Internet Engineering Task Force (IETF)
Request for Comments: 6128
Updates: 5760
Category: Standards Track
ISSN: 2070-1721

A. Begen
Cisco

February 2011

RTP Control Protocol (RTCP) Port for Source-Specific Multicast (SSM) Sessions

Abstract

The Session Description Protocol (SDP) has an attribute that allows RTP applications to specify an address and a port associated with the RTP Control Protocol (RTCP) traffic. In RTP-based source-specific multicast (SSM) sessions, the same attribute is used to designate the address and the RTCP port of the Feedback Target in the SDP description. However, the RTCP port associated with the SSM session itself cannot be specified by the same attribute to avoid ambiguity, and thus, is required to be derived from the "m=" line of the media description. Deriving the RTCP port from the "m=" line imposes an unnecessary restriction. This document removes this restriction by introducing a new SDP attribute.

Status of This Memo

This is an Internet Standards Track document.

This document is a product of the Internet Engineering Task Force (IETF). It represents the consensus of the IETF community. It has received public review and has been approved for publication by the Internet Engineering Steering Group (IESG). Further information on Internet Standards is available in Section 2 of RFC 5741.

Information about the current status of this document, any errata, and how to provide feedback on it may be obtained at http://www.rfc-editor.org/info/rfc6128.

Copyright Notice

Copyright (c) 2011 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust's Legal Provisions Relating to IETF Documents (http://trustee.ietf.org/license-info) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1. Introduction

The Session Description Protocol (SDP) [RFC4566] has an attribute that allows RTP applications [RFC3550] to specify an address and a port associated with the RTP Control Protocol (RTCP) traffic [RFC3605]. This attribute is called 'rtcp'.

Now consider a network where one or more media senders send RTP packets to a distribution source, which then multicasts these RTP packets to multicast receivers using a source-specific multicast (SSM) arrangement [RFC5760]. The distribution source also multicasts the forward RTCP traffic (i.e., RTCP sender reports and receiver reports or their summaries) to the receivers in the same SSM session.

In RTP-based SSM sessions, the 'rtcp' attribute is used to designate the address and the RTCP port of the Feedback Target in the SDP description [RFC5760]. However, the RTCP port associated with the SSM session itself cannot be specified by the same attribute since it could potentially cause ambiguity. Thus, the multicast RTCP port is required to be derived from the "m=" line of the media description

(see Section 10.2 of [RFC5760]) by following the +1 rule (see Section 11 of [RFC3550]). However, [RFC3550] lifted the requirement for the +1 rule since it imposed an unnecessary restriction on RTCP port selection.

In this specification, we introduce a new SDP attribute to remove this restriction. The new attribute allows the multicast sender to use its desired port in the RTCP session. This document updates [RFC5760].

2. The 'multicast-rtcp' Attribute

In RTP-based SSM sessions, the distribution source can use different multicast RTP and RTCP ports to send the RTP and RTCP packets, respectively. Alternatively, the distribution source can use RTP/RTCP port muxing [RFC5761], in which case the RTP and RTCP packets are sent to the same destination port in the SSM session.

For the cases when the distribution source does not want to use the one higher port for the RTCP traffic, this document defines a new SDP attribute, called 'multicast-rtcp'. By using this attribute, the distribution source uses a desired port for the SSM RTCP session. In the absence of the 'multicast-rtcp' attribute, the +1 rule applies following [RFC5760].

The following ABNF [RFC5234] syntax formally describes the 'multicast-rtcp' attribute:

```
rtcp-attribute = "a=multicast-rtcp:" port CRLF
```

Figure 1: ABNF syntax for the 'multicast-rtcp' attribute

Here, the 'port' token is defined as specified in Section 9 of [RFC4566].

The 'multicast-rtcp' attribute is defined as both a media-level and session-level attribute. Except where stated otherwise in this document, the rules of [RFC3550] apply.

3. SDP Example

In the session description shown in Figure 2, a source stream is multicast from a distribution source (with a source IP address of 198.51.100.1) to the multicast destination address of 233.252.0.2 and port 41000. The forward RTCP traffic is multicast in the same multicast group but to port 42000 as specified by the "a=multicast-rtcp:42000" line. A feedback target with an address of 192.0.2.1 and port of 43000 is specified by the 'rtcp' attribute.

```
v=0
o=ali 1122334455 1122334466 IN IP4 ssm.example.com
s='multicast-rtcp' Example
t=0 0
a=rtcp-unicast:rsi
m=video 41000 RTP/AVPF 98
i=Multicast Stream
c=IN IP4 233.252.0.2/255
a=source-filter:incl IN IP4 233.252.0.2 198.51.100.1
a=rtpmap:98 MP2T/90000
a=multicast-rtcp:42000
a=rtcp:43000 IN IP4 192.0.2.1
a=mid:1
```

Figure 2: Example SDP showing the use of the 'multicast-rtcp' attribute

4. Security Considerations

The 'multicast-rtcp' attribute is not believed to introduce any significant security risk to multimedia applications. A malevolent third party could use this attribute to redirect the RTCP traffic, but this requires intercepting and rewriting the packets carrying the SDP description; and if an interceptor can do that, many more attacks are possible, including a wholesale change of the addresses and port numbers at which the media will be sent.

In order to avoid attacks of this sort, the SDP description needs to be integrity protected and provided with source authentication. This can, for example, be achieved on an end-to-end basis using S/MIME [RFC5652] [RFC5751] when SDP is used in a signaling packet using MIME types (application/sdp). Alternatively, HTTPS [RFC2818] or the authentication method in the Session Announcement Protocol (SAP) [RFC2974] could be used as well.

5. IANA Considerations

The following contact information shall be used for all registrations in this document:

Ali Begen
abegen@cisco.com

5.1. Registration of SDP Attributes

This document registers a new attribute name in SDP.

```
SDP Attribute ("att-field"):
Attribute name:     multicast-rtcp
Long form:          Port in the multicast RTCP session
Type of name:       att-field
Type of attribute:  Media or session level
Subject to charset: No
Purpose:            Specifies the port for the SSM RTCP session
Reference:          [RFC6128]
Values:             See [RFC6128]
```

6. Acknowledgments

Thanks to Colin Perkins and Magnus Westerlund for suggesting the name for the 'multicast-rtcp' attribute and providing text for portions of this specification. Some parts of this specification are based on [RFC3605] and [RFC5760]. So, also thanks to those who contributed to those specifications.

7. References

7.1. Normative References

[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.

[RFC5760] Ott, J., Chesterfield, J., and E. Schooler, "RTP Control Protocol (RTCP) Extensions for Single-Source Multicast Sessions with Unicast Feedback", RFC 5760, February 2010.

[RFC5234] Crocker, D. and P. Overell, "Augmented BNF for Syntax Specifications: ABNF", STD 68, RFC 5234, January 2008.

7.2. Informative References

[RFC3605] Huitema, C., "Real Time Control Protocol (RTCP) attribute in Session Description Protocol (SDP)", RFC 3605, October 2003.

[RFC5761] Perkins, C. and M. Westerlund, "Multiplexing RTP Data and Control Packets on a Single Port", RFC 5761, April 2010.

[RFC5652] Housley, R., "Cryptographic Message Syntax (CMS)", STD 70, RFC 5652, September 2009.

[RFC2818] Rescorla, E., "HTTP Over TLS", RFC 2818, May 2000.

[RFC2974] Handley, M., Perkins, C., and E. Whelan, "Session Announcement Protocol", RFC 2974, October 2000.

[RFC5751] Ramsdell, B. and S. Turner, "Secure/Multipurpose Internet Mail Extensions (S/MIME) Version 3.2 Message Specification", RFC 5751, January 2010.

Author's Address

Ali Begen
Cisco
181 Bay Street
Toronto, ON M5J 2T3
Canada

EMail: abegen@cisco.com