Indicating Exclusive Support of RTP/RTCP Multiplexing using SDP
draft-ietf-mmusic-mux-exclusive-03

Abstract

   This document defines a new SDP media-level attribute, 'rtcp-mux-
   exclusive', that can be used by an endpoint 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 IP
   address and 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, and negotiate usage 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.

   The RTCWEB WG has defined that support of the fallback mentioned
   above is optional. Therefore, there is a need for a mechanism that
   allows an endpoint to indicate exclusive support of RTP/RTCP
   multiplexing, meaning that endpoint only supports RTP/RTCP
   multiplexing and is not able to fallback to usage of separate ports
   for RTP and RTCP.

   This document defines a new SDP media-level attribute, 'rtcp-mux-
   exclusive', that can be used to indicate exclusive support of RTP/
   RTCP multiplexing.

   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. SDP rtcp-mux-exclusive Attribute

   This section defines a new SDP media-level attribute, 'rtcp-mux-
   exclusive'.

         Name: rtcp-mux-exclusive

         Value: N/A

         Usage Level: media

         Charset Dependent: no

         Syntax:

             rtcp-mux-exclusive

         Example:

             a=rtcp-mux-exclusive

   In an SDP offer, the offerer uses the SDP 'rtcp-mux-exclusive'
   attribute to indicate exclusive support of RTP/RTCP multiplexing for
   the RTP-based media associated with the SDP media description ("m="
   line).

   In an SDP answer, the 'rtcp-mux-exclusive' attribute indicates that
   the answerer supports, and accepts usage of, RTP/RTCP multiplexing
   for the RTP-based media associated with the SDP media description
   ("m=" line).

   The usage of the SDP 'rtcp-mux-exclusive' attribute is only defined
   for RTP-based media.

   The mux category [I-D.ietf-mmusic-sdp-mux-attributes] for the 'rtcp-
   mux-exclusive' attribute is 'NORMAL', which means that the attribute
   can be associated with an individual media description, even if the
   media description is multiplexed with other media descriptions
   [I-D.ietf-mmusic-sdp-bundle-negotiation] with which the attribute is
   not associated.

The 'rtcp-mux-exclusive' attribute applies to the whole associated
media description. The attribute MUST NOT be defined per source
(using the SDP 'ssrc' attribute [RFC5576]).

The SDP offer/answer [RFC3264] procedures associated with the
attribute are defined in Section 4

4. SDP Offer/Answer Procedures

4.1. General

This section defines the SDP offer/answer [RFC3264] procedures for
indicating exclusive support of, and negotiating usage of, RTP/RTCP
multiplexing.

The procedures in this section apply to individual RTP-based SDP
media descriptions ("m=" lines).

4.2. Generating the Initial SDP Offer

When an offerer sends the initial offer, if the offerer wants to
indicate exclusive RTP/RTCP multiplexing for RTP-based media, the
offerer MUST associate an SDP 'rtcp-mux-exclusive' attribute with the
associated SDP media description ("m=" line).

In addition, if the offerer associates an SDP 'rtcp-mux-exclusive'
attribute with an SDP media description ("m=" line), the offerer MUST
also associate an SDP 'rtcp-mux' attribute with the same SDP media
description ("m=" line), following the procedures in [RFC5761].

If the offerer associates an SDP 'rtcp' attribute [RFC3605] with an
SDP media description ("m=" line), and if the offerer also associates
an SDP 'rtcp-mux-exclusive' attribute with the same SDP media
description ("m=" line), the address and port values of the SDP
'rtcp' attribute MUST match the corresponding values for RTP.

NOTE: This specification does not mandate the usage of the SDP 'rtcp'
attribute for RTP/RTCP multiplexing.

4.3. Generating the Answer

When an answerer receives an offer that contains an SDP 'rtcp-mux-
exclusive' attribute, associated with an RTP-based SDP media
description ("m=" line), if the answerer accepts the usage of RTP/
RTCP multiplexing, the answerer MUST associate an SDP 'rtcp-mux-
exclusive' attribute with the corresponding SDP media description
("m=") in the associated answer. If the answerer does not accept the
usage of RTP/RTCP multiplexing, the answerer MUST either reject the

SDP media description ("m=") by setting the port value to zero in the
associated answer, or reject the whole offer, following the
procedures in [RFC3264].

In addition, if the answerer associates an SDP 'rtcp-mux-exclusive'
attribute with an SDP media description ("m=" line) in the answer,
the answerer MUST also associate an SDP 'rtcp-mux' attribute with the
same SDP media description ("m=" line), following the procedures in
[RFC5761].

4.4. Offerer Processing of the SDP Answer

If an offerer associated an SDP 'rtcp-mux-exclusive' attribute with
an RTP-based SDP media description ("m=" line) in an offer, and if
the corresponding SDP media description ("m=" line) in the associated
answer contains an SDP 'rtcp-mux-exclusive' attribute, and/or an SDP
'rtcp-mux' attribute, the offerer MUST apply the RTP/RTCP
multiplexing procedures [RFC5761] to the associated RTP-based media.
If the corresponding SDP media description ("m=" line) in the
associated answer does not contain an SDP 'rtcp-mux-exclusive'
attribute, nor an SDP 'rtcp-mux' attribute, the offerer MUST either
take appropriate actions in order to disable the associated RTP-based
media, or send a new offer without associating an SDP 'rtcp-mux-
exclusive' attribute with the SDP media description ("m=" line).

NOTE: This document does not mandate specific actions on how to
terminate the RTP media. The offerer might e.g. send a new offer,
where the port value of the SDP media description is set to zero, in
order to terminate the RTP media.

4.5. Modifying the Session

When an offerer sends a subsequent offer, if the offerer and answerer
have previously negotiated usage of RTP/RTCP multiplexing for the
media associated with an RTP-based SDP media description ("m=" line),
the offerer SHOULD associate an SDP 'rtcp-mux-exclusive' attribute
and an SDP 'rtcp-mux' attribute with the corresponding SDP media
description ("m=" line). If the offerer does not associate the
attributes with the corresponding SDP media description ("m=" line)
it is an indication that the offerer no longer wants to use RTP/RTCP
multiplexing, and instead MUST fallback to usage of separate ports
for RTP and RTCP once the offer has been accepted by the answerer.

When an offerer sends a subsequent offer, if the offerer and answerer
have not previously negotiated usage of RTP/RTCP multiplexing for the
media associated with an RTP-based SDP media description ("m=" line),
the offerer MAY indicate exclusive support of RTP/RTCP multiplexing,

following the procedures in Section 4.2. The offerer MUST process
the associated answer following the procedures in Section 4.4.

NOTE: It is RECOMMENDED to not switch between usage of RTP/RTCP
multiplexing and usage of separate ports for RTP and RTCP in a
subsequent offer, unless there is a use-case that mandates it.

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-exclusive' 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 updates the "Session Description Protocol Parameters"
registry as specified in Section 8.2.2 of [RFC4566]. Specifically,
it adds the SDP 'rtcp-mux-exclusive' attribute to the table for SDP
media level attributes.

```
Attribute name: rtcp-mux-exclusive
Type of attribute: media-level
Subject to charset: no
Purpose: Indicate exclusive support of RTP/RTCP multiplexing
Appropriate Values:
Contact name: Christer Holmberg
Category: NORMAL
```

8. Acknowledgments

Thanks to Roman Shpount, Paul Kyzivat, Ari Keranen, 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-ietf-mmusic-rtcp-mux-exclusive-02

   o Minor editorial fix.

   Changes from draft-ietf-mmusic-rtcp-mux-exclusive-01

   o Mux category and source-specific applicability added.

   Changes from draft-ietf-mmusic-rtcp-mux-exclusive-00

   o Defined new SDP attribute for indicating rtcp-mux-exclusive.

   o Updates to RFC 5761 removed.

   o IANA considerations added.

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

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

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

   o Intended status changed to "Standards track".

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

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

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

   o Additional updates to Section 5.1.1 of RFC 5761.

   o ICE considerations added.

10. References

10.1. Normative References

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              with Session Description Protocol (SDP)", RFC 3264,
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10.2. Informative References

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              Media Attributes in the Session Description Protocol
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              Multiplexing", draft-ietf-mmusic-sdp-mux-attributes-12
              (work in progress), January 2016.

   [I-D.ietf-mmusic-sdp-bundle-negotiation]
              Holmberg, C., Alvestrand, H., and C. Jennings,
              "Negotiating Media Multiplexing Using the Session
              Description Protocol (SDP)", draft-ietf-mmusic-sdp-bundle-
              negotiation-25 (work in progress), January 2016.

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