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Advertising S-BFD Discriminators in L2TPv3
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Abstract

This document defines a new AVP that allows L2TP Control Connection Endpoints (LCCEs) to advertise one or more Seamless BFD (S-BFD) Discriminator values using L2TPv3.

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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Table of Contents

1.	Introduction	2
1.1.	Terminology	2
2.	S-BFD Target Discriminator ID AVP	2
2.1.	Encoding Format	3
3.	IANA Considerations	4
4.	Security Considerations	4
5.	Acknowledgements	4
6.	Contributing Authors	4
7.	References	5
7.1.	Normative References	5
7.2.	Informative References	5
	Authors' Addresses	5

[1.](#) Introduction

[I-D.ietf-bfd-seamless-base] defines a simplified mechanism to use Bidirectional Forwarding Detection (BFD) [[RFC5880](#)], referred to as Seamless Bidirectional Forwarding Detection (S-BFD). The S-BFD mechanisms depend on network nodes knowing the BFD discriminators which each node in the network has reserved for this purpose. S-BFD requires the usage of unique discriminators within an administrative domain. The use of Layer Two Tunneling Protocol - Version 3 (L2TPv3) [[RFC3931](#)] is one possible means of advertising these discriminators.

This document specifies the encoding to be used when S-BFD discriminators are advertised using L2TPv3.

[1.1.](#) Terminology

The reader is expected to be very familiar with the terminology and protocol constructs defined in S-BFD (see Section 2 of [[I-D.ietf-bfd-seamless-base](#)]) and L2TPv3 (see [Section 1.3 of \[RFC3931\]](#)).

[2.](#) S-BFD Target Discriminator ID AVP

The "S-BFD Target Discriminator ID" AVP is exchanged using the ICRQ, ICRP, OCRQ, and OCRP control messages during session negotiations.

2.1. Encoding Format

The S-BFD Target Discriminator ID AVP, Attribute Type "TBA by IANA", is an identifier used to advertise the S-BFD Target Discriminator(s) supported by an LCCE for the S-BFD Reflector operation. This AVP indicates that the advertiser implements an S-BFD reflector supporting the specified target discriminator(s) and is ready for S-BFD Reflector operation. The receiving LCCE MAY use this AVP if it wants to monitor connectivity to the advertising LCCE using S-BFD.

The Attribute Value field for this AVP has the following format:

S-BFD Target Discriminator ID (ICRQ, ICRP, OCRQ, OCRP):

		No. of octets
+-----+		
Discriminator Value(s)		4/Discriminator
:	:	
+-----+		

An LCCE MAY include the S-BFD Discriminator Advertisement AVP in a L2TP Control Protocol message (ICRQ, ICRP, OCRQ, OCRP) [[RFC3931](#)]. Multiple S-BFD Discriminators AVPs MAY be advertised by a LCCE. If the other LCCE does not wish to monitor connectivity using S-BFD, it MAY safely discard this AVP without affecting the rest of session negotiation. While current use-cases [[I-D.ietf-bfd-seamless-use-case](#)] of S-BFD require advertisement of only one discriminator, the AVP encoding allows specification an arbitrary number of discriminators (at least one) for extensibility. When multiple S-BFD discriminators are advertised, the mechanism to choose a subset of specific discriminator(s) is out of scope for this document.

The S-BFD Target Discriminator ID AVP allows for advertising at least one S-BFD Discriminator value:

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

The M bit of the L2TP Control Protocol Message (ICRQ, ICRP, OCRQ, OCRP) [[RFC3931](#)] MUST NOT be set inside the S-BFD Target Discriminator ID AVP advertisement.

3. IANA Considerations

IANA maintains a sub-registry "Message Type AVP (Attribute Type 0) Values" in the "Control Message Attribute Value Pairs" as per [[RFC3438](#)]. IANA is requested to assign the first free value from this sub-registry as the Message typ AVP for "S-BFD Target Discriminator ID".

A summary of the new AVPs requested for Attribute Type 0 follows:

Control Message Attribute Value Pairs

Attribute Type	Description
-----	-----
TBA by IANA	S-BFD Target Discriminator ID

4. Security Considerations

Security concerns for L2TP are addressed in [[RFC3931](#)]. Introduction of the S-BFD Discriminator Advertisement AVP introduces no new security risks for L2TP.

Advertisement of the S-BFD discriminators does make 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 the Security Considerations section of [[I-D.ietf-bfd-seamless-base](#)].

5. Acknowledgements

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