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The Alternative Network Address Types Semantics for the Session Description Protocol Grouping Framework

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Abstract

This document defines the Alternative Network Address Types (ANAT) semantics for the SDP grouping framework. The ANAT semantics allow offering alternative types of network addresses to establish a particular media stream.

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1 Introduction

An SDP [1] session description contains the media parameters to be used to establish a number of media streams. For a particular media stream, an SDP session description contains, among other parameters, the network addresses and the codec to be used to transfer media. SDP allows providing a set of codecs per media stream, but only one network address.

Being able to offer a set of network addresses to establish a media stream is useful in environments with both IPv4-only hosts and IPv6-only hosts, for instance.

This document defines the Alternative Network Address Types (ANAT) semantics for the SDP grouping framework [2]. The ANAT semantics allow expressing alternative network addresses (e.g., different IP versions) for a particular media stream.

1.1 Terminology

In this document, the key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" are to be interpreted as described in RFC 2119 [3] and indicate requirement levels for compliant SIP implementations.

2 ANAT Semantics

We define a new "semantics" attribute within the SDP grouping framework [2]: ANAT (Alternative Network Address Types).

Media lines grouped using ANAT semantics provide alternative network addresses of different types for a single logical media stream. The entity creating a session description with an ANAT group MUST be ready to receive (or send) media over any of the grouped m lines. The ANAT semantics MUST NOT be used to group media streams whose network

addresses are of the same type.

3 Preference

The entity generating a session description may have an order of preference for the alternative network address types offered. The identifiers of the media streams MUST be listed in order of preference in the group line. In the example below, the m= line with mid=1 has a higher preference than the m line with mid=2.

```
a=group:ANAT 1 2
```


4 Offer/Answer and ANAT

An answerer receiving a session description that uses the ANAT semantics SHOULD use the address with highest priority it understands and set the ports of the rest of the m= lines of the group to zero.

4.1 ANAT and Media Configurations

The creator of a session description MAY want to use different media configurations (e.g., audio codec) for different network addresses in the same ANAT group. The receiver of such a session may find some of the m lines unacceptable. They may contain codecs that the answerer does not support or contain any other parameter that makes them unacceptable. The answerer should, following normal SIP procedures, set their ports to zero in the answer.

5 SIP Option-Tag

We define the option-tag "sdp-anat" for use in the Require and Supported SIP [4] header fields. SIP user agents that place this option-tag in a Supported header field understand the ANAT semantics as defined in this document.

Using the sdp-anat option-tag in a Require header field allows a user agent to explicitly discover whether or not the remote end supports the ANAT semantics. Nevertheless, user agents MAY use the ANAT semantics without using the sdp-anat option tag. In this case, an offer with an ANAT group may be received by a user agent without

support for it. Such a user agent may refuse the offer because it contains unknown address types or may only establish the media streams whose address types understands (it would reject the rest.) If this behavior is not acceptable for the generator of an offer, it MUST use the sdp-anat option-tag in a Require header field.

6 Example

The session description below contains an IPv4 address and an IPv6 address grouped using ANAT.

```
v=0
o=bob 280744730 28977631 IN IP4 host.example.com
s=
t=0 0
a=group:ANAT 1 2
m=audio 6886 RTP/AVP 0
c=IN IP6 2001:0600::1
```

```
a=mid:1
m=audio 22334 RTP/AVP 0
c=IN IP4 192.0.2.2
a=mid:2
```

7 IANA Considerations

IANA needs to register the following new "semantics" attribute for the SDP grouping framework [2]:

Semantics	Token	Reference
Alternative Network Address Types	ANAT	[RFCxxxx]

It should be registered in the SDP parameters registry (http://www.iana.org/assignments/sdp-parameters) under Semantics for the "group" SDP Attribute.

This document defines a SIP option-tag (sdp-anat) in Section 5. It should be registered in the SIP parameter registry (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 Security Considerations

An attacker adding group lines using the ANAT semantics to an SDP session description could make an end-point use only one out of all the streams offered by the remote end, when the intention of the remote-end might have been to establish all the streams.

An attacker removing group lines using ANAT semantics could make and end-point establish a higher number of media streams. If the end-point sends media over all of them, the session bandwidth may increase dramatically.

It is thus STRONGLY RECOMMENDED that integrity protection be applied to the SDP session descriptions. For session descriptions carried in SIP [4], S/MIME is the natural choice to provide such end-to-end integrity protection, as described in RFC 3261. Other applications MAY use a different form of integrity protection.

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10 Normative References

[1] M. Handley and V. Jacobson, "SDP: session description protocol," RFC 2327, Internet Engineering Task Force, Apr. 1998.

[2] G. Camarillo, G. Eriksson, J. Holler, and H. Schulzrinne, "Grouping of media lines in the session description protocol (SDP)," RFC 3388, Internet Engineering Task Force, Dec. 2002.

[3] S. Bradner, "Key words for use in RFCs to indicate requirement levels," RFC 2119, Internet Engineering Task Force, Mar. 1997.

[4] J. Rosenberg, H. Schulzrinne, G. Camarillo, A. R. Johnston, J. Peterson, R. Sparks, M. Handley, and E. Schooler, "SIP: session initiation protocol," RFC 3261, Internet Engineering Task Force, June 2002.