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OSPF Extensions for Advertising/Signaling BGP Route Reflector Information
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Abstract

This document specifies an OSPF Router Information (RI) TLV to advertise the BGP Router Reflector capability and peering information. This information can be used by BGP Router Reflector clients to dynamically learn and establish sessions with BGP Router Reflectors in the routing domain.

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1. Introduction

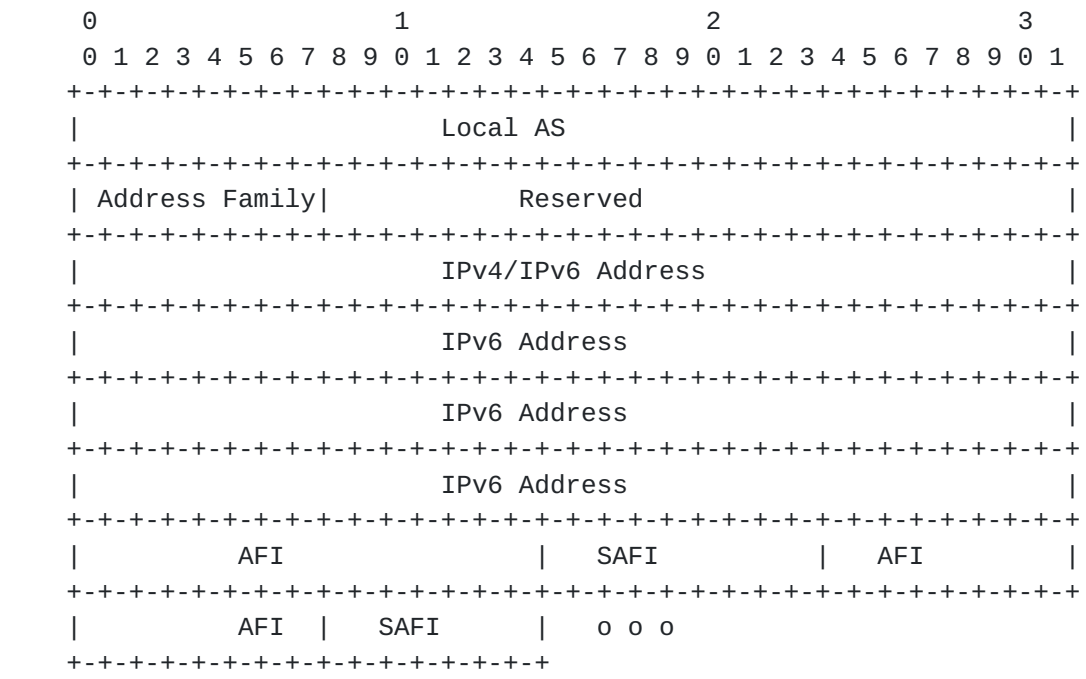
This document specifies an OSPF Router Information (RI) TLV [OSPF-RI] to advertise the BGP Router Reflector [BGP-RR] capability and peering information. This information can be used by BGP Router Reflector clients to dynamically learn and establish sessions with BGP Router Reflectors in the routing domain.

1.1. Requirements Notation

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-KEYWORDS].

2. OSPF BGP Route Reflector TLV

The BGP Router Reflector TLV can be used to advertise the route reflector capability, local AS number, BGP peering address, and supported AFI/SAFI pairs using an OSPFv2 [OSPF] or OSPFv3 [OSPFV3] router using the OSPF Router Information LSA [OSPF-RI]. The OSPF Router Information LSA can be advertised in either area or AS scoped RI LSAs. The BGP Router Reflector TLV consists of the following fields:



Length — The length will be 12 for IPv4 peering addresses or 24 for IPv6 peering addresses plus 3 * the number of AFI/SAFI pairs.

Local AS — The Router-Reflector's local AS number. This can either be used for AS match checking or certain situations where the client's AS doesn't match the route reflectors.

Address Family — IANA Address family (1 for IPv4 or 2 for IPv6)

Address — Local IPv4 or IPv6 Address used for BGP peering.

AFI/SAFI — Address Family Identifier (AFI)/ Subsequent Address Family Identifier

OSPF BGP Route-Reflector TLV

- The BGP Route Reflector (RR) TLV MAY be advertised multiple times with different peering addresses and AFI/SAFI pairs and MAY be advertised in multiple OSPF RI LSAs.

- If different peering addresses are advertised for the same AFI/SAFI pair, the decision of whether a BGP client establishes

sessions with one or more of the advertised peering addresses is beyond the scope of this document.

- If the BGP Router Reflector (RR) TLV has an invalid length or is otherwise malformed, it will not be used for BGP client session establishment. The occurrence of a malformed TLV SHOULD be logged.

3. OSPF Router Information (RI) Opaque LSAs

The OSPF BGP TLV may optionally be advertised in an area-scoped or AS-scoped OSPFv2 Router Information (RI) opaque LSA or OSPFv3 Router Information (RI) LSA [OSPF-RI]. BGP clients may then use the peering address to establish BGP sessions with the advertising route-reflector.

4. Security Considerations

Security considerations for the base OSPF protocol are covered in [OSPF] and [OSPFV3].

5. IANA Considerations

The document will require the following IANA actions:

1. A Router Information TLV type for the BGP Router Reflector TLV will be allocated from the OSPF Router Information (RI) TLVs registry.

6. References

6.1. Normative References

[OSPF] Moy, J., "OSPF Version 2", STD 54, RFC 2328, April 1998.

[OSPF-RI] Lindem, A., Shen, N., Vasseur, J., Aggarwal, R., and S. Shaffer, "Extensions to OSPF for Advertising Optional Router Capabilities", RFC 7770, January 2016.

[OSPFV3] Coltun, R., Ferguson, D., Moy, J., and A. Lindem, "OSPF for IPv6", RFC 5340, July 2008.

[RFC-KEYWORDS] Bradner, S., "Key words for use in RFC's to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

6.2. Informative References

[BGP-RR] Bates, T., Chen, E., and R. Chandra, "BGP Route Reflection: An Alternative to Full Mesh Internal BGP (IBGP)", RFC 4456, April 2006.

Appendix A. Acknowledgments

The RFC text was produced using Marshall Rose's xml2rfc tool.

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