

Internet Engineering Task Force
Internet-Draft
Intended status: Standards Track
Expires: March 27, 2016

M. Bhatia
Ionos Networks
C. Pignataro
Cisco Systems
S. Aldrin
Huawei Technologies
T. Ranganath
Alcatel-Lucent
September 24, 2015

**OSPF extensions to advertise S-BFD Target Discriminator
draft-ietf-ospf-sbfd-discriminator-02**

Abstract

This document defines a new OSPF Router Information (RI) TLV that allows OSPF routers to flood the S-BFD discriminator values associated with a target network identifier. This mechanism is applicable to both OSPFv2 and OSPFv3.

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](#)].

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of [BCP 78](#) and [BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on March 27, 2016.

Copyright Notice

Copyright (c) 2015 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to [BCP 78](#) and the IETF Trust's Legal Provisions Relating to IETF Documents (<http://trustee.ietf.org/license-info>) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1.	Introduction	2
1.1.	Relationship between OSPF and S-BFD	2
2.	Implementation	3
2.1.	S-BFD Discriminator TLV	3
2.2.	Flooding Scope	4
3.	Backward Compatibility	5
4.	Security Considerations	5
5.	IANA Considerations	5
6.	Acknowledgements	5
7.	References	5
7.1.	Normative References	5
7.2.	Informative References	6
	Authors' Addresses	6

[1.](#) Introduction

Seamless Bidirectional Forwarding Detection (S-BFD), specified in [[I-D.ietf-bfd-seamless-base](#)], is a simplified mechanism for using BFD with many negotiations eliminated. This is achieved by using unique network-wide discriminators to identify the Network Targets (e.g., IP addresses). These S-BFD discriminators can be advertised by the IGP, and this document concerns itself with OSPF. Specifically, this document defines a new TLV (named the S-BFD Discriminator TLV) to be carried within the OSPF Router Information LSA ([[RFC4970](#)]).

[1.1.](#) Relationship between OSPF and S-BFD

This document, implicitly, defines a relationship between OSPF and S-BFD. S-BFD assigns one or more Discriminators to each S-BFD reflector node. OSPF, in turn, learns about these from S-BFD, and floods them in the newly defined TLV. After this information is

2. Implementation

2.1. S-BFD Discriminator TLV

```

0          1          2          3
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     |                                     |
|          Type                      |          Length                    |
+-+-+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     |
|          Discriminator 1          |
+-+-+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     |
|          Discriminator 2 (Optional) |
+-+-+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     |
|                                     |
|          ...                       |
+-+-+-----+-----+-----+-----+-----+-----+-----+-----+
|                                     |
|          Discriminator n (Optional) |
+-+-+-----+-----+-----+-----+-----+-----+-----+-----+

```

Value - S-BFD network target discriminator value or values.

Routers that do not recognize the S-BFD Discriminator TLV Type MUST ignore the TLV. S-BFD discriminator is associated with the BFD Target Identifier type, that allows demultiplexing to a specific task or service.

2.2. Flooding Scope

The flooding scope for S-BFD Discriminator information advertised through OSPF can be limited to one or more OSPF areas, or can be extended across the entire OSPF routing domain.

Note that the S-BFD session may be required to span multiple areas, in which case the flooding scope may comprise these areas. This could be the case for an ABR, for instance, advertising the S-BFD Discriminator information within the backbone area and/or a subset of its attached IGP area(s).

The S-BFD Discriminator TLV is advertised within OSPFv2 Router Information LSAs (Opaque type of 4 and Opaque ID of 0) or OSPFv3 Router Information LSAs (function code of 12), which are defined in [\[RFC4970\]](#). As such, elements of procedure are inherited from those defined in [\[RFC4970\]](#).

In OSPFv2, the flooding scope is controlled by the opaque LSA type (as defined in [\[RFC5250\]](#)) and in OSPFv3, by the S1/S2 bits (as defined in [\[RFC5340\]](#)). If the flooding scope is area local, then the S-BFD Discriminator TLV MUST be carried within an OSPFv2 type 10 router information LSA or an OSPFv3 Router Information LSA with the S1 bit set and the S2 bit clear. If the flooding scope is the entire IGP domain, then the S-BFD Discriminator TLV MUST be carried within an OSPFv2 type 11 Router Information LSA or OSPFv3 Router Information LSA with the S1 bit clear and the S2 bit set.

When the S-BFD Reflector is deactivated, the OSPF speaker advertising this S-BFD Discriminator MUST originate a new Router Information LSA that no longer includes the corresponding S-BFD Discriminator TLV, provided there are other TLVs in the LSA. If there are no other TLVs in the LSA, it MUST either send an empty Router Information LSA or purge it by prematurely ageing it.

For intra-area reachability, the S-BFD Discriminator TLV information regarding a specific target identifier is only considered current and useable when the router advertising this information is itself reachable via OSPF calculated paths in the same area of the LSA in which the S-BFD Discriminator TLV appears. In the case of domain-wide flooding, i.e., where the originator is sitting in a remote area, the mechanism described in [section 5 of \[RFC5250\]](#) should be used.

A change in information in the S-BFD Discriminator TLV MUST NOT trigger any SPF computation at a receiving router.

3. Backward Compatibility

The S-BFD Discriminator TLV defined in this document does not introduce any interoperability issues.

A router not supporting the S-BFD Discriminator TLV will just silently ignore the TLV as specified in [[RFC4970](#)].

4. Security Considerations

This document defines OSPF extensions to distribute the S-BFD discriminator within an administrative domain. Hence the security of the S-BFD discriminator distribution relies on the security of OSPF.

OSPF provides no encryption mechanism for protecting the privacy of LSAs and, in particular, the privacy of the S-BFD discriminator advertisement information. This however is not a concern as there isn't any need to hide the discriminator value that can be used to reach the Reflectors.

5. IANA Considerations

IANA has defined a registry for TLVs carried in the Router Information LSA defined in [[RFC4970](#)]. IANA needs to assign a new TLV codepoint for the S-BFD Discriminator TLV carried within the Router Information LSA.

Value	TLV Name	Reference
-----	-----	-----
TBD	S-BFD Discriminator	(this document)

6. Acknowledgements

The authors would like to thank Nobo Akiya, Les Ginsberg, Mach Chen and Peter Psenak for insightful comments and useful suggestions.

7. References

[7.1.](#) Normative References

[I-D.ietf-bfd-seamless-base]

Akiya, N., Pignataro, C., Ward, D., Bhatia, M., and J. Networks, "Seamless Bidirectional Forwarding Detection (S-BFD)", [draft-ietf-bfd-seamless-base-04](#) (work in progress), January 2015.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.

[RFC2328] Moy, J., "OSPF Version 2", STD 54, [RFC 2328](#), April 1998.

[RFC4970] Lindem, A., Shen, N., Vasseur, JP., Aggarwal, R., and S. Shaffer, "Extensions to OSPF for Advertising Optional Router Capabilities", [RFC 4970](#), July 2007.

[RFC5340] Coltun, R., Ferguson, D., Moy, J., and A. Lindem, "OSPF for IPv6", [RFC 5340](#), July 2008.

7.2. Informative References

[RFC5250] Berger, L., Bryskin, I., Zinin, A., and R. Coltun, "The OSPF Opaque LSA Option", [RFC 5250](#), July 2008.

Authors' Addresses

Manav Bhatia
Ionos Networks

Email: manav@ionosnetworks.com

Carlos Pignataro
Cisco Systems

Email: cpignata@cisco.com

Sam Aldrin
Huawei Technologies

Email: aldrin.ietf@gmail.com

Trilok Ranganath
Alcatel-Lucent

Email: trilok.ranganatha@alcatel-lucent.com

