

# Jingle RTP Source Descriptions

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## Introduction

[RTP](#) streams include a SSRC identifier on every packet to indicate the sender of the packet, allowing separate audio or video sources to be multiplexed on a single RTP stream. However, the current Jingle specifications in XMPP do not provide any mechanism to indicate what streams are being sent, and/or provide additional meta-information about them. XEP-0167 defines the “ssrc” attribute on the <description> element to indicate a single SSRC for the outgoing RTP stream, but this is limited to a single value, and no additional information can be conveyed.

Moreover, when performing retransmissions with RTX using SSRC-multiplexed mode, as specified in RFC 4588, a separate SSRC value must be used for retransmissions. Or, when sending media protected by FEC as specified in RFC 4756, a separate SSRC value must be used for FEC data. Therefore, even for sessions that only have one actual media source, a need exists to indicate multiple SSRCs.

In the SIP universe, a similar issue with describing multiple sources in SDP was addressed in [RFC 5576](#), which introduced new SDP attributes to specify and describe multiple sources. This document piggybacks off of that RFC to provide an XMPP specification for the SDP attributes defined therein.

## Specification

To enable the use of multiple sources and gatewaying to SIP implementations that make use of RFC 5576, we define a <source/> element qualified by the 'urn:xmpp:jingle:apps:rtp:1' namespace. This element is a child of the <description/> element that defines the format of a given media type.

If a participant in a session wants to use multiple sources, its <description/> element, contained in a session-initiate or session-accept stanza, as appropriate, shall include at least one <source/> element, and may contain multiple instances of the <source/> element, one for each source to be sent.

The <source/> element has XML attributes as follows:

- name -- this is the friendly name for the source, e.g. “Left Camera”.
- usage -- this indicates the source 'type', to allow recipients to distinguish between different types of sources, e.g. a video and presentation feed. Currently, the only defined types are “default” and “application”

In addition, it contains a list of <ssrc/> elements, which identify the RTP SSRCs that this source will use. In many cases, this will only be a single <ssrc/> element. The <ssrc/> element has no attributes.

An example follows:

**Example 1: User with two different video sources, namely a webcam and a screen-sharing feed.**

```
<description xmlns='urn:xmpp:jingle:apps:rtp:1' media='video'>
  <payload-type id='96' name='H264' clockrate='90000' />
  <source name="Webcam">
    <ssrc>12345</ssrc>
  </source>
  <source name="Keynote">
    <ssrc>67890</ssrc>
  </source>
</description>
```

As in RFC 5576, we also introduce the concept of a source group, which ties together related sources. One use case for this functionality is SSRC-multiplexing with RTX, where the primary and secondary SSRC used for sending and resending can be indicated. To enable this, we defined a <ssrc-group/> element qualified by the 'urn:xmpp:jingle:apps:rtp:1' namespace. This element is a child of the <source/> element.

The <ssrc-group/> element has XML attributes as follows:

- semantic -- this maps to the SDP “ssrc-group” parameter and has the same meaning (i.e., it is a predefined string indicating the semantics of the specified group). Examples include “FID” and “FEC”.

To indicate which SSRCs belong to the group, the <ssrc-group/> element contains a list of <ssrc/> elements that MUST have been previously specified as individual <ssrc/> elements.

An example follows:

**Example 2: User with a single video source, using RTX and FEC with different secondary SSRCs. The primary SSRC is listed first in each group.**

```
<description xmlns='urn:xmpp:jingle:apps:rtp:1' media='video'>
  <payload-type id='96' name='H264' clockrate='90000' />
  <payload-type id='98' name='rtx' clockrate='90000'>
    <parameter apt="96"/>
    <parameter rtx-time="3000"/>
  </payload-type>
  <source name='Webcam'>
    <ssrc>11111</ssrc>
```

```
<ssrc>22222</ssrc>
<ssrc>33333</ssrc>
<ssrc-group semantic='FID'>
  <ssrc>11111</ssrc>
  <ssrc>22222</ssrc>
</ssrc-group>
<ssrc-group semantic='FEC'>
  <ssrc>11111</ssrc>
  <ssrc>33333</ssrc>
</ssrc-group>
</source>
</description>
```

## References

### Internal Documents

- [Jingle RTP Conference Sessions](#)
- [Jingle RTP Source Descriptions](#)
- [Jingle RTP Source Events](#)
- [Jingle stuff under discussion / notes](#)

### Notes

1. XEP-0166: Jingle <<http://xmpp.org/extensions/xep-0166.html>>.
2. XEP-0167: Jingle RTP Sessions <<http://xmpp.org/extensions/xep-0167.html>>.
3. RFC 3550: RTP: A Transport Protocol for Real-Time Applications <<http://tools.ietf.org/html/rfc3550>>.
4. RFC 4566: SDP: Session Description Protocol <<http://tools.ietf.org/html/rfc4566>>.
5. RFC 4588: RTP Retransmission Payload Format <<http://tools.ietf.org/html/rfc4588>>.
6. RFC 5576: Source-Specific Media Attributes in the Session Description Protocol (SDP) <<http://tools.ietf.org/html/rfc5576>>.