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Centralized Conferencing Manipulation Protocol (CCMP) Call Flow Examples  
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## Abstract

This document provides detailed call flows for the scenarios documented in the Centralized Conferencing (XCON) Framework and the XCON Scenarios. The call flows document the use of the interface between a conference control client and a conference control server using the Centralized Conferencing Manipulation Protocol (CCMP). The objective is to provide a base reference for both protocol researchers and developers.

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## **1. Introduction**

This document provides detailed call flows for the scenarios documented in the Framework for Centralized Conferencing (XCON Framework) [[RFC5239](#)] and the XCON Scenarios [[RFC4597](#)]. The XCON scenarios describe a broad range of use cases taking advantage of the advanced conferencing capabilities provided by a system realization of the XCON framework. The call flows document the use of the interface between a conference control client and a conference control server using the Centralized Conferencing Manipulation Protocol (CCMP)[[I-D.ietf-xcon-ccmp](#)].

Due to the broad range of functionality provided by the XCON Framework and the flexibility of the CCMP messaging, these call flows should not be considered inclusive of all the functionality that can be provided by the XCON Framework and protocol implementations. These flows represent a sample to provide an overview of the feature rich capabilities of the XCON framework and CCMP messaging for protocol developers, software developers and researchers.

## **2. Conventions**

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. In this document, these key words are used when describing normative functionality based on the XCON Framework and CCMP.

Note that due to RFC formatting conventions, this document often splits message details whose content would exceed 72 characters. A backslash character marks where this line folding has taken place. This backslash and its trailing CRLF and whitespace would not appear in the actual protocol contents.

## **3. Terminology**

This document uses the same terminology as found in the referenced documents, with the following terms and abbreviations used in the call flows. Also, note that the term "call flows" is used in a very generic sense in this document since the media is not limited to voice. The calls supported by the XCON framework and CCMP can consist of media such as text, voice and video, including multiple media types in a single active conference.



Conferencing and Media Client Client (CMCC): As defined in the XCON Framework. In the flows in this document, the CMCC is logically equivalent to the use of UAC as the client notation in the media control call flows [[I-D.miniero-mediactrl-escs](#)].

Conferencing Server (ConfS): As defined in the XCON Framework. In this document, the conferencing server is used interchangeably with the term Application Server (AS) as used in the Media Control Architectural Framework [[RFC5567](#)]. However, these need not be the same entities in an implementation.

Media Server (MS): As defined in the Media Control Architectural Framework [[RFC5567](#)].

#### **4. Overview**

This document provides a sampling of detailed call flows that can be implemented based on a system realization of [[RFC5239](#)] and implementation of [[I-D.ietf-xcon-ccmp](#)]. This is intended to be a simple guide on the use of the conference control protocol between the Conference Server and the Conference Control Client. The objective is to provide an informational base reference for protocol developers, software developers and researchers.

This document focuses on the interaction between the Conference (and Media) Control Client and the Conferencing system, specifically the Conference Server. The scenarios are based on those described in the XCON framework, many of which are based on the advanced conferencing capabilities described in the XCON scenarios. Additional scenarios have been added to provide examples of other real life scenarios that are anticipated to be supported by the framework. With the exception of an initial example with media control messaging, the examples do not include the details for the media control [[I-D.ietf-mediactrl-mixer-control-package](#)], call signaling or binary floor control [[RFC4582](#)] protocols. This document references the scenarios in the Media Control call flows [[I-D.miniero-mediactrl-escs](#)], SIP Call Control Conferencing [[RFC4579](#)] and binary floor control protocol documents.

#### **5. Conference Creation**

This section provides the details associated with the various ways in which a conference can be created using CCMP and the XCON framework constructs. As previously mentioned the details of the media





control, call signaling and floor control protocols, where applicable, are annotated in the flows without showing all the details. However, for clarification purposes, the first example [Section 5.1](#) provides the details of the media control messaging along with an example of the standard annotation used throughout the remainder of this document. In subsequent flows, only this annotation (identified by lower case letters) is included and the reader is encouraged to refer to the call flows in the relevant documents for details for the other protocols. The annotations for the call signaling are on the left side of the conferencing server vertical bar and those for the media control messaging are on the right side.

### **[5.1.](#) Basic Conference Creation**

The simplest manner in which a conference can be created is accomplished by the client sending a "confRequest" message with the "create" operation as the only parameter to the conference server. This results in the creation of a default conference, with an XCON-URI in the form of the "confObjID" parameter, the XCON-UserID in the form of the "confUserID" parameter and the data for the conference object in the "confInfo" parameter all returned in the "confResponse" message. This example also adds the user that invoked the conference upon creation (i.e., "method" attribute is set to "dial out" for this client based on the particular conferencing systems default). Note, that depending upon the conferencing system, this default conference could be specific to the client requesting the conference and thus may be different for the initiator than other participants (e.g., IVR interactions in this case which are not shown).

The specific data for the conference object is returned in the "confResponse" message in the "confInfo" parameter. This allows the client (with the appropriate authorization) to manipulate this data and add additional participants to the conference, as well as change the data during the conference. In addition, the client may distribute the conferencing information to other participants allowing them to join, the details of which are provided in additional flows.

Clients that are not XCON-aware may join the conference using a specific signaling interface such as SIP [[RFC3261](#)], using the signaling interface to the conference focus as described in [[RFC4579](#)]. However, these details are not shown in the message flows. The message flows in this document identify the point in the message flows at which this signaling occurs via the lower case letter items (i.e., (a)...(x)) along with the appropriate text for the processing done by the conferencing server.



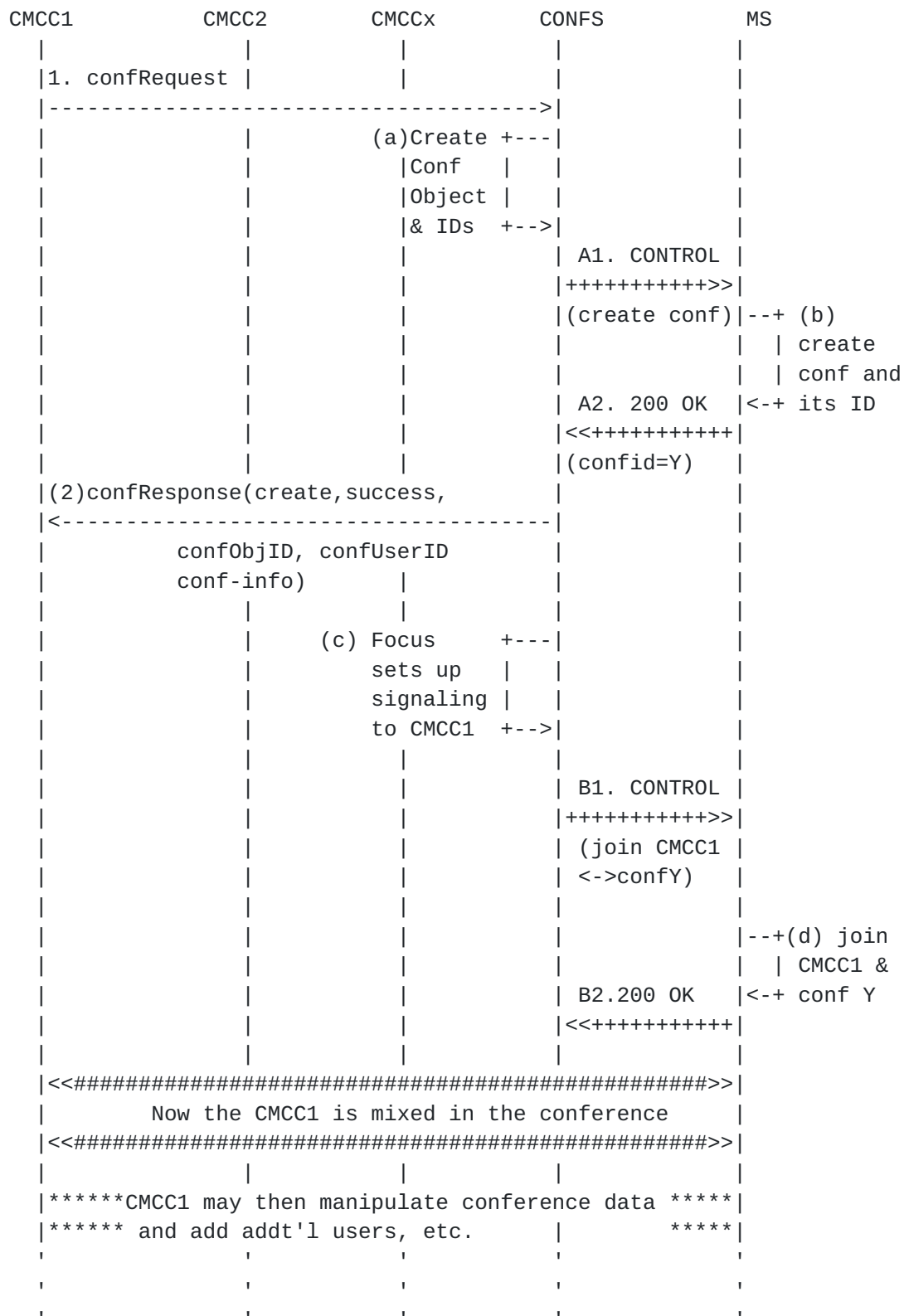
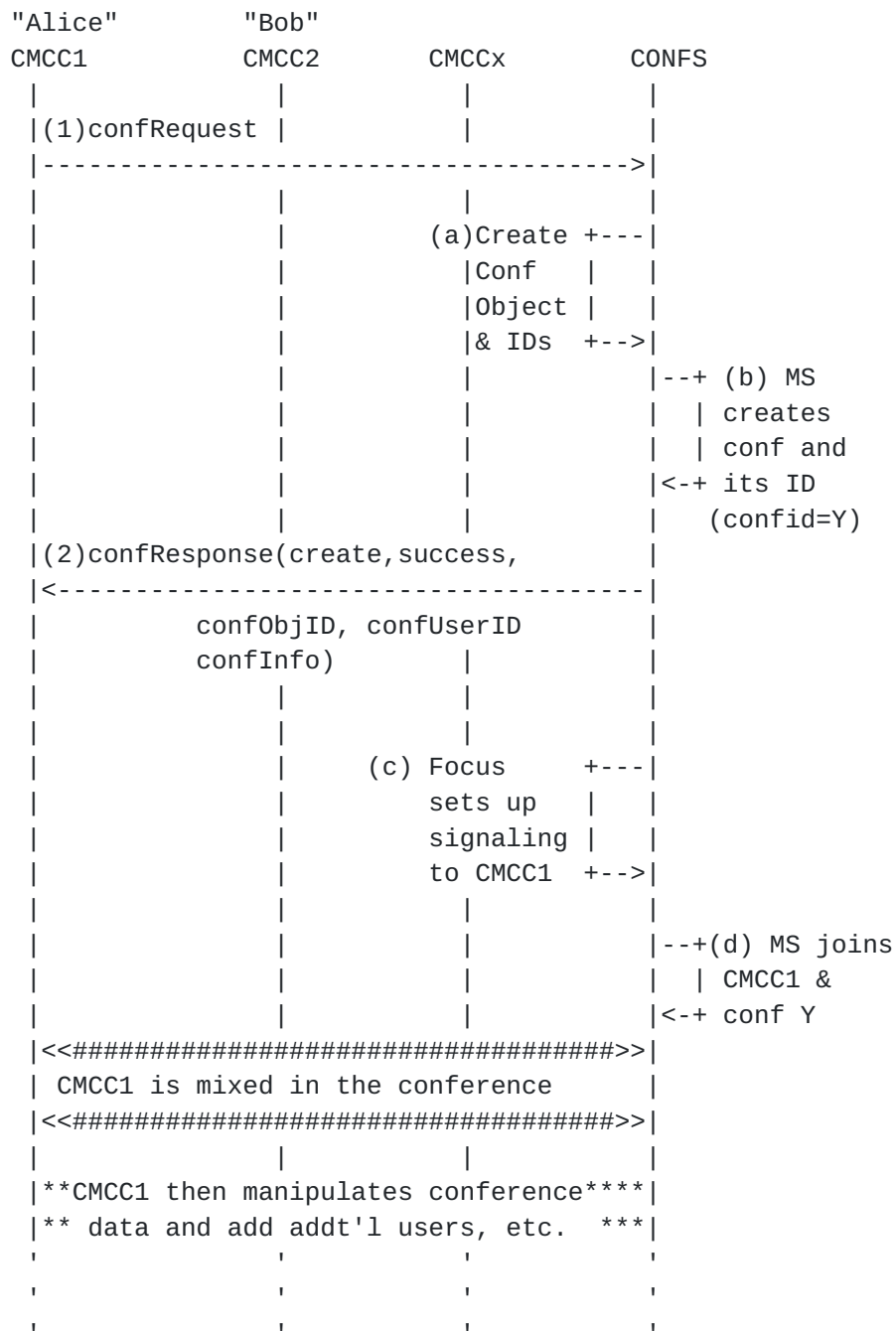




Figure 1: Create Basic Conference - Complete flow



-

Figure 2: Create Basic Conference - Annotated Flow



## 1. confRequest message:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpRequest
  xmlns:info="urn:ietf:params:xml:ns:conference-info"
  xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp"
  xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info">
  <ccmpRequest
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:type="ccmp:ccmp-conf-request-message-type">
    <operation>create</operation>
  </ccmpRequest>
</ccmp:ccmpRequest>
```

## 2. confResponse message:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpResponse
  xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info"
  xmlns:info="urn:ietf:params:xml:ns:conference-info"
  xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp">
  <ccmpResponse
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:type="ccmp:ccmp-conf-response-message-type">
    <confObjID>xcon:8977794@example.com</confObjID>
    <confUserID>xcon-userid:Alice</confUserID>
    <ccmp:response-code>success</ccmp:response-code>
    <ccmp:confResponse>
      <confInfo entity="xcon:8977794@example.com">
        <info:conference-description>
          <info:display-text>
            Default conference initiated by Alice
          </info:display-text>
          <info:conf-uris>
            <info:entry>
              <info:uri>
                xcon:8977794@example.com
              </info:uri>
              <info:display-text>
                Conference XCON-URI
              </info:display-text>
            </info:entry>
          </info:conf-uris>
          <info:maximum-user-count>10</info:maximum-user-count>
          <info:available-media>
            <info:entry label="11">
              <info:type>audio</info:type>
            </info:entry>
          </info:available-media>
        </confInfo>
      </ccmp:confResponse>
    </ccmpResponse>
  </ccmp:ccmpResponse>
```





```

        </info:entry>
      </info:available-media>
    </info:conference-description>
    <info:users>
      <xcon:join-handling>allow</xcon:join-handling>
      <xcon: allowed-users-list>
        <xcon: target uri="sip:alice@example.com"
          method="dial-out"/>
      </xcon:allowed-users-list>
    </info:users>
  </confInfo>
</ccmp:confResponse>
</ccmpResponse>
</ccmp:ccmpResponse>

```

Figure 3: Create Basic Conference (Annotated) Detailed Messaging

## 5.2. Basic Conference Creation for a specific instance of Conference Information

A conference can also be created by the client sending a "confRequest" message with the "create" operation, along with the desired data in the form of the "confInfo" parameter for the conference to be created. If the conferencing system can support that specific type of conference (capabilities, etc.), then the request results in the creation of a conference. In this success case, an XCON-URI in the form of the "confObjID" parameter and the XCON-UserID in the form of the "confUserID" parameter are returned in the "confResponse" message. The "confInfo" is not returned unless changes have been made, in which case the "responseCode" is "modified".

This example also activates the conference upon creation (i.e., "method" attribute is set to "dial out" for this client based on the particular conferencing systems default), Note, that depending upon the conferencing system, this default conference could be specific to the client requesting the conference and thus may be different for the initiator than other participants (e.g., IVR interactions in this case which are not shown).

"Alice"	"Bob"	"Carol"	CONFS
(1)confRequest			
----->			



```

| ( create, confUserID, confInfo) |
| | | | | |
| | | (a)Create +---|
| | | |Conf | |
| | | |Object | |
| | | |& IDs +-->|
| | | | |
| | | | |--+ (b) MS
| | | | | creates
| | | | | conf and
| | | | |--+ its ID
| | | | | (confid=Y)
| (2) confResponse |
| <-----|
| ( create,success, confObjID
| confUserID)|
| | | | |
| | | (c) Focus +---|
| | | sets up | |
| | | signaling | |
| | | to Alice +-->|
| | | |
| | | | |--+(d) MS joins
| | | | | Alice &
| | | | |--+ conf Y
| | | | |
| <<#####>>|
| Alice is mixed in the conference |
| <<#####>>|
| | | | |
| | | (e)Focus +---|
| | | sets up | |
| | | signaling | |
| | | to Bob | |
| | | +-->|
| | | |
| | | | |--+(f)MS joins
| | | | | Bob &
| | | | |--+ conf Y
| | | | |
| | | <<#####>>|
| | | Bob is mixed too |
| | | <<#####>>|
| | | |
| | | (g )Focus +---|
| | | sets up | |
| | | signaling | |
| | | to Carol | |

```



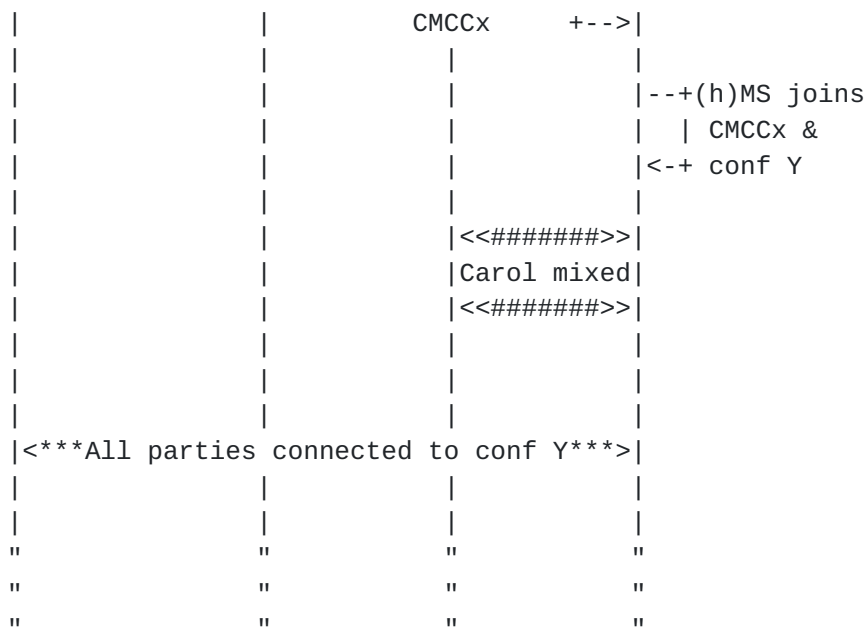


Figure 4: Create Basic Conference from user provided conference-info

## 1. confRequest message:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpRequest
  xmlns:info="urn:ietf:params:xml:ns:conference-info"
  xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp"
  xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info">
  <ccmpRequest
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:type="ccmp:ccmp-conf-request-message-type">
    <confUserID>xcon-userid:Alice</confUserID>
    <operation>create</operation>
    <ccmp:confRequest>
      <confInfo entity="xcon:8977794@example.com">
        <info:conference-description>
          <info:display-text>
            Dial-out conference initiated by Alice
          </info:display-text>
          <info:conf-uris>
            <info:entry>
              <info:uri>
                xcon:8977794@example.com
              </info:uri>
            </info:entry>
          </info:conf-uris>
        </confInfo>
      </ccmp:confRequest>
    </ccmpRequest>
  </ccmp:ccmpRequest>

```



```

        <info:display-text>
            Conference XCON-URI
        </info:display-text>
    </info:entry>
</info:conf-uris>
<info:maximum-user-count>10</info:maximum-user-count>
<info:available-media>
    <info:entry label="11">
        <info:type>audio</info:type>
    </info:entry>
</info:available-media>
</info:conference-description>
<info:users>
    <xcon:join-handling>allow</xcon:join-handling>
    <xcon: allowed-users-list>
        <xcon: target uri="sip:alice@example.com"
            method="dial-out"/>
        <xcon:target uri="sip:bob@example.com"
            method="dial-out"/>
        <xcon:target uri="sip:carol@example.com"
            method="dial-out"/>
    </xcon:allowed-users-list>
</info:users>
</confInfo>
</ccmp:confRequest>
</ccmpRequest>
</ccmp:ccmpRequest>

```

## 2. confResponse message:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpResponse
    xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info"
    xmlns:info="urn:ietf:params:xml:ns:conference-info"
    xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp">
    <ccmpResponse
        xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:type="ccmp:ccmp-conf-response-message">
        <confObjID>xcon:6845432@example.com</confObjID>
        <confUserID>xcon-userid:Alice</confUserID>
        <ccmp:response-code>success</ccmp:response-code>
    </ccmpResponse>
</ccmp:ccmpResponse>

```

Figure 5: Create Basic Conference Detailed Messaging





### 5.3. Basic Conference Creation - Cloning an existing Conference

A client can also create another conference by cloning an existing conference, such as an active conference or conference reservation. In this example, the client sends a "confRequest" message with the "create" operation, along with a specific "confObjID", from which a new conference is to be created by cloning an existing conference.

An example of how a client can create a conference based on a blueprint is provided in [Section 5.4](#). The manner by which a client in this example might learn about a conference reservation or active conferences is similar to the first step in the blueprint example, with the exception of specifying querying for different types of conference objects supported by the specific conferencing system. For example, in this example, the client clones a conference reservation (i.e., an inactive conference).

If the conferencing system can support a new instance of the specific type of conference(capabilities, etc.), then the request results in the creation of a conference, with an XCON-URI in the form of a new value in the "confObjID" parameter to reflect the newly cloned conference object returned in the "confResponse" message. The "confInfo" is not returned unless there had been changes, in which case the "responseCode" is "modified".

```

"Alice"                                Confs
|                                     |
|(1) confRequest (create,             |
|----->|                             | |
|   confObjID, confUserId, child)|     |
|           (a)Create +---|           |
|           Conf   |   |           |
|           Object |   |           |
|           & IDs  +-->|           |
|                                     |---+ (b) MS
|                                     | | creates
|                                     | | conf and
|                                     |<--+ its ID
|                                     |   (confid=Y)
|                                     |
|(2) confResponse                     |
|<-----|                             |
| ( create, success,                  |
|   confObjID, confUserID)            |
|                                     |

```



Figure 6: Create Basic Conference - Clone

1. "Alice" sends a confRequest message to clone a conference based on an existing conference reservation. "Alice" indicates this conference should be a "child" of the parent conference represented by the "confObjID" in the request.
2. Upon receipt of the confRequest message containing a "create" operation and "confObjID", the conferencing system ensures that the "confObjID" received is valid. The conferencing system determines the appropriate read/write access of any users to be added to a conference based on this "confObjID" (using membership, roles, etc.). The conferencing system uses the received "confObjID" to clone a conference reservation. The conferencing system also reserves or allocates a new "confObjID" to be used for the cloned conference object. Any subsequent protocol requests from any of the members of the conference. The conferencing system maintains the mapping between this conference ID and the parent conference object ID associated with the reservation through the conference instance.

#### **1. confRequest message:**

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpRequest
  xmlns:info="urn:ietf:params:xml:ns:conference-info"
  xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp"
  xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info">
  <ccmpRequest
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:type="ccmp:ccmp-conf-request-message-type">
    <confObjID>xcon:6845432@example.com</confObjID>
    <confUserID>xcon-userid:Alice</confUserID>
    <operation>create</operation>
  </ccmpRequest>
</ccmp:ccmpRequest>
```

#### **2. confResponse message:**

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpResponse
  xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info"
  xmlns:info="urn:ietf:params:xml:ns:conference-info"
  xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp">
<ccmpResponse
```



```
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:type="ccmp:ccmp-conf-response-message-type">
<confObjID>xcon:8977794@example.com</confObjID>
<confUserID>xcon-userid:Alice</confUserID>
<operation>create</operation>
<ccmp:response-code>success</ccmp:response-code>

<ccmp:confResponse>
  <confInfo entity="xcon:8977794@example.com">
    <info:conference-description>
      <info:display-text>
        New conference by Alice cloned from 6845432
      </info:display-text>
      <info:conf-uris>
        <info:entry>
          <info:uri>
            xcon:8977794@example.com
          </info:uri>
          <info:display-text>
            conference xcon-uri
          </info:display-text>
          <xcon:conference-password>
            8601
          </xcon:conference-password>
        </info:entry>
      </info:conf-uris>
      <info:maximum-user-count>10</info:maximum-user-count>
      <info:available-media>
        <info:entry label="11">
          <info:type>audio</info:type>
        </info:entry>
      </info:available-media>
    </info:conference-description>
    <info:users>
      <xcon:join-handling>allow</xcon:join-handling>
    </info:users>
    <xcon:floor-information>
      <xcon:floor-request-handling>
        confirm</xcon:floor-request-handling>
      <xcon:conference-floor-policy>
        <xcon:floor id="11"/>
      </xcon:conference-floor-policy>
    </xcon:floor-information>
  </confInfo>
</ccmp:confResponse>
</ccmpResponse>
</ccmp:ccmpResponse>
```



Figure 7: Create Basic Conference (Clone) Detailed Messaging

#### **5.4. Conference Creation using Blueprints**

Figure 8 provides an example of one client "Alice" determining the conference blueprints available for a particular conferencing system and creating a conference based on the desired blueprint.

```

CMCC "Alice"                                ConfS
|                                              |
| (1) blueprintsRequest                      |
|----->|                                     |
|      (confUserID)                         |
|                                              |
|      (2) blueprintsResponse                |
|<-----|                                  |
|      (confUserID, success,               |
|              blueprintsInfo)             |
|--+                                         |
|   | choose preferred                     |
|   | blueprint from the                   |
|   | list (blueprintName)                 |
|<-+                                         |
|                                              |
| (3) blueprintRequest                      |
|----->|                                     |
| (retrieve, confObjID,                    |
|         confUserID)                      |
|                                              |
|      (4) blueprintResponse                |
|<-----|                                  |
|      (success, confObjID,                |
|      confUserID, confInfo)               |
|                                              |
| (5) confRequest (create,                  |
|----->|                                     |
|      confobjID)                          |
|                                          (a)Create +---|
|                               Conf    |   |
|                               Object  |   |
|                               & IDs  +---|
|                                                              |--+ (b) MS
|                                                              | creates
|                                                              | conf and
|                                                              |<-+ its ID
|                                                              |      (confid=Y)
|(6) confResponse                              |
|<-----|                                  |
| (create,success,                            |
|   confObjID, confUserID)                   |
|                                              |
|                                              |
| .
```





Figure 8: Client Creation of Conference using Blueprints

1. "Alice" first sends a "blueprintsRequest" message to the conferencing system identified by the conference server discovery process. Upon receipt of the "blueprintsRequest", the conferencing system would first authenticate "Alice" and then ensure that "Alice" has the appropriate authority based on system policies to receive any blueprints supported by that system.
2. Any blueprints that "Alice" is authorized to use are returned in a "blueprintsResponse" message in the "blueprintsInfo" attribute.
3. Upon receipt of the "blueprintsResponse" containing the blueprints, "Alice" determines which blueprint to use for the conference to be created. "Alice" sends a "blueprintRequest" message to get the specific blueprint as identified by the "confObjID".
4. The conferencing system returns the "confInfo" associated with the specific blueprint as identified by the 'confObjID' in the "blueprintResponse" message.
5. "Alice" then sends a "confRequest" with a "create" operation to the conferencing system to create a conference reservation, including the appropriate "blueprintName" and associated "confObjID".
6. Upon receipt of the "confRequest" message with a "create" operation, the conferencing system uses the received blueprint to clone a conference, allocating a new "confObjID". The conferencing server then sends a "confResponse" message including the "confObjID" associated with the newly created conference instance. Upon receipt of the "confResponse" message, "Alice" can now add other users to the conference .

1. blueprintsRequest message:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpRequest xmlns:info="urn:ietf:params:xml:ns:conference-info"
  xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp"
  xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info">
  <ccmpRequest xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:type="xcon:ccmp-blueprints-request-message-type">
    <confUserID>xcon-userid:Alice</confUserID>
  </ccmpRequest>
</ccmp:ccmpRequest>
```



## 2. blueprintsResponse message:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpResponse
  xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info"
  xmlns:info="urn:ietf:params:xml:ns:conference-info"
  xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp">
<ccmpResponse
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:type="ccmp:ccmp-blueprints-response-message-type">
<confUserID>xcon-userid:Alice</confUserID>
<ccmp:response-code>success</ccmp:response-code>
<ccmp:blueprintsResponse>
  <blueprintsInfo>
    <info:entry>
      <info:uri>xcon:AudioRoom@example.com</info:uri>
      <info:display-text>AudioRoom</info:display-text>
      <info:purpose>Simple Room:
        conference room with public access,
        where only audio is available, more users
        can talk at the same time
        and the requests for the AudioFloor
        are automatically accepted.
      </info:purpose>
    </info:entry>
    <info:entry>
      <info:uri>xcon:VideoRoom@example.com</info:uri>
      <info:display-text>VideoRoom</info:display-text>
      <info:purpose>Video Room:
        conference room with public access,
        where both audio and video are available,
        8 users can talk and be seen at the same time,
        and the floor requests are automatically accepted.
      </info:purpose>
    </info:entry>
    <info:entry>
      <info:uri>xcon:AudioConference1@example.com</info:uri>
      <info:display-text>AudioConference1</info:display-text>
      <info:purpose>Public Audio Conference:
        conference with public access,
        where only audio is available,
        only one user can talk at the same time,
        and the requests for the AudioFloor MUST
        be accepted by a Chair.
      </info:purpose>
    </info:entry>
    <info:entry>
      <info:uri>xcon:VideoConference1@example.com</info:uri>
```



```

    <info:display-text>VideoConference1</info:display-text>
    <info:purpose>Public Video Conference: conference
        where both audio and video are available,
        only one user can talk
    </info:purpose>
</info:entry>
<info:entry>
    <info:uri>xcon:AudioConference2@example.com</info:uri>
    <info:display-text>AudioConference2</info:display-text>
    <info:purpose>Basic Audio Conference:
        conference with private access,
        where only audio is available,
        only one user can talk at the same time,
        and the requests for the AudioFloor MUST
        be accepted by a Chair.
    </info:purpose>
</info:entry>
</blueprintsInfo>
</ccmp:blueprintsResponse>
</ccmpResponse>
</ccmp:ccmpResponse>

```

### 3. blueprintRequest message:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpRequest
    xmlns:info="urn:ietf:params:xml:ns:conference-info"
    xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp"
    xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info">
    <ccmpRequest xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
        xsi:type="ccmp:ccmp-blueprint-request-message-type">
        <confObjID>xcon:AudioRoom@example.com</confObjID>
        <confUserID>xcon-userid:Alice</confUserID>
        <ccmp:blueprintRequest>
            <operation>retrieve</operation>
        </ccmp:blueprintRequest>
    </ccmpRequest>
</ccmp:ccmpRequest>

```

### 4. blueprintResponse message:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpResponse
    xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info"
    xmlns:info="urn:ietf:params:xml:ns:conference-info"
    xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp">
    <ccmpResponse xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"

```



```

        xsi:type="ccmp:ccmp-blueprint-response-message-type">
<confObjID>xcon:AudioRoom@example.com</confObjID>
<confUserID>xcon-userid:Alice</confUserID>
<ccmp:response-code>success</ccmp:response-code>
<ccmp:blueprintResponse>
  <blueprintInfo entity="AudioRoom">
    <info:conference-description>
      <info:display-text>AudioRoom</info:display-text>
      <info:maximum-user-count>2</info:maximum-user-count>
      <info:available-media>
        <info:entry label="audioLabel">
          <info:type>audio</info:type>
        </info:entry>
      </info:available-media>
    </info:conference-description>
    <info:users>
      <xcon:join-handling>allow</xcon:join-handling>
    </info:users>
    <xcon:floor-information>
      <xcon:floor-request-handling>confirm
      </xcon:floor-request-handling>
      <xcon:conference-floor-policy>
        <xcon:floor id="audioLabel"></xcon:floor>
      </xcon:conference-floor-policy>
    </xcon:floor-information>
  </blueprintInfo>
</ccmp:blueprintResponse>
</ccmpResponse>
</ccmp:ccmpResponse>

```

## 5. confRequest message:

```

<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpRequest
  xmlns:info="urn:ietf:params:xml:ns:conference-info"
  xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp"
  xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info">
  <ccmpRequest
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:type="ccmp:ccmp-conf-request-message-type">
    <confObjID>xcon:AudioRoom@example.com</confObjID>
    <confUserID>xcon-userid:Alice</confUserID>
    <operation>create</operation>
  </ccmpRequest>
</ccmp:ccmpRequest>

```





## 6. confResponse message:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ccmp:ccmpResponse
  xmlns:xcon="urn:ietf:params:xml:ns:xcon-conference-info"
  xmlns:info="urn:ietf:params:xml:ns:conference-info"
  xmlns:ccmp="urn:ietf:params:xml:ns:xcon:ccmp">
  <ccmpResponse
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:type="ccmp:ccmp-conf-response-message-type">
    <confObjID>xcon:8977794@example.com</confObjID>
    <confUserID>xcon-userid:Alice</confUserID>
    <operation>create</operation>
    <ccmp:response-code>success</ccmp:response-code>
    <ccmp:confResponse>
      <confInfo entity="xcon:8977794@example.com">
        <info:conference-description>
          <info:display-text>
            New conference by Alice cloned from AudioRoom
          </info:display-text>
          <info:conf-uris>
            <info:entry>
              <info:uri>
                xcon:8977794@example.com
              </info:uri>
              <info:display-text>
                conference xcon-uri
              </info:display-text>
              <xcon:conference-password>
                8601
              </xcon:conference-password>
            </info:entry>
          </info:conf-uris>
          <info:maximum-user-count>10</info:maximum-user-count>
          <info:available-media>
            <info:entry label="11">
              <info:type>audio</info:type>
            </info:entry>
          </info:available-media>
        </info:conference-description>
        <info:users>
          <xcon:join-handling>allow</xcon:join-handling>
        </info:users>
        <xcon:floor-information>
          <xcon:floor-request-handling>
            confirm</xcon:floor-request-handling>
          <xcon:conference-floor-policy>
            <xcon:floor id="11"/>
          </xcon:conference-floor-policy>
        </xcon:floor-information>
      </confInfo>
    </ccmp:confResponse>
  </ccmpResponse>
</ccmp:ccmpResponse>
```



```
        </xcon:conference-floor-policy>
      </xcon:floor-information>
    </confInfo>
  </ccmp:confResponse>
</ccmpResponse>
</ccmp:ccmpResponse>
```

Figure 9: Create Conference (Blueprint) Detailed Messaging

## 6. General Conference scenarios and examples

The following scenarios are based on those documented in the XCON framework. The examples assume that a conference has already been correctly established, with media, if applicable, per one of the examples in [Section 5](#).

### 6.1. Conference Announcements and Recordings

In this example, as shown in Figure 10 "Alice" is joining "Bob"'s conference that requires that she first enter a pass code. After successfully entering the passcode, an announcement prompts "Alice to speak her name so it can be recorded. When "Alice" is added to the active conference, the recording is played back to all the existing participants.

(Figure not available yet).

Figure 10: Recording and Announcements

1. Upon receipt of the userRequest from "Alice" to be added to "Bob's" conference (i.e., an "update" operation on "Bob's" conference object). The conferencing system determines that a password is required for this specific conference, thus an announcement asking "Alice" to enter the password is provided to "Alice". Once "Alice" enters the password, it is validated against the policies associated with "Bob's" active conference. The conferencing system then connects to a server which prompts and records "Alice's" name. The conferencing system must also determine whether "Alice" is already a user of this conferencing system or whether she is a new user. In this case, "Alice" is a new user for this conferencing system, so a conference user identifier is created for "Alice". Based upon the addressing information provided by "Alice", the call signaling to add



"Alice" to the conference is instigated through the Focus.

2. The conference server sends "Alice" a userResponse message which includes the "confUserID" assigned by the conferencing system for "Alice". This would allow "Alice" to later perform operations on the conference (if she were to have the appropriate policies), including registering for event notifications associated with the conference. Once the call signaling indicates that "Alice" has been successfully added to the specific conference, per updates to the state, and depending upon the policies, other participants (e.g., "Bob") are notified of the addition of "Alice" to the conference via the conference notification service and an announcement is provided to all the participants indicating that "Alice" has joined the conference.

(CCMP Messaging details not available yet).

Figure 11: Announcement Messaging Details

## **6.2. Monitoring for DTMF**

The conferencing system also needs the capability to monitor for DTMF from each individual participant. This would typically be used to enter the identifier and/or access code for joining a specific conference.

An example of DTMF monitoring, within the context of the framework elements, is shown in Figure 10.

## **6.3. Adding a Party**

In this example, "Alice" wants to add "Bob" to an established conference.

To do.

Figure 12: Client Manipulation of Conference - Add a party

1. "Alice" sends a userRequest message with an operation of "create" to add "Bob" to the specific conference as identified by the confObjID. The conference server ensures that "Alice" has the appropriate authority based on the policies associated with that specific conference object to perform the operation. A



Conference User Identifier is created for Bob.

2. The call signaling to add "Bob" to the conference is instigated through the Focus.
3. Once "Bob" has been successfully added to the specific conference, per updates to the state, and depending upon the policies, other participants (including "Bob") may be notified of the addition of "Bob" to the conference via the Conference Notification Service.

(CCMP Messaging details not available yet).

Figure 13: Add Party Message Details

#### **6.4. Muting a Party**

This section provides an example of the muting of a party in an active conference. The unmuting would involve the identical CCMP message flow. Although, in the case that floor control is involved, whether or not a particular conference client can unmute themselves must be considered by the conferencing system.

Figure 14 provides an example of one client "Alice" impacting the media state of another client "Bob". This example assumes an established conference. In this example, the client, "Alice" whose Role is "moderator" of the conference, wants to mute "Bob" on a medium-size multi-party conference, as his device is not muted (and he's obviously not listening to the call) and background noise in his office environment is disruptive to the conference.

(To be added).

Figure 14: Client Manipulation of Conference - Mute a party

1. Upon receipt of the Conference Control Protocol request to "mute" a party ("Bob") in the specific conference as identified by the conference object ID, the Conference Server ensures that "Alice" has the appropriate authority based on the policies associated





with that specific conference object to perform the operation. "Bob"'s status is marked as "recvonly" and the conference object is updated to reflect that "Bob"s media is not to be "mixed" with the conference media. In case the Conference Server relies on a remote Media Server for its multimedia functionality, it subsequently changes "Bob"'s media profile accordingly by means of the related protocol interaction with the MS. An example describing a possible way of dealing with such a situation using the Media Server Control architecture is described in [\[I-D.miniero-mediactrl-escs\]](#), at "Simple Bridging: Framework Transactions (2)".

2. ..x Depending upon the policies, other participants (including "Bob") may be notified of this change via the Conference Notification Service.

(CCMP Messaging details not available yet).

Figure 15: Mute Message Details

### [6.5.](#) Internal Sidebar

Figure 16 provides an example of one client "Alice" involved in active conference with "Bob" and "Carol". "Alice" wants to create a sidebar to have a side discussion with "Bob" while still viewing the video associated with the main conference. Alternatively, the audio from the main conference could be maintained at a reduced volume. "Alice" initiates the sidebar by sending a request to the conferencing system to create a conference reservation based upon the active conference object. "Alice" and "Bob" would remain on the roster of the main conference, such that other participants could be aware of their participation in the main conference, while an internal-sidebar conference is occurring.

(To be added).

Figure 16: Client Creation of a Sidebar Conference

1. Upon receipt of the Conference Control Protocol request to "reserve" a new sidebar conference, based upon the active conference received in the request, the conferencing system uses the received active conference to clone a conference reservation



for the sidebar. The sidebar reservation is NOT independent of the active conference (i.e., parent). The conferencing system also reserves or allocates a conference ID to be used for any subsequent protocol requests from any of the members of the conference.

2. Upon receipt of the conference control protocol response to reserve the conference, "Alice" can now create an active conference using that reservation or create additional reservations based upon the existing reservations. In this example, "Alice" wants only "Bob" to be involved in the sidebar, thus she manipulates the membership. "Alice" also only wants the video from the original conference and wants the audio to be restricted to the participants in the sidebar. Alternatively, "Alice" could manipulate the media values to receive the audio from the main conference at a reduced volume. "Alice" sends a conference control protocol request to update the information in the reservation and to create an active conference.
3. Upon receipt of the conference control protocol request to update the reservation and to create an active conference for the sidebar, as identified by the conference object ID, the conferencing system ensures that "Alice" has the appropriate authority based on the policies associated with that specific conference object to perform the operation. The conferencing system must also validate the updated information in the reservation, ensuring that a member like "Bob" is already a user of this conferencing system.
4. ..x. Depending upon the policies, the initiator of the request (i.e., "Alice") and the participants in the sidebar (i.e., "Bob") may be notified of his addition to the sidebar via the conference notification service.

(CCMP Messaging details not available yet).

Figure 17: Internal Sidebar Messaging Details

### **6.6. External Sidebar**

Figure 18 provides an example of one client "Alice" involved in an active conference with "Bob", "Carol", "David" and "Ethel". "Alice" gets an important text message via a whisper from "Bob" that a critical customer needs to talk to "Alice", "Bob" and "Ethel". "Alice" creates a sidebar to have a side discussion with the customer



"Fred" including the participants in the current conference with the exception of "Carol" and "David", who remain in the active conference. "Alice" initiates the sidebar by sending a request to the conferencing system to create a conference reservation based upon the active conference object. "Alice", "Bob" and "Ethel" would remain on the roster of the main conference in a hold state. Whether or not the hold state of these participants is visible to other participants depends upon the individual and local policy.

(To be Detailed).

Figure 18: Client Creation of an External Sidebar

1. Upon receipt of the confRequest message to "reserve" a new sidebar conference, based upon the active conference received in the request, the conferencing system uses the received active conference to clone a conference reservation for the sidebar. The sidebar reservation is NOT independent of the active conference (i.e., parent). The conferencing system also reserves or allocates a conference ID to be used for any subsequent protocol requests from any of the members of the conference. The conferencing system maintains the mapping between this conference ID and the conference object ID associated with the sidebar reservation through the conference instance.
2. Upon receipt of the confResponse message, "Alice" wants only "Bob" and "Ethel", along with the new participant "Fred" to be involved in the sidebar, thus she manipulates the membership. "Alice" sets the media in the conference-info such that the participants in the sidebar don't receive any media from the main conference.
3. "Alice" sends a confRequest to update the information in the reservation and to create an active conference. Upon receipt of the confRequest with an operation of "update", the conferencing system ensures that "Alice" has the appropriate authority based on the policies associated with that specific conference object to perform the operation. The conferencing system also validates the updated information in the reservation. Since "Fred" is a new user for this conferencing system, a conference user identifier is created for "Fred". Based upon the addressing information provided for "Fred" by "Alice", the call signaling to add "Fred" to the conference is instigated through the Focus.



4. ..x. The conference server sends a confResponse message and depending upon the policies, the initiator of the request (i.e., "Alice") and the participants in the sidebar (i.e., "Bob" and "Ethel") may be notified of his addition to the sidebar via the conference notification service.

(CCMP Messaging details not available yet).

Figure 19: External Sidebar Messaging Details

### **6.7. Floor control using sidebars**

Floor control with sidebars can be used to realize conferencing scenario such as an analyst briefing. In this scenario, the conference call has a panel of speakers who are allowed to talk in the main conference. The other participants are the analysts, who are not allowed to speak unless they have the floor. To request access to the floor, they have to join a new sidebar with the moderator and ask their question. The moderator can also whisper to each analyst what their status/position in the floor control queue, similar to the example in Figure 22. It should be noted that other mechanisms which don't make use of sidebars could be used for floor control such as those detailed in BFCP.

Figure 20 provides an example of the configuration involved for this type of conference. As in the previous sidebar examples, there is the main conference along with a sidebar. "Alice" and "Bob" are the main participants in the conference, with "A1", "A2" and "A3" representing the analysts. The sidebar remains active throughout the conference, with the moderator, "Carol", serving as the chair. As discussed previously, the sidebar conference is NOT independent of the active conference (i.e., parent). The analysts are provided the conference object ID associated with the active sidebar when they join the main conference. The conferencing system also allocates a conference ID to be used for any subsequent manipulations of the sidebar conference. The conferencing system maintains the mapping between this conference ID and the conference object ID associated with the active sidebar conference through the conference instance. The analysts are permanently muted while in the main conference. The analysts are moved to the sidebar when they wish to speak. Only one analyst is given the floor at a given time. All participants in the main conference receive audio from the sidebar conference, as well as audio provided by the panelists in the main conference.





(To Be added).

Figure 20: Floor Control with sidebars

1. "A1" wishes to ask a question, so he sends a Floor Request message to the floor control server.
2. Upon receipt of the request, the floor control server notifies the moderator, "Carol" of the active sidebar conference, whose serving as the floor chair.
3. Since no other analysts have yet requested the floor, "Carol" indicates to the floor control server that "A1" may be granted the floor.

(CCMP Messaging details not available yet).

Figure 21: Floor Control Messaging Details

#### **6.8. Whispering or Private Messages**

The case of private messages can be handled as a sidebar with just two participants, similar to the example in section [Section 6.5](#), but rather than using audio within the sidebar, "Alice" could add an additional text based media stream to the sidebar. The other context, referred to as whisper, in this document refers to situations involving one time media targetted to specific user(s). An example of a whisper would be an announcement injected only to the conference chair or to a new participant joining a conference.

Figure 22 provides an example of one user "Alice" whose chairing a fixed length conference with "Bob" and "Carol". The configuration is such that only the chair is providing a warning when there is only 10 minutes left in the conference. At that time, "Alice" is moved into a sidebar created by the conferencing system and only "Alice" receives the announcement.

(To Be completed).



Figure 22: Whisper

1. When the conferencing system determines that there is only 10 minutes left in the conference which "Alice" is chairing, the conferencing system directly creates an active sidebar conference, based on the active conference associated with "Alice". This sidebar conference is NOT independent of the active conference (i.e., parent). The conferencing system also allocates a conference ID to be used for any subsequent manipulations of the sidebar conference.
2. Immediately upon creation of the active sidebar conference, the announcement media is provided to "Alice". Depending upon the policies, Alice may be notified of her addition to the sidebar via the conference notification service. "Alice" continues to receive the media from the main conference.
3. Upon completion of the announcement, "Alice" is removed from the sidebar and the sidebar conference is deleted.
4. "Alice" is notified of her removal from the sidebar via the conference notification service.

(CCMP Messaging details not available yet).

Figure 23: Whisper Messaging Details

### **6.9. Observing and Coaching**

An example of observing and coaching is shown in figure Figure 24. In this example, call center agent "Bob" is involved in a conference with customer "Carol". Since "Bob" is a new agent and "Alice" sees that he has been on the call with "Carol" for longer than normal, she decides to observe the call and coach "Bob" as necessary.

(Figure not available yet).

Figure 24: Supervisor Creating a Sidebar for Observing/Coaching

1. Upon receipt of the confRequest from "Alice" to "create" a new sidebar conference from the confObjID received in the request, the conferencing system uses the received active conference to



clone a conference reservation for the sidebar. The conferencing system also allocates a conference ID to be used for any subsequent protocol requests from any of the members of the conference. The conferencing system maintains the mapping between this conference ID and the confObjID associated with the sidebar reservation through the conference instance. The conference server sends a confResponse message with the new confObjID and relevant confInfo.

2. Upon receipt of the confResponse message, "Alice" manipulates the data received in the confInfo in the response. "Alice" wants only "Bob" to be involved in the sidebar, thus she updates the "allowed-users-list" to include only "Bob". "Alice" also wants the audio to be received by herself and "Bob" from the original conference, but wants any outgoing audio from herself to be restricted to the participants in the sidebar, whereas "Bob's" outgoing audio should go to the main conference, so that both "Alice" and the customer "Carol" hear the same audio from "Bob". "Alice" sends a confRequest message with an "update" operation including the updated conference information.
3. Upon receipt of the confRequest message with an "update" operation, the conferencing system ensures that "Alice" has the appropriate authority based on the policies associated with that specific conference object to perform the operation.
4. After validating the data, the conference server sends a confResponse message. Based upon the addressing information provided for "Bob" by "Alice", the call signaling to add "Bob" to the sidebar with the appropriate media characteristics is instigated through the Focus. "Bob" is notified of his addition to the sidebar via the conference notification service, thus he is aware that "Alice" the supervisor is available for coaching him through this call.

(CCMP Messaging details not available yet).

Figure 25: Coaching and Observing Messaging details

## **7. Removing participants and deleting conferences**

The following scenarios detail the basic operations associated with removing participants from conferences and entirely deleting conferences. The examples assume that a conference has already been



correctly established, with media, if applicable, per one of the examples in [Section 5](#).

### **7.1. Removing a Party**

Figure 26 provides an example of one client "Alice" removing another participant "Bob" from a conference. This example assumes an established conference with "Alice", "Bob", "Claire" and "Duck". In this example, "Alice" wants to remove "Bob" from the conference so that the group can continue in the same conference without "Bob"'s participation.

(Figure not available yet).

Figure 26: Client Manipulation of Conference - Remove a party

1. "Alice" sends a userRequest message, with a "delete" operation. The conference server ensures that "Alice" has the appropriate authority based on the policies associated with that specific conference object to perform the operation.
2. Based upon the addressing and media information in the conference object for "Bob" in the "user" element, the conference instigates the process to remove "Bob" (e.g., the call signaling to remove "Bob" from the conference is instigated through the Focus). The conference server updates the data in the conference object, thus removing "Bob" from the "users" list and a userResponse message is sent to "Alice". Depending upon the policies, other participants (including "Bob") may be notified of the removal of "Bob" from the conference via the Conference Notification Service.

(CCMP Messaging details not available yet).

Figure 27: Removing a Participant Messaging Details

### **7.2. Deleting a Conference**

Details to be added.

(Figure not available yet).





Figure 28: Deleting a conference

(Text description to be added).

(CCMP Messaging details not available yet).

Figure 29: Deleting a Conference Messaging Details

## **8. Additional Conference Scenarios and Examples**

The following are additional scenarios making use of the XCON framework and associated protocols. In some cases, these examples make use of some of the building block scenarios detailed in the previous example sections, in which case the appropriate scenario is referenced rather than duplicating details. In addition, in cases where the scenarios make use of other protocols, as in the previous section, the appropriate reference in the form of a title to the specific flow in the appropriate protocol document is included.

### **8.1. Chat**

The chat functionality described in this section of the document allows clients that use the XCON framework and protocols 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 an Instant Messaging (IM) chat session, independent of the IM chat protocol. In some cases (e.g., Message Session Relay Protocol (MSRP) chat), this would provide additional capabilities, such as sidebars. This approach also allows the conferencing system to provide a natural interworking point for various IM protocols, the details of the interworking are outside the scope of this document.

An IM client wishing to join a conference uses standardized centralized conferencing mechanisms for creating and joining a conference, as identified in the previous sections. The request to send an IM to an IM media session is specific to the IM protocol (e.g., MSRP SEND), just as there is specific media control messaging for other types of sessions. An IM client connecting to a conferencing system has a 1:1 relationship with the IM media signaling entity in the conferencing system. This relationship is referred to as an IM session. Further details of the correlation of the IM session identifiers with the XCON session identifiers is provided in [[I-D.boulton-xcon-session-chat](#)]. The IM media signaling



entity is responsible for distribution of all the messages to the other participants.

As with the other example conferences created, each IM session is logically associated with a specific conference. The conference itself has a specific identifier in the form of the XCON-URI, which is passed in the "confObjID" element in the CCMP messages. This provides the relevant association between IM session and a centralized conference.

An IM client wishing to delete a chat room uses standardized mechanisms for deleting a conference instance, such as those detailed in [Section 7.2](#).

#### **[8.1.1.1](#). Basic Chat Operations**

This section provides details of the realization of the Multi-party IM (chat) within the context of the centralized conferencing framework. A brief discussion and diagrams are provided for creating, joining, and deleting a chat based conference. The discovery of chat rooms available on a specific conferencing system is inherent in the blueprint capability provided by the conferencing system. The objective of this section is to further illustrate the model, mechanisms and protocols presented in the previous sections and also serves to validate that the model, mechanisms and protocols are sufficient to support IM chat.

It should be noted that not all entities impacted by the request are shown in the diagram (e.g., Focus), but rather the emphasis is on the new entities introduced by this centralized conferencing framework.

##### **[8.1.1.1.1](#). Creating a Chat Room**

There are different ways to create a conference. A participant can create a conference using call signaling means only, such as SIP, as detailed in [\[RFC4579\]](#). For a conferencing client to have more flexibility in defining the characteristics and capabilities of a chat based conference, a conferencing client would implement a conference control protocol client. By using a conference control protocol, the client can determine the capabilities of a conferencing system and its various resources.

Figure 30 provides an example of one client "Alice" determining the conference blueprints available to support various types of chat rooms for a particular conferencing system and creating a chat based conference using the desired blueprint.



Details to be added.

Figure 30: Client Creation of Chat room

Upon receipt of the Conference Control Protocol request for blueprints associated with chat rooms, the conferencing system would first authenticate "Alice" (and allocate a conference user identifier, if necessary) and then ensure that "Alice" has the appropriate authority based on system policies to receive any chat room based blueprints supported by that system. Any blueprints that "Alice" is authorized to use are returned in a response, along with the conference user ID.

Upon receipt of the Conference Control Protocol response containing the blueprints, "Alice" determines which blueprint to use for the conference to be created. "Alice" creates a conference object based on the blueprint (i.e., clones) and modifies applicable fields, such as membership list, topic details, and start time. "Alice" then sends a request to the conferencing system to create a conference reservation based upon the updated blueprint.

Upon receipt of the Conference Control Protocol request to "create" a conference based upon the blueprint in the request, the conferencing system ensures that the blueprint received is a valid blueprint (i.e. the values of the various field are within range). The conferencing system determines the appropriate read/write access of any users to be added to a conference based on this blueprint (using membership, roles, etc.). The conferencing system uses the received blueprint to clone a conference reservation. The conferencing system also reserves or allocates a conference ID to be used for any subsequent protocol requests from any of the members of the conference. The conferencing system maintains the mapping between this conference ID and the conference object ID associated with the reservation through the conference instance.

Upon receipt of the conference control protocol response to reserve the conference, "Alice" now creates an active chat room using that reservation. "Alice" provides the conference information, including the necessary conference ID, to desired participants to allow them to join the chat room. "Alice" may also add other users to the chat room. When the first participant, including "Alice", requests to be added to the conference, an active conference and focus are created. The focus is associated with the conference ID received in the request.



(CCMP Messaging details not available yet.  
Plan is to reference detailed flows in  
previous sections  
in the example.)

Figure 31: Chatroom Creation Messaging Details

#### **8.1.1.2. Joining a Chat Room**

A participant can join and leave the conference using call signaling means only, such as SIP. However, in order to perform richer conference control a user client can implement a conference control protocol client. By using a conference control protocol, the client can affect its own state and the state of other participants, depending upon policies, which may indirectly affect the state of any of the conference participants.

In the example in section [Section 8.1.1.1](#), "Alice" has reserved a chat room . "Alice" has also already joined the conference and made the chat room active. "Alice" can either add additional participants to the chat room or provide the conference information, including the necessary conference ID, to desired participants and allow them to request to join themselves. Any participants that have the authority to manipulate the conference would receive the conference object identifier of the active conference object in the response to their request to join.

Figure 32 provides an example of "Bob" joining the chat room using the conference ID provided by "Alice" (e.g., in an IM).

Details to be added.

Figure 32: Joining a chat room

Upon receipt of the Conference Control Protocol request to "add" a party ("Bob") in the specific conference as identified by the conference object ID, the conferencing system must determine whether "Bob" is already a user of this conferencing system or whether he is a new user. If "Bob" is a new user for this conferencing system, a Conference User Identifier is created for Bob. The conferencing system must also ensure that "Bob" has the appropriate authority based on the policies associated with that specific conference object to perform the operation.





Once "Bob" has been successfully added to the chat room, a response is sent to "Bob". Depending upon the policies, other participants (including "Bob") may be notified of the addition of "Bob" to the conference via the Conference Notification Service.

(CCMP Messaging details not available yet.  
Plan is to reference detailed flows in  
previous sections as appropriate  
in the example.)

Figure 33: Chatroom Join Messaging Details

#### **8.1.1.3. Deleting a Chat Room**

Depending upon the conferencing system policies and policies specific to the chat room, the creator of the chat would typically be the participant authorized to delete the chat room.

In the example in section [Section 8.1.1.1](#), "Alice" has created a chat room and provided the conference information, including the necessary conference ID, to desired participants and allow them to request to join themselves. "Bob" and others are participants in the chat. Figure 34 provides an example of "Alice" later deleting this same chat room.

Details to be added.

Figure 34: Deleting a chat room

Upon receipt of the Conference Control Protocol request to "delete" the specific chat room as identified by the conference object ID, the conferencing system must determine whether "Alice" has the authority to delete this conference. Since "Alice" is the creator of the conference, the "delete" operation is performed, with the appropriate signaling sent to the participants, including a response to "Alice" indicating that the chat room has been deleted.

One step in the deletion of the chat room may include notifying the participants (including "Bob") that they have been removed via the Conference Notification Service.



(CCMP Messaging details not available yet.  
Plan is to reference detailed flows in  
previous sections .)

Figure 35: Chatroom Deletion Messaging Details

### **8.1.2. Advanced Operations**

This section provides details of the realization of advanced chat features, such as sidebars and private messages, within the context of the centralized conferencing framework. As with [Section 8.1.1](#), the objective of this section is to further illustrate the model, mechanisms and protocols presented in the previous sections and also serves to validate that the model, mechanisms and protocols are sufficient to support advance IM chat features.

#### **8.1.2.1. Text Sidebar**

The concept of a 'sidebar' in conferencing system is fully described in the Sidebar section and related subsections within the Conferencing Scenarios Realization section of the centralized conferencing framework document [[RFC5239](#)]. The creation, manipulation and deletion of sidebars for chat rooms follows the same principles.

A conference object representing a sidebar is created by cloning the parent associated with the existing conference and updating any information specific to the sidebar. A sidebar conference object is implicitly linked to the parent conference object (i.e. it is not an independent object) and is associated with the parent conference object identifier. A conferencing system manages and enforces the parent and appropriate localized restrictions on the sidebar conference object (e.g., no members from outside the parent conference instance can join, sidebar conference can not exist if parent conference is terminated, etc.).

Figure 36 provides an example of one client "Alice" involved in active chat room with "Bob" and "Carol". "Alice" wants to create a sidebar to have a side discussion with "Bob" while still receiving the session based messaging associated with the main chat room. Whether the text is interleaved with the main chat or whether a separate window is created for the sidebar is implementation specific. "Alice" initiates the sidebar by sending a request to the conferencing system to create a conference chat reservation based upon the active chat conference object. "Alice" and "Bob" would remain on the roster of the main conference, such that other participants could be aware of their participation in the main



conference, while the text sidebar conference is occurring.

Details to be added.

Figure 36: Client Creation of a Sidebar Conference

Upon receipt of the Conference Control Protocol request to "reserve" a new sidebar chat conference, based upon the active chat conference received in the request, the conferencing system uses the received active chat conference to clone a conference chat reservation for the sidebar. As discussed previously, the sidebar reservation is NOT independent of the active conference (i.e., parent). The conferencing system also reserves or allocates a conference ID to be used for any subsequent protocol requests from any of the members of the conference. The conferencing system maintains the mapping between this conference ID and the conference object ID associated with the sidebar reservation through the conference instance.

Upon receipt of the conference control protocol response to reserve the conference, "Alice" can now create an active chat conference using that reservation or create additional reservations based upon the existing reservations. In this example, "Alice" wants only "Bob" to be involved in the sidebar, thus she manipulates the membership. "Alice" also only wants the text from the original conference, but wants the text within the sidebar to be restricted to the participants in the sidebar. "Alice" sends a conference control protocol request to update the information in the reservation and to create an active conference.

Upon receipt of the conference control protocol request to update the reservation and to create an active chat conference for the sidebar, as identified by the conference object ID, the conferencing system ensures that "Alice" has the appropriate authority based on the policies associated with that specific conference object to perform the operation. The conferencing system must also validate the updated information in the reservation, ensuring that a member like "Bob" is already a user of this conferencing system.

Depending upon the policies, the initiator of the request (i.e., "Alice") and the participants in the sidebar (i.e., "Bob") may be notified of his addition to the sidebar via the conference notification service.



Details to be added.

Figure 37: Chatroom Sidebar Messaging Details

#### **8.1.2.2. Private Message**

The case of private messages can be handled as a sidebar with just two participants, identical to the example in section [Section 8.1.2.1](#). The other context, referred to as whisper, in this document refers to situations involving one time media targetted to specific user(s). An example of a whisper would be a text message injected only to the conference chair or to a new participant joining a conference.

Figure 38 provides an example of one user "Alice" who's chairing a fixed length conference with "Bob" and "Carol". The configuration is such that only the chair is providing a warning when there is only 10 minutes left in the conference. At that time, "Alice" is moved into a sidebar created by the conferencing system and only "Alice" receives that text message announcing the 10 minute warning.

Details to be added.

Figure 38: Whisper

When the conferencing system determines that there is only 10 minutes left in the conference which "Alice" is chairing, rather than creating a reservation as was done for the sidebar in [Section 8.1.2.1](#), the conferencing system directly creates an active chat sidebar conference, based on the active chat conference associated with "Alice". As discussed previously, the sidebar conference is NOT independent of the active conference (i.e., parent). The conferencing system also allocates a conference ID to be used for any subsequent manipulations of the sidebar chat conference. The conferencing system maintains the mapping between this conference ID and the conference object ID associated with the active sidebar conference through the conference instance.

Immediately upon creation of the active chat sidebar conference, the text announcement is provided to "Alice". Depending upon the policies, Alice may be notified of her addition to the sidebar via the conference notification service. "Alice" continues to receive the text messages from the main conference.





Upon delivery of the text announcement, "Alice" is removed from the sidebar and the sidebar conference is deleted. Depending upon the policies, "Alice" may be notified of her removal from the sidebar via the conference notification service.

Details to be added.

Figure 39: Chatroom Sidebar Messaging Details

## **9. IANA Considerations**

This document has no IANA considerations.

## **10. Security Considerations**

The security considerations applicable to the implementation of these call flows is documented in the XCON Framework, with additional security considerations documented in the CCMP document. Where applicable, statements with regards to the necessary security are discussed in particular flows, however, since this is only an informational document, readers are strongly recommended to carefully consider the security considerations defined in the XCON Framework and the CCMP document.

## **11. Change Summary**

NOTE TO THE RFC-Editor: Please remove this section prior to publication as an RFC.

The following are the major changes between the individual 01 version to the WG 00:

- o Updates to reflect most recent version of CCMP, including parameter names, etc.
- o Added protocol details to initial examples.
- o Editorial: Simplifying intro, terms, etc.

The following are the major changes between the 00 and the 01



versions of the draft:

- o Updates to reflect change of CCMP to HTTP transport model.

## **12. Acknowledgements**

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