Multimedia Conference Recording Use Cases and Requirements
draft-kyzivat-siprec-conference-use-cases-00

Abstract

   The current work of SIPREC will soon finish. As conferences are the
   key requirement for some environments, it is worth to explore several
   extensions and additional functionalities to support multimedia
   conference recording. SIPREC is not sufficient to record all the
   conference sessions via certain interactive media channels, like
   multi-user chat or screen sharing.

   This draft tries to show the use cases for multimedia conference
   recording and the requirements for how to work well under SIPREC
   mechanism.

Requirements Language

   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].

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1. Introduction

   In general, a basic video conference has participants with video
   channels, audio channels and DTMF ability. An advanced multimedia
   conference would have extended channels like text, interactive text
   and presentation graphics [RFC4597]. These extended channels
   recording have the same strong needs as audio or video, especially in

some conference use cases. The conference's host and participants,
even nonparticipants, would like to play back the recordings in real-
time or non-real-time for different purposes, like editing summary,
reviewing outlines or monitoring process. The recordings should have
the ability to reconstruct the conference richly, with adequate media
and metadata recorded, which are not only audio/video but also IM,
shared data and even floor negotiation information via BFCP. Such an
exhaustive reconstruction could give audiences more information and a
better experience.

2. Multimedia Conference Recording Overview

   There is one use case (use case 11) covering the recording of a
   multi-channel and multimedia session in the existing use case
   document [RFC6341]. Aside from audio, video and text (as defined by
   [RFC4103]), it does not include other interactive channels. The
   limitations to the multi-channel types leads to poor support for
   recording multimedia conference. A multimedia conference has various
   channels, including audio, video, IM, data sharing(screen/document/
   application), etc. SIPREC is mostly capable of recording any sort of
   RTP media sessions, including voice, DTMF, video, and text [RFC6341]
   with SDP negotiation [I-D.ietf-siprec-protocol] and certain metadata
   [I-D.ietf-siprec-metadata]. But it is not evident how to support the
   remaining media, like multi-user chat or screen sharing.

   Multi-user chat session is one of key cases about the IM session in
   CS of multimedia conference. A multi-user chat or simple-chat
   session is to handle the media to relay instant messages received
   from one participant to the rest of the participants in the
   conference [I-D.ietf-simple-chat], especially for the MSRP session.
   The host and participants in conference might start MSRP sessions
   among each others for public group chat, sidebar chat or whisper
   chat. These MSRP content could be replicated by SRC (might be the
   MSRP switch or certain MSRP replay or MSRP client) to deliver to SRS
   via a special RS channel. The replicated content could be the
   Message/CPIM message that contains text, HTML and Image, etc.
   Recording XMPP based IM in CS is out of the scope for this document.

   The data sharing, known as content sharing or content streams as
   well, in a multimedia conference's CS has functionalities as screen
   sharing, application sharing, document sharing, etc. These data
   streams of them could be managed as still images (snapshots with
   increments) or as dynamic streams (video streams) to carry details
   like slide presentation, annotating, direct editing or page turning.
   Especially, the screen sharing would have different ways to get its
   data streams, like the video streams directly offered from VGA port
   or codec by application on peer's client or turned from multiple
   screenshots, or even the still images carried by MSRP channels.

One way for a conference focus to record a conference is introduced in [I-D.ietf-siprec-architecture]. This defines how the conference focus works as a SRC to deliver RTP streams and associate recording metadata to SRS. It may choose the recording RTP stream type, separated or mixed. There are more details about how to use SDP, RTP for recording by participant or by media type in [I-D.ietf-siprec-protocol]. The focus may setup different recording sessions for different media streams recorded separately, or one recording session for a mixed media stream created by the SRC, or even multiplexing different media streams in a single RTP recording session[I-D.ietf-siprec-protocol].

But more is needed to support other media streams in a multimedia conference. There is need for MSRP switch/relay/client as SRC to replicate MSRP session to the recorder, with a new "media stream" type in RS for delivering MSRP based streams or contents. There is another need for a new type of "media stream" for data sharing, distinct from the main video streams, with different m-lines or metadata. There is also need of a mechanism for the SRC to bound the number of media streams to be recorded, especially when the participant number in a conference is extremely large.

3. Definitions

   Instant Message Stream: instant message stream refers to the streams transferred by messages between users in near real-time [RFC3248].

   Data Sharing: Data sharing is to use a content channel for collaboratively working on documents, files, images, desktops, etc in real time. It is also called as content sharing, including application sharing, screen sharing, document sharing, etc.

   Application Sharing: application sharing is the sharing of the graphical user-interface of an application amongst multiple users simultaneously in real time. The slide sharing could be one of special case.

   Screen Sharing: screen sharing is the sharing of a computer desktop amongst multiple users simultaneously in real time, also called desktop sharing. Comparing to application sharing, which is always a single one, screen sharing is for the a whole screen.

   Document Sharing: document sharing is the sharing to help multiple users working simultaneously on a single document or file to achieve a single final version. It is also called as file sharing or document collabration.

Audio/Video Conference: Audio/video conference is one sort of various conferences. In SIP, an audio/video conference is an instance of a multi-party conversation that followed the definition in [RFC4353] and the framework in [RFC5239], with the media channels as audio and video.

Chat Conference: a synonym for a multi-party chat conference [I-D.ietf-simple-chat].

Multimedia Conference: multimedia conference is the multi-party conversation include any combination of different media types such as audio, video, text, interactive text, or presentation graphics [RFC4597].

4. Use cases

4.1. Instant Message Stream Recording

Use Case 1: Instant Message Stream Recording.

Instant message is the function offered to chat between/among peers. There are page mode and session mode [RFC6914]. Here especially means the instant message session happened in the point to point call using session mode, which consider instant message as a media type.

For example, in a call center or emergency (first-responder) center, a customer could use the web client to start a chat with an agent about his questions or describing the situation happened around him. Call center or emergency center would need to record those chat sessions between customers and agents.

4.2. Screen Sharing Stream Recording

Use Case 2: Screen Sharing Stream Recording.

This is also well known as desktop sharing or remote sharing between peers. This function could be also used in a point to point call directly.

In an enterprise, the softphone calls between colleagues would choose screen sharing to illustrate their views clearly if the voice discussing is not enough. The enterprise would ask to record those screen sharing session for security check.

Another example is the remote education training, it need to record the screen to keep the integrality of training class.

4.3. Application Sharing Stream Recording

   Use Case 3: Application Sharing Stream Recording.

   Users would choose application sharing instead of screen sharing to
   avoid exposing the privacy content on their computer desktop, when
   have the point-to-point call with others or have a conference call.
   And the recorded streams are the content of applications shown in CS.

4.4. Document Sharing Stream Recording

   Use Case 4: Document Sharing Stream Recording.

   Users would work on one document simultaneously in real time. The
   content of document would be recorded which is close to use case 3.

4.5. Audio/Video Conference Recording

   Use Case 5: Audio/Video conference Recording.

   The recording for audio/video conference is basic. All the channels
   in conference would be recorded as one mixed streams or separated
   streams by participants. It has been supported by current SIPREC
   mechanism.

4.6. Chat Conference Recording

   Use Case 6: Chat Conference Recording.

   There is another type conference known as multi-user chat conference
   or chat-rooms. The chat conference would have participants to chat
   or message each other in conference with nicknames and provide
   private chat using the Message Session Relay Protocol (MSRP)
   [I-D.ietf-simple-chat]. There would have needs to record the chat
   content and details like nichnames.

4.7. Multimedia Conference Recording

   Use Case 7: Multimedia Conference Recording.

   This is a special use case to indicate the multimedia conference
   recording environment. When there is a common education class or
   skill training conference, the audiences who are not in the
   conference session would prefer replaying the conference in real-time
   with professor or lecturer's voice with their slides, better include
   the video of if available. The recording of this education
   conferences need to record audio, video from hosts and data sharing
   of theirs.

While the audiences(out-conference) need to know what the audiences (in-conference) feedback to the training, they might also want to know what those audiences(in-conference) have been discussing in IM session. Thus the recording need record the IM sessions.

5. Requirements

5.1. REQ-001

   REQ-001: The mechanism MUST support MSRP stream recording. This requirement could derive from use case 1,6,7.

5.2. REQ-002

   REQ-002: The mechanism MUST support screen sharing stream recording. This requirement could derive from use case 2,7.

5.3. REQ-003

   REQ-004: The mechanism MUST support application sharing stream recording. This requirement could derive from use case 3,7.

5.4. REQ-004

   REQ-003: The mechanism MUST support document sharing stream recording. This requirement could derive from use case 4,7.

5.5. REQ-005

   REQ-005: The mechanism MUST support metadata or SDP to separate the main video stream to data/content video stream. This requirement could derive from use case 3,4,5,7.

6. IANA Considerations

   This document contains no IANA considerations.

7. Security Considerations

   Not explicitly covered in this version.

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