MMUSIC
Internet-Draft
Updates: 4856 (if approved)
Intended status: Standards Track
Expires: December 19, 2013

Muthu A M. Perumal
Cisco Systems
Parthasarathi. Ravindran
Nokia Siemens Networks
June 17, 2013

Offer/Answer Considerations for G723 Annex A and G729 Annex B
draft-ietf-mmusic-sdp-g723-g729-03

Abstract

RFC4856 describes the annexa parameter for G723 and the annexb parameter for G729, G729D and G729E. However, the specification does not describe the offerer and answerer behavior when the value of the annexa or annexb parameter does not match in the Session Description protocol(SDP) offer and answer. This document provides the offer/answer considerations for these parameters and updates RFC4856.

Table of Contents

1. Introduction

[RFC4856] describes the annexa parameter for G723 as follows:

> annexa: indicates that Annex A, voice activity detection, is used or preferred. Permissible values are "yes" and "no" (without the quotes); "yes" is implied if this parameter is omitted.

Also, [RFC4856] describes the annexb parameter for G729, G729D and G729E as follows:

> annexb: indicates that Annex B, voice activity detection, is used or preferred. Permissible values are "yes" and "no" (without the quotes); "yes" is implied if this parameter is omitted.

However, it does not have any normative statement for the case where the value of this parameter does not match in the SDP [RFC4566] offer and answer. For example, if the offer has G729 with annexb=yes and the answer has G729 with annexb=no, it can be interpreted in two different ways:

- The offerer and answerer proceed as if G729 is negotiated with annexb=yes, or
- The offerer and answerer proceed as if G729 is negotiated with annexb=no.

Since [RFC4856] does not state it clearly, various implementations have interpreted the offer/answer in their own ways, resulting in a different codec being chosen to call failure, when the parameter value does not match in the offer and answer.

[RFC3264] requires SDP extensions that define new fmtp parameters to specify their proper interpretation in offer/answer. But, [RFC4856] does not specify it for the Annex A flavor of G723 and the Annex B flavors of G729, G729D and G729E.

This document describes the offer/answer considerations for these parameters and provides the necessary clarifications.

2. Terminology

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 [RFC2119].

3. Offer/Answer Considerations

[RFC3551] states that

> Receivers MUST accept comfort noise frames if restriction of their use has not been signaled. The MIME registration for G729 in RFC 3555 specifies a parameter that MAY be used with MIME or SDP to restrict the use of comfort noise frames.

Based on the above, it is best not to use comfort noise frames if the SDP offer or answer indicates that comfort noise is not supported.

3.1. Offer/Answer Considerations for G723 Annex A

When the offer or answer has G723 and the annexa parameter is absent, the offerer or answerer knows that it has implied the default "annexa=yes". This is because the annexa attribute is part of the original registration of audio/G723 [RFC4856]. All implementations that support G723 understand the annexa attribute. Hence, this case MUST be considered as if the offer or answer has G723 with annexa=yes.

When the offer has G723 with annexa=yes and the answer has G723 with annexa=no, the offerer and answerer MUST proceed as if G723 is negotiated with annexa=no.

When the offer has G723 with annexa=no then the answer MUST NOT have annexa=yes for G723. Thus the annexa parameter can be turned off by the answerer, but cannot be turned on.

When the offer has G723 with annexa=no, the reason for not mandating that the answer MUST have annexa=no for G723 is that there are there implementations that omit the annexa parameter in answer and expect the least common denominator to be used.

When the offer has G723 with no annexa parameter and the answer has G723 with annexa=yes, the offerer and answerer MUST proceed as if G723 is negotiated with annexa=yes.

3.2. Offer/Answer Considerations for G729 Annex B, G729D Annex B and G729E Annex B

In this section G729 represents any of G729 or G729D or G729E.

When the offer or answer has G729 and the annexb parameter is absent, the offerer or answerer knows that it has implied the default "annexb=yes". This is because the annexb attribute is part of the original registration of audio/G729 [RFC4856]. All implementations

that support G729 understand the annexb attribute. Hence, this case MUST be considered as if the offer or answer has G729 with annexb=yes.

When the offer or answer has G729 and the annexb parameter is absent, it MUST be considered as if the offer or answer has G729 with annexb=yes.

When the offer has G729 with annexb=yes and the answer has G729 with annexb=no, the offerer and answerer MUST proceed as if G729 is negotiated with annexb=no.

When the offer has G729 with annexb=no then the answer MUST NOT have annexb=yes for G729. Thus the annexb parameter can be turned off by the answerer, but cannot be turned on.

When the offer has G729 with annexa=no, the reason for not mandating that the answer MUST have annexa=no for G729 is that there are there implementations that omit the annexa parameter in answer and expect the least common denominator to be used.

When the offer has G729 with no annexb parameter and the answer has G729 with annexb=yes, the offerer and answerer MUST proceed as if G729 is negotiated with annexb=yes.

4. Examples

4.1. Offer with G729 annexb=yes and answer with G729 annexb=no

```
[Offer with G729 annexb=yes]

v=0
o=alice 2890844526 2890844526 IN IP4 host.atlanta.example.com
s=
c=IN IP4 host.atlanta.example.com
t=0 0
m=audio 49170 RTP/AVP 18
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=yes
```

```
[Answer with G729 annexb=no]

v=0
o=bob 1890844326 1890844326 IN IP4 host.bangalore.example.com
s=
c=IN IP4 host.bangalore.example.com
t=0 0
m=audio 19140 RTP/AVP 18
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
```

In the above example the offerer and answerer proceed as if G729 is negotiated with annexb=no.

4.2. Offer with G729 annexb=yes and answer with G729 and no annexb parameter

```
[Offer with G729 annexb=yes]

v=0
o=alice 2890844526 2890844526 IN IP4 host.atlanta.example.com
s=
c=IN IP4 host.atlanta.example.com
t=0 0
m=audio 49170 RTP/AVP 18
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=yes

[Answer with G729 and no annexb parameter]

v=0
o=bob 1890844326 1890844326 IN IP4 host.bangalore.example.com
s=
c=IN IP4 host.bangalore.example.com
t=0 0
m=audio 19140 RTP/AVP 18
a=rtpmap:18 G729/8000
```

In the above example the offerer and answerer proceed as if G729 is negotiated with annexb=yes.

4.3. Offer with G729 and no annexb parameter and answer with G729 annexb=no

```
[Offer with G729 and no annexb parameter]

v=0
o=alice 2890844526 2890844526 IN IP4 host.atlanta.example.com
s=
c=IN IP4 host.atlanta.example.com
t=0 0
m=audio 49170 RTP/AVP 18
a=rtpmap:18 G729/8000

[Answer with G729 annexb=no]

v=0
o=bob 1890844326 1890844326 IN IP4 host.bangalore.example.com
s=
c=IN IP4 host.bangalore.example.com
t=0 0
m=audio 19140 RTP/AVP 18
a=rtpmap:18 G729/8000
a=fmtp:18 annexb=no
```

In the above example the offerer and answerer proceed as if G729 is negotiated with annexb=no.

5. Security Considerations

There is no extra security consideration apart from what is described in [RFC4856].

6. IANA Considerations

There is no IANA consideration for this draft.

7. Acknowledgement

Thanks to Flemming Andreasen (Cisco), Miguel A. Garcia (Ericsson), Ali C. Begen (Cisco), Paul Kyzivat(Huawei), Roni Even (Huawei), Kevin Riley (Sonus), Ashish Sharma (Sonus), Kevin P. Fleming (Digium), Dale worley, Cullen Jennings (Cisco), Ari Keranen (Ericsson) and Harprit S. Chhatwal (InnoMedia) for their valuable inputs and comments. Martin Dolly (ATT) and Hadriel Kaplan (Acme Packet) provided useful suggestions at the mic at IETF-83.

8. Normative References

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

[RFC3264] Rosenberg, J. and H. Schulzrinne, "An Offer/Answer Model with Session Description Protocol (SDP)", RFC 3264, June 2002.

[RFC3551] Schulzrinne, H. and S. Casner, "RTP Profile for Audio and Video Conferences with Minimal Control", STD 65, RFC 3551, July 2003.

[RFC4566] Handley, M., Jacobson, V., and C. Perkins, "SDP: Session Description Protocol", RFC 4566, July 2006.

[RFC4856] Casner, S., "Media Type Registration of Payload Formats in the RTP Profile for Audio and Video Conferences", RFC 4856, February 2007.

Authors' Addresses

Muthu Arul Mozhi Perumal
Cisco Systems
Cessna Business Park
Sarjapur-Marathahalli Outer Ring Road
Bangalore, Karnataka 560103
India

Email: mperumal@cisco.com

Parthasarathi Ravindran
Nokia Siemens Networks
Manyata Embassy Business park
Bangalore, Karnataka
India

Email: partha@parthasarathi.co.in