extended Prefix TLV Flags Registry

This document adds a new bit in the "OSPFv2 Extended Prefix TLV Flags"registry:

AC-Flag (Anycast Flag).

7. Security Considerations

Procedures and protocol extensions defined in this document do not affect the OSPFv2 security model. See the "Security Considerations"section of [RFC7684] for a discussion of OSPFv2 security.

8. 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>.

[RFC7684] Psenak, P., Gredler, H., Shakir, R., Henderickx, W., Tantsura, J., and A. Lindem, "OSPFv2 Prefix/Link Attribute Advertisement", RFC 7684, DOI 10.17487/RFC7684, November 2015, <https://www.rfc-editor.org/info/rfc7684>.

[RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <https://www.rfc-editor.org/info/rfc8174>.

[RFC9085] Previdi, S., Talaulikar, K., Ed., Filsfils, C., Gredler, H., and M. Chen, "Border Gateway Protocol - Link State (BGP-LS) Extensions for Segment Routing", RFC 9085, DOI 10.17487/RFC9085, August 2021, <https://www.rfc-editor.org/info/rfc9085>.

[RFC9089] Xu, X., Kini, S., Psenak, P., Filsfils, C., Litkowski, S., and M. Bocci, "Signaling Entropy Label Capability and Entropy Readable Label Depth Using OSPF", RFC 9089, DOI 10.17487/RFC9089, August 2021, <https://www.rfc-editor.org/info/rfc9089>.

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