

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

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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'.

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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.

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