

**Indicating Exclusive Support of RTP/RTCP Multiplexing using SDP
draft-ietf-mmusic-mux-exclusive-02**

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

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9. Change Log

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

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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10.2. Informative References

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- [RFC5576] Lennox, J., Ott, J., and T. Schierl, "Source-Specific Media Attributes in the Session Description Protocol (SDP)", [RFC 5576](#), DOI 10.17487/RFC5576, June 2009, <<http://www.rfc-editor.org/info/rfc5576>>.
- [I-D.ietf-mmusic-sdp-mux-attributes]
Nandakumar, S., "A Framework for SDP Attributes when 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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