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The sdp-anat Session Initiation Protocol (SIP) Option-Tag
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Abstract

This document defines the sdp-anat SIP option-tag. The presence of this option-tag in a Supported header field indicates support for the SDP grouping framework and for the ANAT (Alternative Network Address Types) semantics.

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1. Introduction

SIP [3] UAs (User Agents) with support for different network types can use the ANAT semantics [6] of the SDP [2] grouping framework [5] to offer alterative addresses of different types. For example, an IPv4/IPv6 dual stack SIP UA following the offer/answer model [4] would generate an offer grouping its IPv6 address and its IPv4 address using ANAT.

If the recipient of an offer that uses ANAT supports the ANAT semantics, everything works as described in the ANAT specification [6]. Nevertheless, the recipient of such an offer (i.e., the answerer) may not support ANAT. In this case, different implementations of the answerer would react in different ways. This document discusses the answerer behaviors that are most likely to be found and defines the sdp-anat SIP option-tag.

The sdp-anat option-tag can be used to ensure that an offer using ANAT is not processed by answerers without support for ANAT. This option-tag can also be used to explicitly discover the capabilities of a UA (i.e., whether or not it supports ANAT).

2. Terminology

In this document, the key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" are to be interpreted as described in BCP 14, RFC 2119 [1] and indicate requirement levels for compliant implementations.

3. The sdp-anat Option-Tag

We define the option-tag sdp-anat for use in the Require and Supported SIP [3] header fields. SIP user agents that place this option-tag in a Supported header field understand the ANAT semantics

as defined in [6].

4. Backward Compatibility

Answerers without support for ANAT will react in different ways on reception of an offer using ANAT. We expect that, even under the same circumstances, different implementations behave in different ways. In this section, we analyze these behaviors (i.e., the next subsections assume that the answerer does not support ANAT).

4.1 Answerer Supports All the Network Types Offered

If the answerer supports all the network types in the offer, it may

accept the offer and establish all the media streams in it. This behavior is not what the offerer expected because it results in too many media streams being established. If the answerer starts sending media over all of them, the result may be a high bandwidth usage.

The answerer may also reject the offer, because although it supports all the network types in it, the answerer may not support them simultaneously. The error response sent by the answerer will most likely not be explicit enough about the situation. So, the offerer will not understand what went wrong.

In the previous scenarios, the sdp-anat option-tag would avoid the establishment of too many media streams and would allow the answerer to explicitly inform the offerer that the answerer did not support ANAT.

4.2 Answerer does not Support All the Network Types Offered

If the answerer does not support all the network types in the offer, it may only establish the media streams whose address types understands (it would reject the rest). This would be an acceptable behavior from the offerer's point of view.

On the other hand, the answerer may also reject the offer because it contains unknown address types. The error response sent by the answerer will most likely not be explicit enough about the situation. So, the offerer will not understand what went wrong.

In the previous scenario, the sdp-anat option-tag would allow the answerer to explicitly inform the offerer that the answerer did not support ANAT.

4.3 OPTIONS Requests

Although RFC 3388 [5] provides servers with a means to indicate support for ANAT in an SDP description, many servers do not include an SDP description in their responses to OPTIONS requests. The sdp-anat option-tag makes it possible to discover if any server supports ANAT, since they would include this option-tag in a Supported header field in their responses.

5. Option-Tag Usage

As discussed in the previous section, the use of the sdp-anat option-tag makes SIP messages more explicit about ANAT support, which is generally a good property. So, SIP entities generating an offer that uses the ANAT semantics SHOULD place the sdp-anat option-tag in a Require header field. SIP entities that support the ANAT semantics

MUST understand the sdp-anat option-tag.

6. Security Considerations

An attacker may attempt to add the sdp-anat option tag to the Require header field of a message to perform a DoS attack. If the UAS does not support ANAT, it will return an error response instead of processing the message.

An attacker may attemp to remove the sdp-anat option-tag from the Require header field of a message. This may result in the establishment of too many media streams.

To avoid the previous attacks, it is RECOMMENDED that the Require header field is integrity protected. The natural choice to integrity protect header fields in SIP is S/MIME.

7. IANA Considerations

This document defines a SIP option-tag (sdp-anat) in Section 3. It should be registered in the SIP parameter registry at:

http://www.iana.org/assignments/sip-parameters

SIP user agents that place the sdp-anat option-tag in a Supported header field understand the ANAT semantics.

8 Normative References

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

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