

MMUSIC
Internet-Draft
Intended status: Standards Track
Expires: January 7, 2010

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July 6, 2009

A Session Description Protocol (SDP) Attribute for Maximum Media Source
Count Indication

[draft-lennox-mmusic-sdp-max-sources-00](#)

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Abstract

The Real-Time Transport Protocol (RTP) is a multi-point protocol, supporting multiple simultaneous sending sources in an RTP session.

However, many existing RTP endpoints cannot usefully receive more than one simultaneous source. This document provides a Session Description Protocol (SDP) attribute that allows endpoints to indicate the maximum number of sources they can usefully receive.

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[1.](#) Introduction

The Real-Time Transport Protocol (RTP) [[RFC3550](#)] is a multi-point protocol. It supports multiple simultaneous media senders, and, as documented in RTP Topologies [[RFC5117](#)], scales from two-party point-to-point sessions to large, wide-area sessions.

However, many existing systems do not make use of this capability. Especially for Voice-over-IP and multimedia conferencing systems using SIP [[RFC3261](#)], many existing terminals will not decode more than a single RTP stream at a time per RTP session. Indeed, many deployed systems are known to misbehave badly upon receiving more than one simultaneous RTP stream in an RTP session.

Thus, even if endpoints can receive, decode, and usefully present multiple sources in an RTP session, there is no portable way for their peers to know this and take advantage of it.

To remedy this situation, this document defines a new SDP attribute, "max-sources", which specifies the maximum number of sources that an endpoint in an RTP session can usefully process.

[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 [RFC 2119](#) [[RFC2119](#)] and indicate requirement levels for compliant implementations.

[3.](#) The "max-sources" Media Attribute

This section defines a new SDP media-level attribute, "max-sources", which indicates the maximum number of sources supported in an RTP session.

a=max-sources:<source count>
a=max-sources:unlimited

The SDP media attribute "max-sources" indicates the maximum number of RTP sources that an RTP receiver supports within an RTP session. <source count> is the maximum number of sources that can usefully be decoded, expressed as a positive decimal integer or the string "unlimited". Thus, it indicates the maximum number of RTP senders that should be present in the session, other than those that the SDP

author itself will send.

The "max-sources" media attribute MAY be used for any RTP-based media transport. It is not defined for other transports.

The "max-sources" attribute is only defined for SDP Offer/Answer [[RFC3264](#)] messages, not declarative SDP. A receiver of a "max-sources" attribute in an offer or answer SHOULD restrict the number of sources that it transmits on the RTP session to the number of sources mentioned in the SDP message.

The "max-sources" attribute does not support the value of "0". If no sources are supported on a session, an appropriate SDP sendrecv attribute (e.g. "sendonly") SHOULD be used instead.

The "max-sources" attribute SHOULD NOT be used with RTP sessions sent over any-source multicast (those that RTP Topologies [[RFC5117](#)] describes as "Topo-Multicast", or the multicast side of "Topo-Translator"), because new participants cannot immediately determine how many existing senders are present in the RTP session.

For the unicast portion of translator-based topologies, it is the translator's responsibility to forward only the appropriate number of sources along the unicast path.

Figure 1 in [Section 5](#) gives a formal Augmented Backus-Naur Form (ABNF) [[RFC5234](#)] grammar for the "max-sources" attribute.

The "max-sources" media attribute is not dependent on charset.

[4.](#) Backward Compatibility

As mentioned in the introduction, it is unclear with existing endpoints whether they can usefully support multiple sources on an RTP session. In most circumstances, therefore, existing endpoints will default to sending only a single source per session. This will be compatible with any requested value of "max-sources" even if the receiver of the SDP does not support the attribute.

[5.](#) Formal Grammar

This section gives a formal Augmented Backus-Naur Form (ABNF) [[RFC5234](#)] grammar for each the "max-sources" media attribute.

```
max-sources-attr = "max-sources:" ( 1*DIGIT / "unlimited" )
```

```
attribute =/ max-sources-attr
```

Figure 1: Syntax of the "max-sources" media attribute

[6.](#) Security Considerations

All the security implications of RTP [[RFC3550](#)] and of SDP [[RFC4566](#)] apply. Explicitly indicating the number of RTP sources supported in an RTP media stream does not appear to add further security issues.

[7.](#) IANA Considerations

[7.1.](#) New SDP Media-Level Attribute

This document defines a new SDP media-level attribute, "max-sources". This attribute should be registered by IANA under "Session Description Protocol (SDP) Parameters" under "att-field (media level only)". Its format is defined in [Section 3](#)

[8.](#) References

[8.1.](#) 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.
- [RFC3550] Schulzrinne, H., Casner, S., Frederick, R., and V. Jacobson, "RTP: A Transport Protocol for Real-Time Applications", STD 64, [RFC 3550](#), July 2003.
- [RFC4566] Handley, M., Jacobson, V., and C. Perkins, "SDP: Session Description Protocol", [RFC 4566](#), July 2006.
- [RFC5234] Crocker, D. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", STD 68, [RFC 5234](#), January 2008.

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[8.2.](#) Informative References

- [RFC3261] Rosenberg, J., Schulzrinne, H., Camarillo, G., Johnston, A., Peterson, J., Sparks, R., Handley, M., and E. Schooler, "SIP: Session Initiation Protocol", [RFC 3261](#), June 2002.
- [RFC5117] Westerlund, M. and S. Wenger, "RTP Topologies", [RFC 5117](#), January 2008.

[Appendix A.](#) Open issues

- o Does "max-sources" need to be defined for declarative SDP (e.g. for RTSP)?

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