

SIMPLE Working Group
Internet-Draft
Intended status: Standards Track
Expires: January 15, 2009

S. Loreto
G. Camarillo
Ericsson
Jul 14, 2008

SCTP-Based Media Transport in the Session Description Protocol.
draft-loreto-mmusic-sctp-sdp-01

Status of this Memo

By submitting this Internet-Draft, each author represents that any applicable patent or other IPR claims of which he or she is aware have been or will be disclosed, and any of which he or she becomes aware will be disclosed, in accordance with [Section 6 of BCP 79](#).

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF), its areas, and its working groups. Note that other groups may also distribute working documents as Internet-Drafts.

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."

The list of current Internet-Drafts can be accessed at <http://www.ietf.org/ietf/lid-abstracts.txt>.

The list of Internet-Draft Shadow Directories can be accessed at <http://www.ietf.org/shadow.html>.

This Internet-Draft will expire on January 15, 2009.

Abstract

Stream Control Transmission Protocol (SCTP) provides a reliable communication channel between two end-hosts in many ways similar to TCP. This document describes how to express media transport over SCTP using the Session Description Protocol (SDP). It defines the SDP 'SCTP' protocol identifier.

Table of Contents

- [1. Introduction](#) [3](#)
- [2. Terminology](#) [3](#)
- [3. Protocol Identifier](#) [3](#)
- [4. Multihoming Association Management](#) [4](#)
- [5. Examples](#) [4](#)
 - [5.1. Passive/Active](#) [4](#)
 - [5.2. Existing Connection Reuse](#) [5](#)
- [6. Security Considerations](#) [6](#)
- [7. IANA Considerations](#) [6](#)
- [8. Normative References](#) [6](#)
- [Authors' Addresses](#) [7](#)
- [Intellectual Property and Copyright Statements](#) [8](#)

1. Introduction

The Session Description Protocol (SDP) [[RFC4566](#)] provides a general-purpose format for describing multimedia sessions in announcements or invitations. [RFC4145](#), Connection-Oriented Media Transport in the Session Description Protocol (SDP) [[RFC4145](#)], specifies a general mechanism for describing and establishing such connection-oriented stream using TCP as transport protocol. [RFC 4572](#), Connection-Oriented Media Transport over the Transport Layer Security (TLS) Protocol in the Session Description Protocol [[RFC4572](#)], extends [RFC4145](#) to allow session descriptions to describe media session that use the Transport Layer Security (TLS) protocol [[RFC4346](#)].

While these transports are appropriate choices for the majority of the applications, there are applications for which SCTP [[RFC4960](#)] is more appropriate. This document defines a new protocol identifier, 'SCTP', to describe SCTP associations in SDP.

SCTP uses to describe an association the same attributes, with the same meaning, defined in [RFC415](#) to describe an TCP connection setup: 'setup' and 'connection'.

2. Terminology

In this document, the key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" are to be interpreted as described in [BCP 14](#), [RFC 2119](#) [[RFC2119](#)] and indicate requirement levels for compliant implementations.

3. Protocol Identifier

The following is the ABNF for an 'm' line, as specified by [RFC 2327](#) [[RFC2327](#)].

```
media-field =          "m=" media space port ["/" integer]
                        space proto 1*(space fmt) CRLF
```

Figure 1

This document defines a new value for the proto field: 'SCTP'.

The 'SCTP' protocol identifier is similar to both the 'UDP' and 'TCP' protocol identifiers in that it only describes the transport protocol, and not the upper-layer protocol. An 'm' line that specifies 'SCTP' MUST further qualify the application-layer protocol

using an fmt identifier. Media described using an 'm' line containing the 'SCTP' protocol identifier are carried using SCTP [[RFC4960](#)].

[4.](#) Multihoming Association Management

The Association Management is completely equal to the Connection Management described in [RFC 4145 Section 6](#). However, a SCTP endpoint, unlike a TCP endpoint, can be multihoming.

An SCTP endpoint is considered multi-homed if there are more than one transport address that can be used as a destination address to reach that endpoint. Moreover if a client is multi-homed, it informs the server about all its IP addresses with the INIT chunk's address parameters. Thereby, the client is only required to know one IP address of the server because the server provides all its IP addresses to the client in the INIT-ACK chunk.

So for a multi-homed SCTP endpoint it is enough to insert, in the connection-address field of the 'c' line, one of the IP addresses of the server.

[5.](#) Examples

The usage of the 'setup' and 'connection' attributes combined with SCTP-based media description is completely equal to the usage described in [RFC4145](#).

The following examples show this equivalent usage. For the purpose of brevity, the main portion of the session description is omitted in the examples, which only show 'm' lines and their attributes (including 'c' lines).

[5.1.](#) Passive/Active

An offerer at 192.0.2.2 signals its availability for an application session at port 54111:

```
m=application 54111 SCTP *
c=IN IP4 192.0.2.2
a=setup:passive
a=connection:new
```

Figure 2

An answerer at 192.0.2.1 receiving this offer responds with the

Loreto & Camarillo Expires January 15, 2009 [Page 4]

Internet-Draft SCTP protocol identifier in SDP Jul 2008

following answer:

```
m=application 9 SCTP *
c=IN IP4 192.0.2.1
a=setup:active
a=connection:new
```

Figure 3

The endpoint at 192.0.2.1 then initiates the SCTP association to port 54111 at 192.0.2.2.

[5.2.](#) Existing Connection Reuse

Subsequent to the exchange in Section [Section 5.1](#), another offer/answer exchange is initiated in the opposite direction. The endpoint at 192.0.2.1 wishes to continue using the existing association:

```
m=application 54321 SCTP *
c=IN IP4 192.0.2.1
a=setup:passive
a=connection:new
```

Figure 4

The endpoint at 192.0.2.2 also wishes to use the existing connection and responds with the following description:

```
m=application 9 SCTP *
c=IN IP4 192.0.2.2
a=setup:active
a=connection:new
```

Figure 5

The existing connection from 192.0.2.2 to 192.0.2.1 will be reused.

Considering the SCTP multi-homing capabilities, it is worth to underline that is not possible to reuse a media description putting a different address in the c= field; in fact according to [[RFC3265](#)] (in [section 8.3.1](#)) to modify an Address, Port or Transport, the offerer have to create a new media description. So if an SCTP association changes its active address and then needs to modify the address updating the c= line, the offere have to create a new media description.

6. Security Considerations

See [RFC 4566](#) [[RFC4566](#)] for security and other considerations specific to the Session Description Protocol in general.

7. IANA Considerations

This document defines a proto value: SCTP. Its format is defined in [Section 3](#). This proto value should be registered by the IANA under "Session Description Protocol (SDP) Parameters" under "proto".

The SDP specification, [[RFC4566](#)], states that specifications defining new proto values, like the SCTP proto value defined in this RFC, must define the rules by which their media format (fmt) namespace is

managed. For the SCTP protocol, new formats SHOULD have an associated MIME registration. Use of an existing MIME subtype for the format is encouraged. If no MIME subtype exists, it is RECOMMENDED that a suitable one is registered through the IETF process [[RFC2048](#)] by production of, or reference to, a standards-track RFC that defines the transport protocol for the format.

8. Normative References

- [RFC2048] Freed, N., Klensin, J., and J. Postel, "Multipurpose Internet Mail Extensions (MIME) Part Four: Registration Procedures", [BCP 13](#), [RFC 2048](#), November 1996.
- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", [BCP 14](#), [RFC 2119](#), March 1997.
- [RFC2327] Handley, M. and V. Jacobson, "SDP: Session Description Protocol", [RFC 2327](#), April 1998.
- [RFC3265] Roach, A., "Session Initiation Protocol (SIP)-Specific Event Notification", [RFC 3265](#), June 2002.
- [RFC4145] Yon, D. and G. Camarillo, "TCP-Based Media Transport in the Session Description Protocol (SDP)", [RFC 4145](#), September 2005.
- [RFC4346] Dierks, T. and E. Rescorla, "The Transport Layer Security (TLS) Protocol Version 1.1", [RFC 4346](#), April 2006.
- [RFC4566] Handley, M., Jacobson, V., and C. Perkins, "SDP: Session Description Protocol", [RFC 4566](#), 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.
- [RFC4960] Stewart, R., "Stream Control Transmission Protocol", [RFC 4960](#), September 2007.

Authors' Addresses

Salvatore Loreto
Ericsson
Hirsalantie 11
Jorvas 02420
Finland

Email: Salvatore.Loreto@ericsson.com

Gonzalo Camarillo
Ericsson
Hirsalantie 11
Jorvas 02420
Finland

Email: Gonzalo.Camarillo@ericsson.com

Copyright (C) The IETF Trust (2008).

This document is subject to the rights, licenses and restrictions contained in [BCP 78](#), and except as set forth therein, the authors retain all their rights.

This document and the information contained herein are provided on an "AS IS" basis and THE CONTRIBUTOR, THE ORGANIZATION HE/SHE REPRESENTS OR IS SPONSORED BY (IF ANY), THE INTERNET SOCIETY, THE IETF TRUST AND THE INTERNET ENGINEERING TASK FORCE DISCLAIM ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY WARRANTY THAT THE USE OF THE INFORMATION HEREIN WILL NOT INFRINGE ANY RIGHTS OR ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

Intellectual Property

The IETF takes no position regarding the validity or scope of any Intellectual Property Rights or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; nor does it represent that it has made any independent effort to identify any such rights. Information on the procedures with respect to rights in RFC documents can be found in [BCP 78](#) and [BCP 79](#).

Copies of IPR disclosures made to the IETF Secretariat and any assurances of licenses to be made available, or the result of an attempt made to obtain a general license or permission for the use of such proprietary rights by implementers or users of this specification can be obtained from the IETF on-line IPR repository at <http://www.ietf.org/ipr>.

The IETF invites any interested party to bring to its attention any copyrights, patents or patent applications, or other proprietary rights that may cover technology that may be required to implement this standard. Please address the information to the IETF at ietf-ipr@ietf.org.