Chatrooms within a Centralized Conferencing (XCON) System
draft-boulton-xcon-session-chat-03

Status of this Memo

This Internet-Draft is submitted to IETF in full conformance with the provisions of BCP 78 and 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/1id-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 September 8, 2009.

Copyright Notice

Copyright (c) 2009 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 in effect on the date of publication of this document (http://trustee.ietf.org/license-info). Please review these documents carefully, as they describe your rights and restrictions with respect to this document.

Abstract

The document "A Framework for Centralized Conferencing" defines a centralized conference as both signaling and protocol agnostic. The
primary examples within this framework focus on audio and video as the media types for the session. This document provides an overview of the mechanisms defined in the centralized conferencing framework that can be used to support chatrooms. In addition, the document describes additional functionality and requirements necessary to provide feature rich chatroom functionality.

Table of Contents

1. Introduction .................................................. 3
2. Conventions and Terminology ................................. 3
3. Overview ....................................................... 4
   3.1. Protocol Operations ....................................... 5
   3.2. Chat Session and Conferencing Identifiers .............. 5
4. Basic Operations ............................................... 7
5. Advanced Operations ........................................... 8
6. Additional Operations .......................................... 8
   6.1. Nicknames ................................................ 8
   6.2. Logging .................................................. 9
   6.3. History .................................................. 10
   6.4. Indicating Alternate Venue ............................... 10
7. Security Considerations ....................................... 10
8. IANA Considerations ........................................... 11
9. Acknowledgements ............................................. 11
10. References .................................................... 11
    10.1. Normative References ................................... 11
    10.2. Informative References ................................. 12
Authors’ Addresses .............................................. 13
1. Introduction

A Centralized Conference as defined by the "A Framework for Centralized Conferencing" [RFC5239] is both signaling and protocol agnostic. The primary examples within the framework focus on audio and video as the media types for the session. This document provides an overview of the mechanisms and associated framework elements involved when text is the media for the conference. This functionality is often referred to as a "chatroom" as it provides the text equivalent of a voice conversation involving multiple parties.

Several existing protocols support this chatroom functionality, such as Internet Relay Chat (IRC) [RFC1459] and Extensible Messaging and Presence Protocol (XMPP) [RFC3920]. In addition, [I-D.ietf-simple-chat] provides chatroom functionality for a purely SIP signaling based solution option using Message Session Relay Protocol (MSRP) [RFC4975].

The focus of this document is to describe the interface and provide guidelines for the support of existing chatroom functionality on a conferencing system based on the XCON framework, independent of the specific media type used by the chat client. The details of the use of the XCON framework for chat are provided in the Conference Control Manipulation Protocol (CCMP) call flow document [I-D.barnes-xcon-examples].

The functionality described in this document is not intended to replace any of the existing chat protocols, nor is it specifying a new chat protocol. The motivation for this document is to allow clients that use the conferencing framework model for other media types (e.g. voice/video) to utilize the same conference control mechanisms and conferencing system to establish, update and delete a conference instance associated with a chatroom, independent of the chat protocol. This approach also allows the conferencing system to provide a natural interworking point for various chat protocols - the details of the interworking are outside the scope of this document.

2. Conventions and Terminology

This document reuses the terminology defined in "A Framework for Centralized Conferencing" and the protocol operations defined in the Centralized Conferencing Protocol document [I-D.ietf-xcon-ccmp].

The terms "chat" and "chatroom" are used as described in [RFC2664]. Group chat is used to refer to the conferencing system "chatroom" functionality. A Chat Client is a Conferencing Client as defined in [RFC5239] that participates in a "chatroom".
3. Overview

Figure 1 provides a general illustration of chat clients having a direct, 1:1 connection to the conferencing system. The conferencing system receives messages sent from a client participating in a conference instance and then distributes them to the other clients associated with the conference instance.

Figure 1: Client Connection

The approach in this document is to have no impact on the existing...
chat protocols, while taking full advantage of the functionality provided by the centralized conferencing framework.

A basic solution for MSRP based IM chat sessions is documented in [I-D.ietf-simple-chat]. It uses the concept of an "MSRP switch" as the centralized component, whose role is very similar to the MSRP Conferencing Server in this document. The solution in [I-D.ietf-simple-chat] doesn’t explicitly take advantage of the centralized conferencing framework model, as it primarily intends to make use of the basic SIP conferencing framework to provide the basic chat functionality. The MSRP based IM chat solution is compatible with the solution components described in this document, with no impact on that basic solution proposal. One of the advantages of applying the two solutions in concert would be to take advantage of the centralized conferencing framework model for advanced features, such as sidebars and private conferences, and manipulation of the conference data.

[Editor’s Note: Add detail as to how this relates to XMPP, as well.]

3.1. Protocol Operations

A chat client wishing to join a conference uses standardized centralized conferencing mechanisms for creating and joining a conference, as identified in the centralized conferencing framework and related protocol documents.

The request to send a message is specific to the chat protocol (e.g., MSRP SEND). Upon issuing a request to send a message, the message will be replicated and forwarded by the conferencing system to all other chat clients that are participants of the Group Chat conference instance.

A chat client wishing to delete a chat room uses standardized mechanisms for deleting a conference instance. Non-signaling specific mechanisms are defined in the Centralized Conferencing Framework [RFC5239] and related protocol document [I-D.ietf-xcon-ccmp]. Protocol specific mechanisms are defined in other documents such as for SIP in the SIPPING Conference Framework [RFC4353].

3.2. Chat Session and Conferencing Identifiers

As highlighted in the overview section, a chat client connecting to a conferencing system has a 1:1 relationship with the chat signaling entity, each having a unique protocol specific Chat Session identifier (ID). When referring to Chat Session IDs the document is making reference to the locally (at conferencing system) generated
Chat Session ID used for session signaling identification. In the case of MSRP, this Chat Session ID is inserted into the local path SDP attribute. An important concept in this proposal is the creation and management of Group Chats. It is important that each chat session created, as identified by a unique chat session ID, is explicitly tied to an associated conference, represented by the conference identifier (as defined in the Centralized Conferencing Framework [RFC5239]). This provides the relevant association between a chat session and a centralized conference. A generic example representation is illustrated by the rows contained in Figure 2.

![Figure 2: Simple Session Association](image)

The Centralized Conferencing Framework[RFC5239] introduces the concept of a conference user identifier defined in [I-D.ietf-xcon-common-data-model]. When a user joins a conference instance through the signaling protocol, it is allocated an appropriate conference user identifier either through authentication or system allocation. The conference user identifier MUST be used in conjunction with a chat session identifier to internally represent a participant in a conference instance. Figure 2 is then expanded to look like Figure 3. Again a row in the table representing a single entry.

![Figure 3: Expanded Session Association](image)
A more complex session association is necessary due to potential for a user to have multiple group chats in a single conference instance, such as multi-lingual conference support. In an example with SIP and MSRP, the conference representation in Figure 3 allows for such functionality when separate SIP dialogs represent MSRP sessions. This process becomes complex in the case that multiple SDP MSRP media sessions (m=) are defined in a single payload. This internal representation needs expanding to enable a conferencing system to explicitly associate a media session (m=). This involves including the media label, as defined in [RFC4574], to maintain the internal conference association. An example is illustrated in Figure 4.

<table>
<thead>
<tr>
<th>Conference Identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chat Session ID=8asjdhk</td>
</tr>
<tr>
<td>Chat Session ID=38iuuds</td>
</tr>
<tr>
<td>Chat Session ID=838uahH</td>
</tr>
<tr>
<td>Chat Session ID=djiowid</td>
</tr>
<tr>
<td>Chat Session ID=389hewu</td>
</tr>
<tr>
<td>Chat Session ID=Ko03jdk</td>
</tr>
</tbody>
</table>

In Figure 4, conference user identifiers ‘0283hHu’ and ‘pakdj7H’ appear twice. The combination of multiple conference user identifiers and a unique Group Chat session ID enables the conference system to clearly identify a specific Group Chat instance. Even in the simplest conferencing system, where users are allowed to enter anonymously, the internal representation described in this section should be observed. In this case, the conferencing system would still internally create a conference user identifier for participant reference purposes.

4. Basic Operations

The basic operations for creating, joining, and deleting a chat based conference are all supported by the XCON framework using CCMP. The discovery of chat rooms available on a specific conferencing system is inherent in the blueprint capability provided by the conferencing
5. Advanced Operations

Advanced chat features, such as sidebars and private messages can also be supported within the context of the centralized conferencing framework using CCMP. The protocol details for these advanced features are provided in [I-D.barnes-xcon-examples].

6. Additional Operations

This section discusses additional operations or features required to provide chat room functionality. Most of the operations are not explicitly defined in the centralized conferencing framework. However, some of the features and operations are achievable using data maintained by a conferencing system based on the framework.

6.1. Nicknames

Nicknames allow a user to define a text string that uniquely identifies the user within a particular chatroom without necessarily reflecting any protocol specific identity (e.g., SIP URI, Conference User Indentifier, etc.). It is also important to note that the functionality to provide nicknames is not limited to users involved in chatrooms, thus it should be a general feature of the conferencing system.

Within a conferencing system, all nicknames should map to a conference user identifier. The nicknames are unique only to the specific conferencing system. There may be multiple nicknames associated with a single conference user identifier (e.g., a user that has different nicknames for different chat rooms and/or voice/video conferences). In order to support nicknames, an attribute is defined to the createUser CCMP request message to specify that a user wants a nickname. The conferencing client may include a preferred nickname in the createUser CCMP request.

The conferencing system allocates a conference user identifier and a nickname using system specific mechanisms, which may also include authentication. The conferencing system associates the assigned nickname with the specific conference user identifier that has been allocated.

As described Section 3.2, the conference user identifier MUST be used in conjunction with a chat session identifier to internally represent
a participant in a conference instance. This association is created when a conferencing client requests to create or join a specific chatroom. The nickname allocated for the specific conferencing user identifier MUST also be associated with the chat session ID. Figure 5 provides an example of the association between the chat session identifier, the conference user identifier and conference nickname for a specific Group Chat represented by the conference identifier.

<table>
<thead>
<tr>
<th>Conference Identifier</th>
<th>Chat Session ID</th>
<th>Conf User ID</th>
<th>Nick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chat Session ID=8asjdhk</td>
<td>Conf User ID=839ULjj</td>
<td>Nick=Alice</td>
<td></td>
</tr>
<tr>
<td>Chat Session ID=38iuhds</td>
<td>Conf User ID=0283hHu</td>
<td>Nick=Bob</td>
<td></td>
</tr>
<tr>
<td>Chat Session ID=838unaH</td>
<td>Conf User ID=0283hHu</td>
<td>Nick=Cliff</td>
<td></td>
</tr>
<tr>
<td>Chat Session ID=djiowid</td>
<td>Conf User ID=ncH37Hs</td>
<td>Nick=Dude</td>
<td></td>
</tr>
<tr>
<td>Chat Session ID=389hewu</td>
<td>Conf User ID=pakdj7H</td>
<td>Nick=Elliott</td>
<td></td>
</tr>
<tr>
<td>Chat Session ID=Ko03jdk</td>
<td>Conf User ID=pakdj7H</td>
<td>Nick=Fluffy</td>
<td></td>
</tr>
</tbody>
</table>

**Figure 5: Nickname Associations for a Group Chat**

Depending upon the conferencing system, the conference system may allocate the preferred nickname for that user or return a different nickname in the createUser CCMP response message.

In the future, if a more generic nickname mechanism is available, rather than provide nicknames that are specific to the conferencing system, a conferencing system may interface with a nickname registry, for example, in order to allocate a new nickname for a specific conferencing client. This change in how a conferencing system allocates nicknames should not impact the CCMP protocol interface to support nicknames.

6.2. Logging

A common chat feature involves logging the history of a chat room. This provides a record of a chat room that can be used when a user first joins a chat room as discussed in Section 6.3. It can also be used to provide a complete capture of a specific chat room session. The centralized conferencing framework does not fully describe the role of recording or logging of active conferences. However, this functionality can be realized with the manipulation of the appropriate elements in the data model using the general conference
control protocol operations. One approach for implementing this function would be to have it be based on specific manipulation of the conference by a user with the appropriate permissions (e.g., CHANGE operation to start and stop recording). Another mechanism for implementing this function would be to have a specific user as part of the conference to perform this function, by defining a specific role such as "observer" and having the media proxied to a logging device.

6.3. History

A common chat feature allows users to view the past history of chat rooms. This operation is common when a user first joins a chat room that is underway. A user is often offered the option to review a specific number of past messages. Conferencing systems that maintain the history associated with specific chat rooms through logging, as described in Section 6.2, should provide a mechanism, using the conference identifier, to access the specific information requested by a user based on a specific timestamp. The user request for the information and the rendering of the information is specific to the user’s session based messaging protocol and may not be supported by all the messaging protocols.

6.4. Indicating Alternate Venue

Another chat room feature provides the details of an alternate chat room venue for previously active chat rooms that have been closed, with a related topic. While not detailed in the centralized conferencing framework, this functionality can be accomplished by creating the new chat room as a child or sibling of the previous chat room and providing the Active chat conference object identifier to any valid users that attempt to join a previous chat room. The information about the new chat room can also be provided at the end of a chat room that is being de-activated at the end of the session.

7. Security Considerations

As discussed in the Centralized Conferencing Framework, there are a wide variety of potential attacks related to conferencing, due to the natural involvement of multiple endpoints and the many, often user-invoked, capabilities provided by the conferencing system. Examples of attacks in the context of MSRP conferencing would include the following: an endpoint attempting to receive the messages for conferences in which it is not authorized to participate, an endpoint attempting to disconnect other users, and theft of service, by an endpoint, in attempting to create conferences it is not allowed to create.
Since this document describes the use of existing protocols (e.g. MSRP, Conference Control Protocol, SIP, etc.), it also re-uses the security solutions for those protocols and the associated authorization mechanisms. Since this solution makes use of the Centralized Conferencing framework, it makes use of the policy associated with the conference object to ensure that only authorized entities are able to manipulate the data to access the capabilities. This solution also makes use of the privacy and security of the identity of a user in the conference, as discussed in the Centralized Conferencing Framework.

8. IANA Considerations

This document requires no IANA registrations.

9. Acknowledgements

The authors appreciate the input and comments from Miguel Garcia-Martín, Dave Morgan and Salvatore Loreto.

10. References

10.1. Normative References


10.2. Informative References

[I-D.roach-xcon-chatroom-analysis]

[I-D.barnes-xcon-examples]


[I-D.ietf-simple-chat]


Authors’ Addresses

Chris Boulton
NS-Technologies

Email: chris@ns-technologies.com

Mary Barnes
Nortel
2201 Lakeside Blvd
Richardson, TX

Email: mary.barnes@nortel.com