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Advertising Seamless Bidirectional Forwarding Detection (S-BFD) Discriminators in IS-IS

Abstract

This document defines a means of advertising one or more Seamless Bidirectional Forwarding Detection (S-BFD) Discriminators using the IS-IS Router CAPABILITY TLV.

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 http://www.rfc-editor.org/info/rfc7883.

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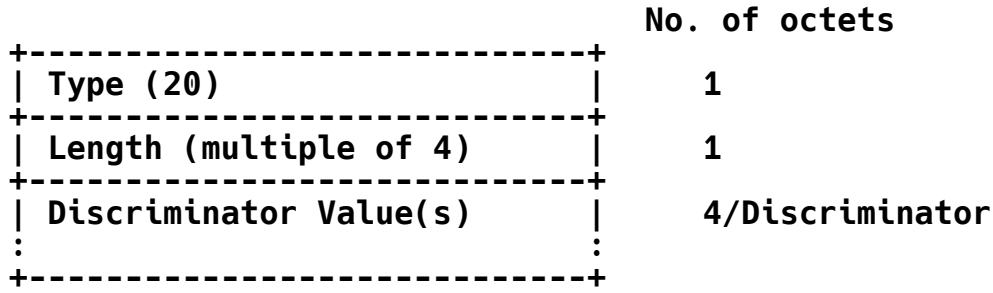
1. Introduction

[RFC7880] defines a simplified mechanism for using Bidirectional Forwarding Detection (BFD) [RFC5880]. This mechanism depends on network nodes knowing the BFD Discriminators that each node in the network has reserved for this purpose. The use of the Intermediate System to Intermediate System (IS-IS) [IS-IS] protocol is one possible means of advertising these discriminators.

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. Encoding Format

The IS-IS Router CAPABILITY TLV as defined in [RFC4971] will be used to advertise Seamless BFD (S-BFD) Discriminators. A new sub-TLV is defined as described below. S-BFD Discriminators sub-TLVs are formatted as specified in [RFC5305].



The inclusion of an S-BFD Discriminators sub-TLV in a Router CAPABILITY TLV is optional. Multiple S-BFD Discriminators sub-TLVs MAY be advertised by an IS. How a given discriminator is mapped to a specific use case when multiple S-BFD Discriminators are advertised is out of scope for this document.

S-BFD Discriminator advertisements MAY be flooded within an area or throughout the domain, using the procedures specified in [RFC4971]. The appropriate flooding scope depends on the intended use of S-BFD. If S-BFD usage will be exclusively within a Level-1 area, then area scope is appropriate. If S-BFD usage will span different Level-1 areas, then domain scope is appropriate.

3. IANA Considerations

IANA has added a new sub-TLV in the "Sub-TLVs for TLV 242" registry. The registration is as follows:

Value	Description
20	S-BFD Discriminators

4. Security Considerations

Security concerns for IS-IS are addressed in [IS-IS], [RFC5304], and [RFC5310]. The new S-BFD Discriminators sub-TLV does not introduce any new security risks for IS-IS.

Advertising the S-BFD Discriminators makes it possible for attackers to initiate S-BFD sessions using the advertised information. The vulnerabilities this poses and how to mitigate them are discussed in [RFC7880].

5. Normative References

[IS-IS] International Organization for Standardization, "Intermediate System to Intermediate System intra-domain routeing information exchange protocol for use in conjunction with the protocol for providing the connectionless-mode network service (ISO 8473)", ISO Standard 10589, 2002.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <http://www.rfc-editor.org/info/rfc2119>.

[RFC4971] Vasseur, JP., Ed., Shen, N., Ed., and R. Aggarwal, Ed., "Intermediate System to Intermediate System (IS-IS) Extensions for Advertising Router Information", RFC 4971, DOI 10.17487/RFC4971, July 2007, <http://www.rfc-editor.org/info/rfc4971>.

[RFC5304] Li, T. and R. Atkinson, "IS-IS Cryptographic Authentication", RFC 5304, DOI 10.17487/RFC5304, October 2008, <http://www.rfc-editor.org/info/rfc5304>.

[RFC5305] Li, T. and H. Smit, "IS-IS Extensions for Traffic Engineering", RFC 5305, DOI 10.17487/RFC5305, October 2008, <http://www.rfc-editor.org/info/rfc5305>.

[RFC5310] Bhatia, M., Manral, V., Li, T., Atkinson, R., White, R., and M. Fanto, "IS-IS Generic Cryptographic Authentication", RFC 5310, DOI 10.17487/RFC5310, February 2009, <http://www.rfc-editor.org/info/rfc5310>.

[RFC5880] Katz, D. and D. Ward, "Bidirectional Forwarding Detection (BFD)", RFC 5880, DOI 10.17487/RFC5880, June 2010, <http://www.rfc-editor.org/info/rfc5880>.

[RFC7880] Pignataro, C., Ward, D., Akiya, N., Bhatia, M., and S. Pallagatti, "Seamless Bidirectional Forwarding Detection (S-BFD)", RFC 7880, DOI 10.17487/RFC7880, July 2016, <http://www.rfc-editor.org/info/rfc7880>.

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