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Indicating Exclusive Support of RTP/RTCP Multiplexing using SDP
draft-ietf-mmusic-mux-exclusive-00

Abstract

This document defines how an endpoint can indicate exclusive support of RTP/RTCP multiplexing using the Session Description Protocol (SDP).

The document updates RFC 5761, by defining how the SDP 'rtcp' attribute is used, together with the SDP 'rtcp-mux' attribute, to indicate exclusive support of RTP/RTCP multiplexing.

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1. Introduction

[RFC5761] defines how to multiplex RTP and RTCP on a single port, referred to as RTP/RTCP multiplexing. [RFC5761] also defines an Session Description Protocol (SDP) [RFC4566] attribute, 'rtcp-mux' that can be used by entities to indicate support of RTP/RTCP multiplexing.

As defined in [RFC5761], if the peer endpoint does not support RTP/RTCP multiplexing, there must be a fallback to usage of separate ports for RTP and RTCP. However, the RTCWEB WG have defined that support of the fallback is optional. Therefore, there needs to be a mechanism for an endpoint to be able to indicate exclusive support of RTP/RTCP multiplexing, i.e. to be able to indicate that the endpoint only supports RTP/RTCP multiplexing and is not able to fallback to usage of separate ports for receiving RTP and RTCP.

This document describes a mechanism, how the SDP 'rtcp-mux' attribute [RFC5761] and the SDP 'rtcp' attribute [RFC3605] can be used to indicate exclusive support of RTP/RTCP multiplexing. The document updates sections 5.1.1 and 5.1.3 of [RFC5761] in order to enable usage of the mechanism.

The document also describes the Interactive Connectivity Establishment (ICE) [I-D.ietf-ice-rfc5245bis] considerations when indicating exclusive support of RTP/RTCP multiplexing.

2. Conventions

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. Mechanism

As as described in [RFC5761], when an offerer sends an offer, and wants to indicate support of RTP/RTCP multiplexing, it must associate an SDP 'rtcp-mux' attribute with each RTP-based SDP media description ("m=" line) for which support of multiplexing is indicated. In addition, the offerer may assign an SDP 'rtcp' attribute, in order to provide a fallback port for RTCP in case the answerer does not support (or is not willing to use) RTP/RTCP multiplexing.

When an offerer sends an offer, and wants to indicate exclusive support of RTP/RTCP multiplexing it MUST, in addition to the SDP 'rtcp-attribute, associate an SDP 'rtcp' attribute with each SDP media description for which exclusive support of RTP/RTCP multiplexing is indicated. The offerer MUST assign a port value identical to the port value of the associated SDP media description to the 'rtcp' attribute. The offerer MAY assign the optional IP address part to the 'rtcp' attribute. If assigned, the IP address part value MUST be identical to the value of the associated connection address ("c=" line).

4. Update to RFC 5761

4.1. General

This section updates sections 5.1.1 and 5.1.3 of [RFC5761], by adding a new paragraph in section 5.1.1 after the second paragraph, and by modifying the second paragraph in section 5.1.3.

4.2. RFC 5761 Section 5.1.1 Update

NEW PARAGRAPH:

If the offerer is not able to use different ports
for RTP and RTCP, the SDP offer MUST also include the "a=rtcp"
attribute [10] with an attribute value identical to the associated
port value for RTP. For example:

```
v=0
o=csp 1153134164 1153134164 IN IP6 2001:DB8::211:24ff:fea3:7a2e
s=-
c=IN IP6 2001:DB8::211:24ff:fea3:7a2e
t=1153134164 1153137764
m=audio 49170 RTP/AVP 97
a=rtpmap:97 iLBC/8000
a=rtcp-mux
a=rtcp: 49170
```

4.3. RFC 5761 Section 5.1.3 Update

OLD TEXT:

> If it is desired to use both ICE and multiplexed RTP and RTCP, the initial offer MUST contain an "a=rtcp-mux" attribute to indicate that RTP and RTCP multiplexing is desired and MUST contain "a=candidate:" lines for both RTP and RTCP along with an "a=rtcp:" line indicating a fallback port for RTCP in the case that the answerer does not support RTP and RTCP multiplexing. This MUST be done for each media where RTP and RTCP multiplexing is desired.

NEW TEXT:

> If it is desired to use both ICE and multiplexed RTP and RTCP, the initial offer MUST contain an "a=rtcp-mux" attribute to indicate that RTP and RTCP multiplexing is desired. If the offerer supports a fallback port for RTCP in the case that the answerer does not support RTP and RTCP multiplexing, the initial offer MUST contain "a=candidate:" lines for both RTP and RTCP along with an "a=rtcp:" line indicating a fallback port for RTCP. If the offerer is not able to use separate ports for RTP and RTCP the offer MUST NOT contain "a=candidate:" lines for RTCP, and the "a=rtcp:" line MUST indicate the RTP port. If the "a=rtcp:" line indicates the RTP port, and if the "a=rtcp:" line also contains the optional IP address part, the IP address part value MUST be identical to the value of the associated "c=" line. The This MUST be done for each media where RTP and RTCP multiplexing is desired.

4.4. Issues And TBDs

ISSUE #1: We may want to specify an explicit procedure for the answerer too, saying that it must select mux if it receives rtcp-mux and rtcp with the RTP port value.

ISSUE #2: We may want to specify something about the case when the answerer only supports mux, and receives an offer without mux.

5. ICE Considerations

As defined in [I-D.ietf-ice-rfc5245bis], if an entity is aware that the remote peer supports, and is willing to use, RTP/RTCP multiplexing, the entity will only provide RTP candidates (component ID 1). However, only providing RTP candidates does not as such imply exclusive support of RTP/RTCP multiplexing. RTCP candidates would not be provided also in cases where RTCP is not supported at all. Therefore, additional information is needed in order to indicate

support of exclusive RTP/RTCP multiplexing. This document defines such mechanism using the SDP 'rtcp-mux' and 'rtcp' attributes.

6. Security Considerations

This document does not introduce new security considerations in additions to those specified in [RFC3605] and [RFC5761].

7. IANA Considerations

This document makes no requests from IANA.

8. Acknowledgments

Thanks to Roman Shpount, Paul Kyzivat, Ari Keraenen, Bo Burman and Tomas Frankkila for their comments and input on the draft.

9. Change Log

[RFC EDITOR NOTE: Please remove this section when publishing]

Changes from draft-holmberg-mmusic-mux-exclusive-03

- Submitted as draft-ietf-mmusic-mux-exclusive-00.

Changes from draft-holmberg-mmusic-mux-exclusive-02

- Intended status changed to "Standards track".

Changes from draft-holmberg-mmusic-mux-exclusive-01

- Clarified that the SDP rtcp attribute may contain the optional IP address part.

Changes from draft-holmberg-mmusic-mux-exclusive-00

- Additional updates to Section 5.1.1 of RFC 5761.
- ICE considerations added.

10. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <http://www.rfc-editor.org/info/rfc2119>.

[RFC3264] Rosenberg, J. and H. Schulzrinne, "An Offer/Answer Model with Session Description Protocol (SDP)", RFC 3264, DOI 10.17487/RFC3264, June 2002, <http://www.rfc-editor.org/info/rfc3264>.

[RFC3605] Huitema, C., "Real Time Control Protocol (RTCP) attribute in Session Description Protocol (SDP)", RFC 3605, DOI 10.17487/RFC3605, October 2003, <http://www.rfc-editor.org/info/rfc3605>.

[RFC4566] Handley, M., Jacobson, V., and C. Perkins, "SDP: Session Description Protocol", RFC 4566, DOI 10.17487/RFC4566, July 2006, <http://www.rfc-editor.org/info/rfc4566>.

[RFC5761] Perkins, C. and M. Westerlund, "Multiplexing RTP Data and Control Packets on a Single Port", RFC 5761, DOI 10.17487/RFC5761, April 2010, <http://www.rfc-editor.org/info/rfc5761>.

[I-D.ietf-ice-rfc5245bis] Keranen, A. and J. Rosenberg, "Interactive Connectivity Establishment (ICE): A Protocol for Network Address Translator (NAT) Traversal", draft-ietf-ice-rfc5245bis-00 (work in progress), October 2015.

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