

MMUSIC
Internet-Draft
Intended status: Standards Track
Expires: August 5, 2015

S. Nandakumar
Cisco Systems Inc
February 1, 2015

IANA registrations of SDP 'proto' attribute for transporting RTP Media
over TCP under various RTP profiles.
draft-nandakumar-mmusic-proto-iana-registration-01

Abstract

RTP provides end-to-end network transport functions suitable for applications transmitting real-time data such as audio, video or simulation data, over multicast or unicast network services. The data transport is augmented by a control protocol (RTCP) to allow monitoring of the data delivery in a manner scalable to large multicast networks, and to provide minimal control and identification functionality.

The RTP specification [RFC3550] establishes a registry of profile names for use by higher-level control protocols, such as the SDP, to refer to the transport methods. This specification describes the following new SDP transport protocol identifiers for transporting RTP Media over TCP: 'TCP/RTP/AVPF', 'TCP/RTP/SAVP', 'TCP/RTP/SAVPF', 'TCP/DTLS/RTP/SAVP', 'TCP/DTLS/RTP/SAVPF', 'TCP/TLS/RTP/AVP', 'TCP/TLS/RTP/AVPF', 'TCP/TLS/RTP/SAVP', 'TCP/TLS/RTP/SAVPF'.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at <http://datatracker.ietf.org/drafts/current/>.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on August 5, 2015.

Copyright Notice

Copyright (c) 2015 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.

This document may contain material from IETF Documents or IETF Contributions published or made publicly available before November 10, 2008. The person(s) controlling the copyright in some of this material may not have granted the IETF Trust the right to allow modifications of such material outside the IETF Standards Process. Without obtaining an adequate license from the person(s) controlling the copyright in such materials, this document may not be modified outside the IETF Standards Process, and derivative works of it may not be created outside the IETF Standards Process, except to format it for publication as an RFC or to translate it into languages other than English.

Table of Contents

1. Overview	3
2. Terminology	4
3. Protocol Identifiers	4
3.1. TCP/RTP/AVPF Transport Realization	4
3.2. TCP/RTP/SAVP Transport Realization	4
3.3. TCP/RTP/SAVPF Transport Realization	4
3.4. TCP/DTLS/RTP/SAVP Transport Realization	4
3.5. TCP/DTLS/RTP/SAVPF Transport Realization	5
3.6. TCP/TLS/RTP/AVP Transport Realization	5
3.7. TCP/TLS/RTP/AVPF Transport Realization	5
3.8. TCP/TLS/RTP/SAVP Transport Realization	5
3.9. TCP/TLS/RTP/SAVPF Transport Realization	6
4. ICE Considerations	6
5. IANA Considerations	6
6. Security Considerations	7
7. Acknowledgements	7
8. References	7
8.1. Normative References	7
8.2. Informative References	8

Author's Address 8

1. Overview

SDP [RFC4566] provides a general-purpose format for describing multimedia sessions in announcements or invitations. [RFC4145] specifies a general mechanism for describing media transport over TCP using SDP with [RFC4571] defining a method for framing Real-time Transport Protocol (RTP) and RTP Control Protocol (RTCP) packets onto a connection-oriented transport (such as TCP). [RFC4572] extends [RFC4145] for describing TCP-based media streams that are protected using TLS [RFC5246].

This specification describes the following new SDP transport protocol identifiers for transporting RTP Media over TCP:

TCP/RTP/AVPF: to describe RTP Media with RTCP-based Feedback [RFC4585] over TCP, as defined in Section 3.1.

TCP/RTP/SAVP: to describe Secure RTP Media [RFC3711] over TCP, as defined in Section 3.2.

TCP/RTP/SAVPF: to describe Secure RTP Media with RTCP-based Feedback [RFC5124] over TCP, as defined in Section 3.3.

TCP/DTLS/RTP/SAVP: to describe Secure RTP Media [RFC3711] using DTLS-SRTP [RFC5764] over TCP, as defined in Section 3.4.

TCP/DTLS/RTP/SAVPF: to describe Secure RTP Media with RTCP-based Feedback [RFC5124] using DTLS-SRTP over TCP, as defined in Section 3.5.

TCP/TLS/RTP/AVP: to describe RTP Media on top of TLS over TCP, as defined in Section 3.6.

TCP/TLS/RTP/AVPF: to describe RTP Media with RTCP-based Feedback [RFC5124] on top of TLS over TCP, as defined in Section 3.7.

TCP/TLS/RTP/SAVP: to describe Secure RTP Media on top of TLS over TCP, as defined in Section 3.8.

TCP/TLS/RTP/SAVPF: to describe Secure RTP Media with RTCP-based Feedback [RFC5124] on top of TLS over TCP, as defined in Section 3.9.

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].

3. Protocol Identifiers

The 'm=' line in SDP specifies, among other items, the transport protocol to be used for the media in the session. See the "Media Descriptions" section of SDP [RFC4566] for a discussion on transport protocol identifiers.

The following is the format for an 'm=' line, as specified in [RFC4566]:

```
m=<media> <port> <proto> <fmt> ...
```

An 'm' line that specifies these new proto identifiers MUST further qualify the application-layer protocol using an fmt identifier.

3.1. TCP/RTP/AVPF Transport Realization

The TCP/RTP/AVPF is realized as described below:

- o RTP/AVPF stream over the TCP transport is realized using the framing method defined in [RFC4571].

3.2. TCP/RTP/SAVP Transport Realization

The TCP/RTP/SAVP is realized as described below:

- o RTP/SAVP stream over the TCP transport is realized using the framing method defined in [RFC4571].

3.3. TCP/RTP/SAVPF Transport Realization

The TCP/RTP/SAVPF is realized as described below:

- o RTP/SAVPF stream over the TCP transport is realized using the framing method defined in [RFC4571].

3.4. TCP/DTLS/RTP/SAVP Transport Realization

The TCP/DTLS/RTP/SAVP is realized as described below:

- o RTP/SAVP on top of DTLS is realized according to the procedures defined in [RFC5764]; and

- o [RFC4571] framing is used to transport DTLS-SRTP packets over TCP.

3.5. TCP/DTLS/RTP/SAVPF Transport Realization

The TCP/DTLS/RTP/SAVPF is realized as described below:

- o RTP/SAVPF on top of DTLS is realized according to the procedures defined in [RFC5764]; and
- o [RFC4571] framing is used to transport DTLS-SRTP packets over TCP.

3.6. TCP/TLS/RTP/AVP Transport Realization

The TCP/TLS/RTP/AVP is realized as described below:

- o RTP/AVP packets are framed using the procedures from [RFC4571]; and
- o [RFC4571] framed RTP/AVP packets are transported as Application data messages over the TLS association setup using the procedures from [RFC4572].

3.7. TCP/TLS/RTP/AVPF Transport Realization

The TCP/TLS/RTP/AVPF is realized as described below:

- o RTP/AVPF packets are framed using the procedures from [RFC4571]; and
- o [RFC4571] framed RTP/AVPF packets are transported as Application data messages over the TLS association setup using the procedures from [RFC4572].

3.8. TCP/TLS/RTP/SAVP Transport Realization

The TCP/TLS/RTP/SAVP is realized as described below:

- o [RFC4572] procedures are followed for setting up TLS association(s) between the peers. However, the cryptographic mechanism used to generate the certificate fingerprint presented in the SDP MUST be chosen from the SRTPProtectionProfiles as described in [RFC5764]; and
- o RTP/SAVP packets are framed according to the procedures from [RFC4571]; and

- o [RFC4571] framed RTP/SAVP packets are transported as Application data messages over the TLS association setup using the procedures from [RFC4572].

3.9. TCP/TLS/RTP/SAVPF Transport Realization

The TCP/TLS/RTP/SAVPF is realized as described below:

- o [RFC4572] procedures are followed for setting up TLS association(s) between the peers. However, the cryptographic mechanism used to generate the certificate fingerprint presented in the SDP MUST be chosen from the SRTPProtectionProfiles as described in [RFC5764]; and
- o RTP/SAVPF packets are framed according to the procedures from [RFC4571]; and
- o [RFC4571] framed RTP/SAVPF packets are transported as Application data messages over the TLS association setup using the procedures from [RFC4572].

4. ICE Considerations

When procedures from [RFC6544] are used to setup ICE [RFC5245] candidates for a TCP transport, the framing mechanism from [RFC4571] is used for STUN keep-alive packets as well, as defined in section 3 of [RFC6544].

5. IANA Considerations

This specification describes the following new SDP transport protocol identifiers : 'TCP/RTP/AVPF', 'TCP/RTP/SAVP', 'TCP/RTP/SAVPF', 'TCP/DTLS/RTP/SAVP', 'TCP/DTLS/RTP/SAVPF', 'TCP/TLS/RTP/AVP', 'TCP/TLS/RTP/AVPF', 'TCP/TLS/RTP/SAVP', 'TCP/TLS/RTP/SAVPF' as defined in the Section 3. These proto values should be registered by the IANA under the:

- o "proto" subregistry in the "Session Description Protocol (SDP) Parameters" registry; and
- o "RTP Profile Names" registry subregistry on the "Real-Time Transport Protocol (RTP) Parameters" registry.

Additionally the following proto values described in [RFC5764] should be registered under the "RTP Profile Names" subregistry under the "Real-Time Transport Protocol (RTP) Parameters" registry: 'UDP/TLS/RTP/SAVP', 'DCCP/TLS/RTP/SAVP', 'UDP/TLS/RTP/SAVPF', 'DCCP/TLS/RTP/SAVPF'.

6. Security Considerations

The new "proto" identifiers registered by this document in the SDP parameters registry maintained by IANA is primarily for use by the offer/answer model of the Session Description Protocol [RFC3264] for the negotiation and establishment of RTP based Media over the TCP transport. These additional SDP "proto" identifiers does not introduce any security considerations beyond those detailed in Section 7 of [RFC4566].

7. Acknowledgements

Author would like to thank Cullen Jennings, Alissa Cooper, Justin Uberti and Christer Holmberg for early reviews and suggested improvements.

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.
- [RFC4566] Handley, M., Jacobson, V., and C. Perkins, "SDP: Session Description Protocol", RFC 4566, July 2006.
- [RFC4571] Lazzaro, J., "Framing Real-time Transport Protocol (RTP) and RTP Control Protocol (RTCP) Packets over Connection-Oriented Transport", RFC 4571, July 2006.
- [RFC4572] Lennox, J., "Connection-Oriented Media Transport over the Transport Layer Security (TLS) Protocol in the Session Description Protocol (SDP)", RFC 4572, July 2006.
- [RFC5245] Rosenberg, J., "Interactive Connectivity Establishment (ICE): A Protocol for Network Address Translator (NAT) Traversal for Offer/Answer Protocols", RFC 5245, April 2010.
- [RFC5764] McGrew, D. and E. Rescorla, "Datagram Transport Layer Security (DTLS) Extension to Establish Keys for the Secure Real-time Transport Protocol (SRTP)", RFC 5764, May 2010.
- [RFC6544] Rosenberg, J., Keranen, A., Lowekamp, B., and A. Roach, "TCP Candidates with Interactive Connectivity Establishment (ICE)", RFC 6544, March 2012.

8.2. Informative References

- [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.
- [RFC3711] Baugher, M., McGrew, D., Naslund, M., Carrara, E., and K. Norrman, "The Secure Real-time Transport Protocol (SRTP)", RFC 3711, March 2004.
- [RFC4145] Yon, D. and G. Camarillo, "TCP-Based Media Transport in the Session Description Protocol (SDP)", RFC 4145, September 2005.
- [RFC4585] Ott, J., Wenger, S., Sato, N., Burmeister, C., and J. Rey, "Extended RTP Profile for Real-time Transport Control Protocol (RTCP)-Based Feedback (RTP/AVPF)", RFC 4585, July 2006.
- [RFC5124] Ott, J. and E. Carrara, "Extended Secure RTP Profile for Real-time Transport Control Protocol (RTCP)-Based Feedback (RTP/SAVPF)", RFC 5124, February 2008.
- [RFC5246] Dierks, T. and E. Rescorla, "The Transport Layer Security (TLS) Protocol Version 1.2", RFC 5246, August 2008.

Author's Address

Suhas Nandakumar
Cisco Systems Inc
707 Tasman Drive
San Jose, CA 95134
USA

Email: snandaku@cisco.com