CONFERENCING FRAMEWORKS

Gonzalo.Camarillo@ericsson.com

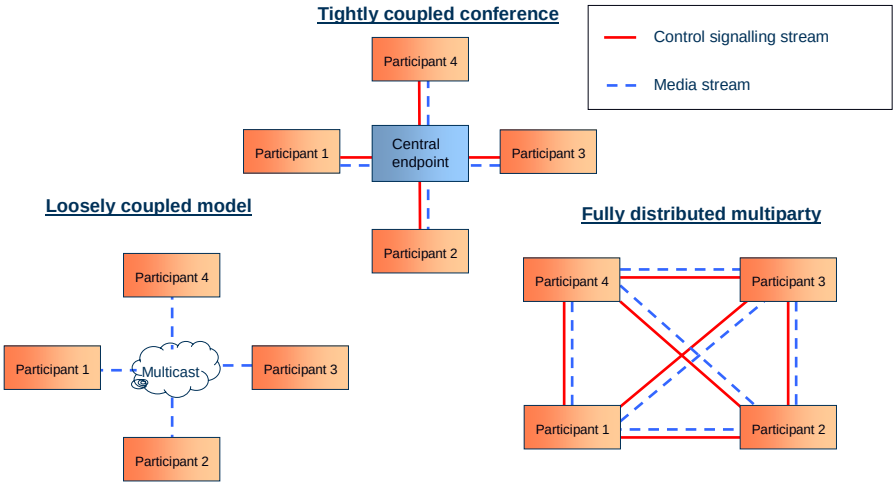
ERICSSON
TAKING YOU FORWARD

Contents

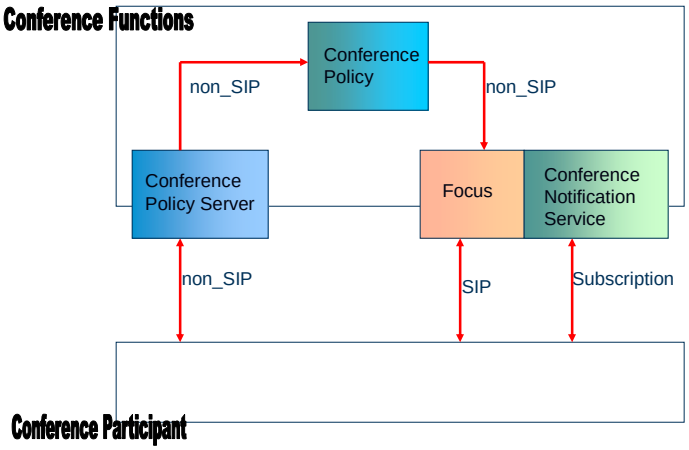
Overview

- Conferencing is a communication session with multiple participants, multi-party communication.
- There are two framework definitions for how a conferencing can occur.
- These frameworks describes the architecture, terminology and protocol components needed for conferencing.
- These frameworks are:
  - SIPPING Conferencing Framework.
  - XCON Conferencing Framework.

Models of Multi-party Communications

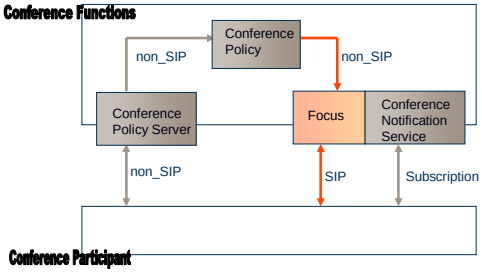


The SIPPING Conferencing Framework



Focus

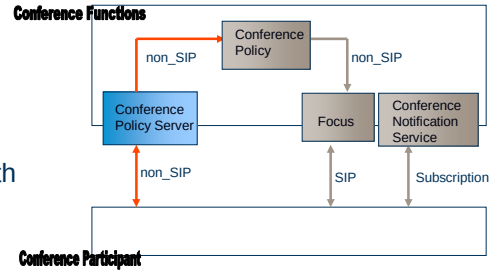
- The central component in a SIP conference
- Focus is a SIP User Agent that is address by a unique URI (*i.e. sip: discussion-on-cats@example.com*)



- Maintains a SIP signalling relationship with each participant in the conference
- Implements conference policies and enforce those policies
- Manipulates the media session through the use of mixers

Conference Policy Server

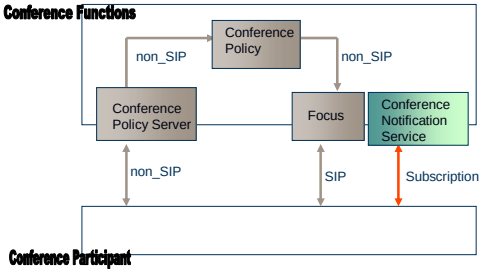
- Logical function which can store and manipulate the conference policy
- Participants comunicatee with the conference policy server using non-SIP-specific mechanism



- Conference-aware participant: can comunicate with the conference policy server.It has access to advanced functionality through additional protocol interfaces.
- Conference-unaware participant:

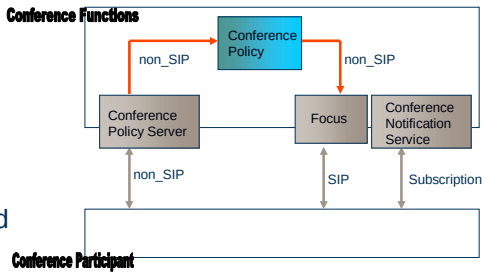
Conference Notification Service

- Logical function provided by the focus
- Notify subscribers about changes in the conference state (i.e. *participant leaves the conference, participant join the conference…*)



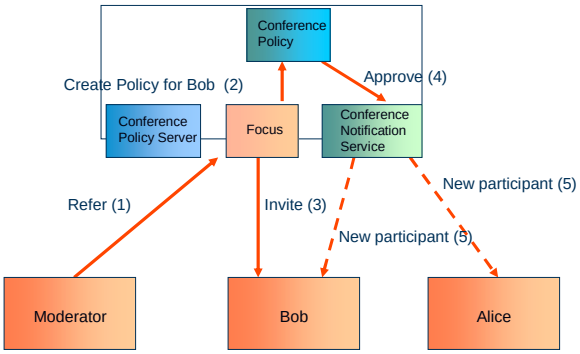
Conference Policy

- The complete set of rules governing a particular conference
- It can be a simple access list that defines the set of allowed participants in a conference
- It can also be a incredible complex set of rules (i.e. *specifying time-of-day based rules*)



Example: Overview of Common conferencing operations

Adding Participant (third party)



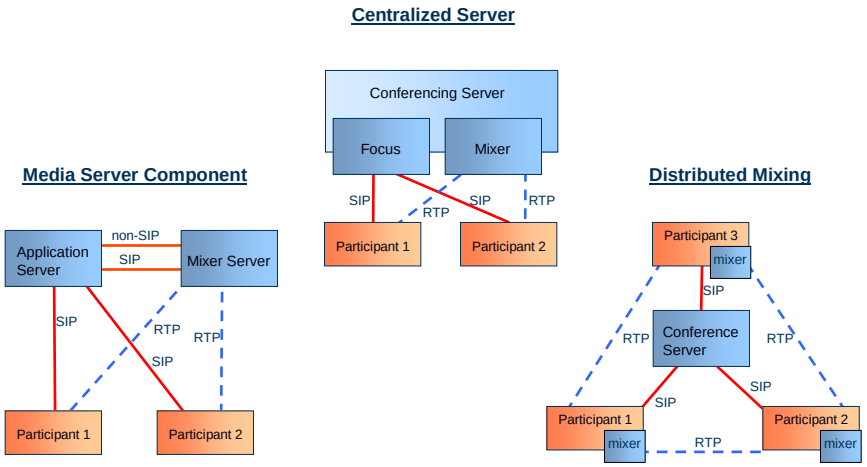
Conference Notification Service

Example

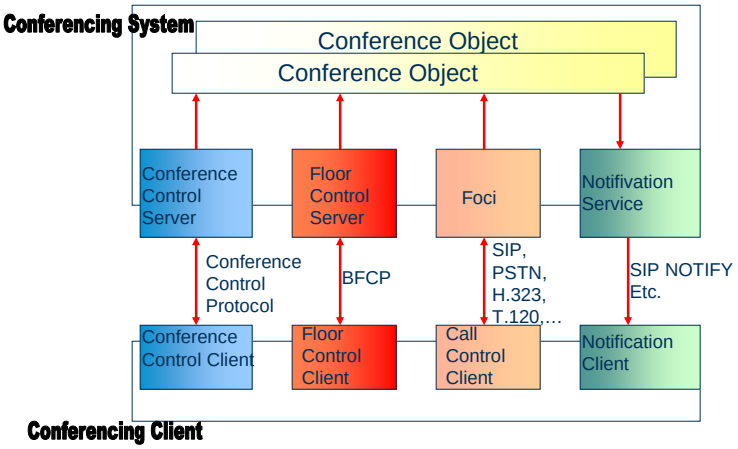
```
<?xml version="1.0" encoding="UTF-8"?>
  <conference-info
  xmlns="urn:ietf:params:xml:ns:conference-info“
  entity="sips:conf233@example.com“ state="full"
      version="1">
  <conference-description>
   <subject>Agenda: This month's goals</subject>
   <service-uris>
    <entry>
     <uri>http://sharepoint/salesgroup/</uri>
     <purpose>web-page</purpose>
    </entry>
   </service-uris>
  </conference-description>
  <conference-state>
   <user-count>33</user-count>
  </conference-state>
```

```
<users>
   <user entity="sip:bob@example.com" state="full">
    <display-text>Bob Hoskins</display-text>
    <endpoint entity="sip:bob@pc33.example.com">
<media id="1">
     <display-text>main audio</display-text>
     <type>audio</type>
     <label>34567</label>
     <src-id>432424</src-id>
     <status>sendrecv</status>
    </media>
   </endpoint>
  </user>
 </users>
</conference-info>
```


Physical Instantiation of the SIPPING Conference Framework

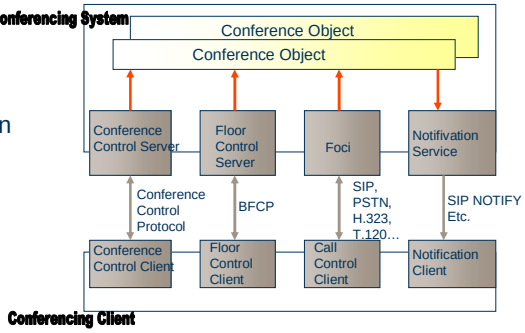


The XCON Conferencing Framework



Conference Object

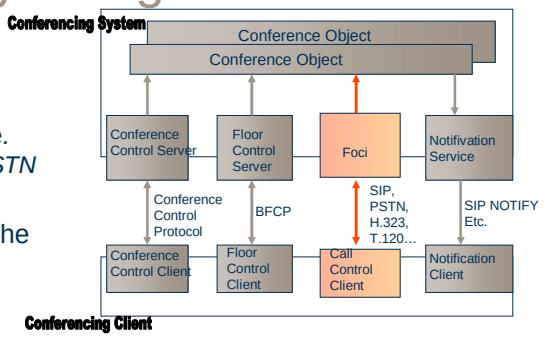
- Logical representation of a Conference Instance at a certain stage that is addressed by a unique URI
- A conference Instance represents the internal implementation of a conference



- It is divided in two components:
  - Common Conference Information: contain the core information that is used in any conference
  - Conference Template: represents the variable information of the conference object
- Conference Policy controls the right and permission of the operations that are performed in a Conference Object

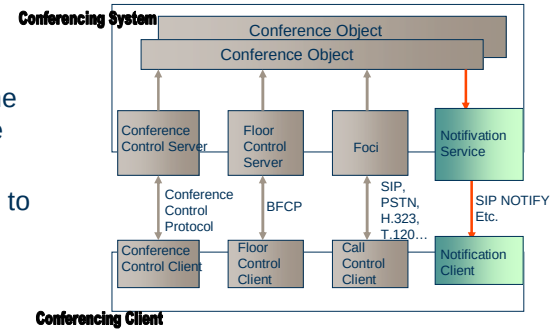
Call Control Signalling

- Protocol uses between a participant and a Focus (i.e. *SIP, h.323, Jabber, HTML, PSTN signalling, …*)
- Participants interface with the focus using a call control signalling

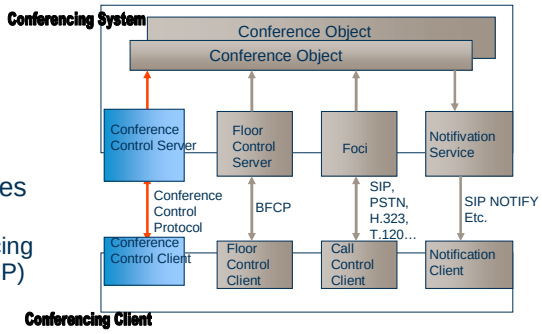


Conference Notification Service

- Provides updates about the Conference Instance state
- It can filter the notification information that is allowed to be sent to that user



Conference Control Protocol



- Control the state of a Conference Object
- XCON working group defines several protocols:
  - Centralized Conferencing Control Protocol (CCCP) is a semantic-oriented protocol
  - Conference State Change Protocol (CSCP) is a client server protocol used to change the state of a conference object. CSCP is an extension of the BFCP.
  - CCMP/COMP is based on the Simple Object Access Protocol (SOAP) and re-uses SOAP libraries, servers and other infrastructure.

Centralized Conferencing Control Protocol (CCCP)

- CCCP is a transaction client-server protocol. This protocol is not implemented yet
- Types of operations: Request and response
- Some primitives (GetTemplate, GetActiveConference…)

Example (Add user BOB and DIAL OUT to its PC4 with main audio only):

```
<conference-request request-id="8797">
  <content entity="sips:conf233@example.com">
    <user entity="sip:bob@example.com">
          <operator><code>add</code></operator>
          <display-text>Bob Hoskins</display-text>
          <endpoint entity="sip:bob@pc4.example.com">
            <display-text>Bob's Laptop</display-text>
            <joining-method>dialed-out</joining-method>
            <media entity="1">
              <display-text>main audio</display-text>
              <proto>audio</proto>
            </media>
          </endpoint>
    </user>
  </content>
  </conference-request>
```

SOAP

- SOAP protocol intented to exchanging structure information in a distributed environment.
- It uses XML tecnologies to define an extensible messaging framework.

Example (SOAP message containing a SOAP header block and a SOAP body):

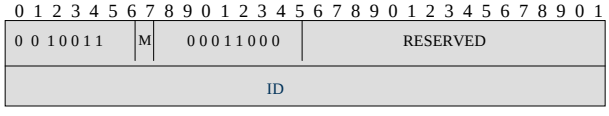
```
<env:Envelope xmlns:env="http://www.w3.org/2003/05/soap-envelope">
<env:Header>
  <n:alertcontrol xmlns:n="http://example.org/alertcontrol"> <n:priority>1</n:priority>
       <n:expires>2001-06-22T14:00:00-05:00</n:expires>
  </n:alertcontrol>
</env:Header>
<env:Body>
   <m:alert xmlns:m="http://example.org/alert">
      <m:msg>Pick up Mary at school at 2pm</m:msg>
   </m:alert>
 </env:Body>
</env:Envelope>
```


Conference State Change Protocol (CSCP)

- Extends the Binary Floor Control Protocol (BFCP) and add new primitives (get, set, add, and delete field) and new attributes(ELEMENT-ID, NAME, VALUE).
- Example of a format of an Adding Element primitives:

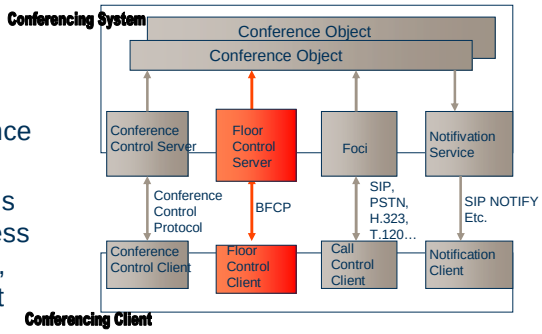
COMMON HEADER
ELEMENT-ID
NAME

- Example of a format of an ELEMENT-ID attribute:



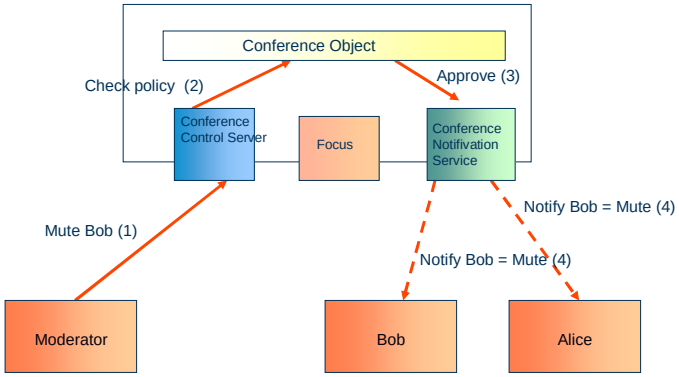
Floor Control

- Floor is a set of resource associated with a Conference Instance
- Floor Chair is a client who is authorized to manage access to one floor (grants, denies, revokes a floor). It does not have to be a participant
- It is not a mandatory mechanism for a conferencing system



Example: Conference Scenario Realization

Media manipulation



Relationship Between SIPPING and XCON Framework

- XCON Framework is compatible with the SIPPPING Framework
- SIPPING Framework ilustrates how SIP can be used as a signalling means
- SIPPING Framework does not define new conference control protocols to be used by the conferencing system
- XCON Framework achieve interoperability between the XCON entities from different vendors