This sequence diagram was generated with EventStudio System Designer 4.0 (http://www.EventHelix.com/EventStudio). Copyright © 2008 EventHelix.com Inc. All Rights Reserved. The EventStudio source files for this document can be downloaded from http://www.eventhelix.com/call-flow/ims-conference.zip.

This sequence diagram shows an IMS user creating a conference by using a conference-factory URI. The conference is created at a MRFC-AS of the users home network. The steps involved in the conference scenario covered here are:

(1) The conference initiator UE uses the conference factory URI to initiate a conference with the MRFC-AS (Multimedia Resource Function Control/Application Server).

(2) The MRFC-AS assigns a conference URI to the conference and configures the MRFP (Multimeda Resource Function Processor).

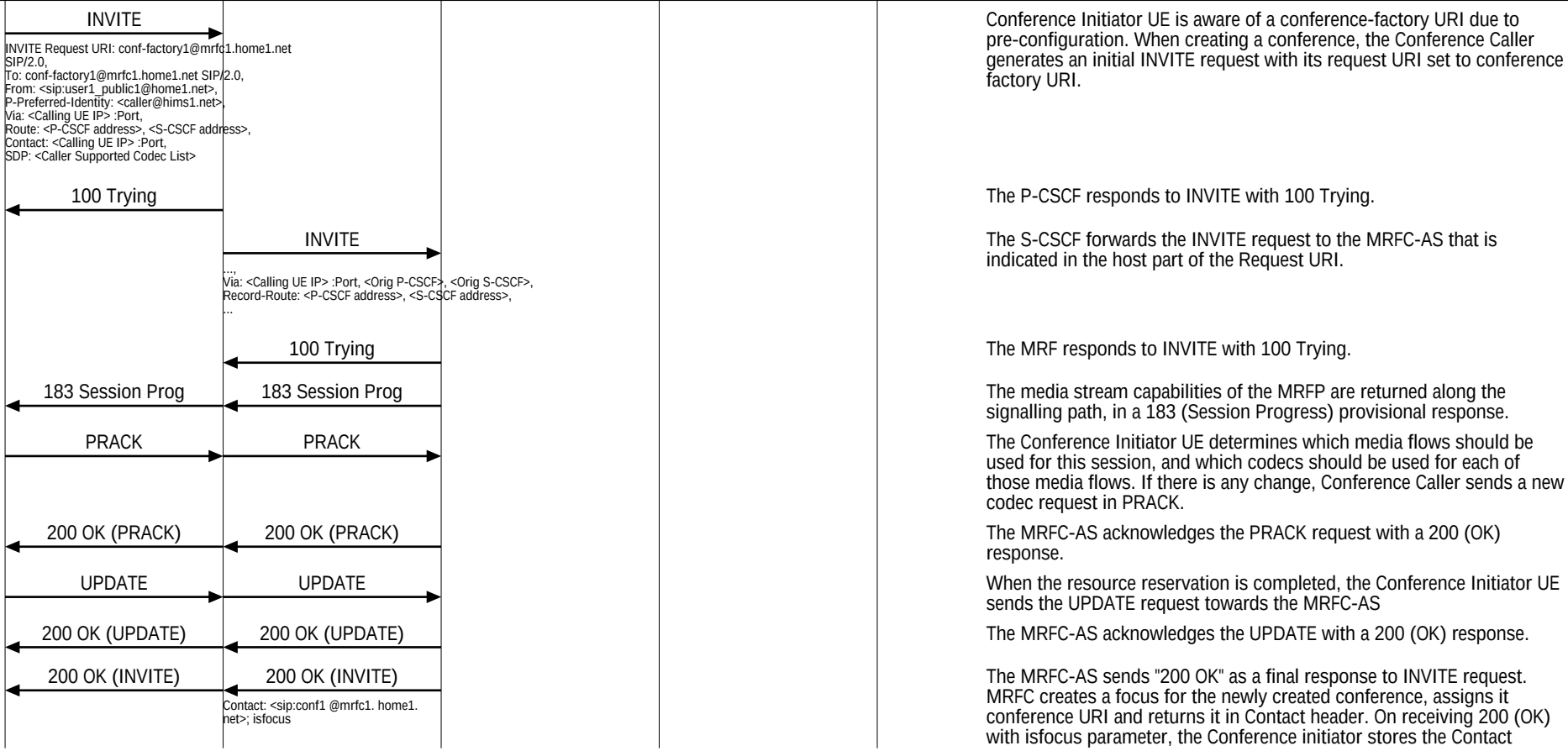
(3) The conference call is setup and the RTP data begins flowing between the conference initiating UE and the MRFP.

(4) The conference initiator then uses the refer procedure to add more users to the conference. The new users establish a call to the conference URI passed in the refer message.

(5) When the conference is in progress, RTP media streams are being mixed and propagated to all the participants.

(6) The conference user drops out of the conference. All users are notified for this exit from the conference.

Initiating an IMS conference using the Conference Factory URI



Conference Initiator UE is aware of a conference-factory URI due to pre-configuration. When creating a conference, the Conference Caller generates an initial INVITE request with its request URI set to conference factory URI.

The P-CSCF responds to INVITE with 100 Trying.

The S-CSCF forwards the INVITE request to the MRFC-AS that is indicated in the host part of the Request URI.

The MRF responds to INVITE with 100 Trying.

The media stream capabilities of the MRFP are returned along the signalling path, in a 183 (Session Progress) provisional response.

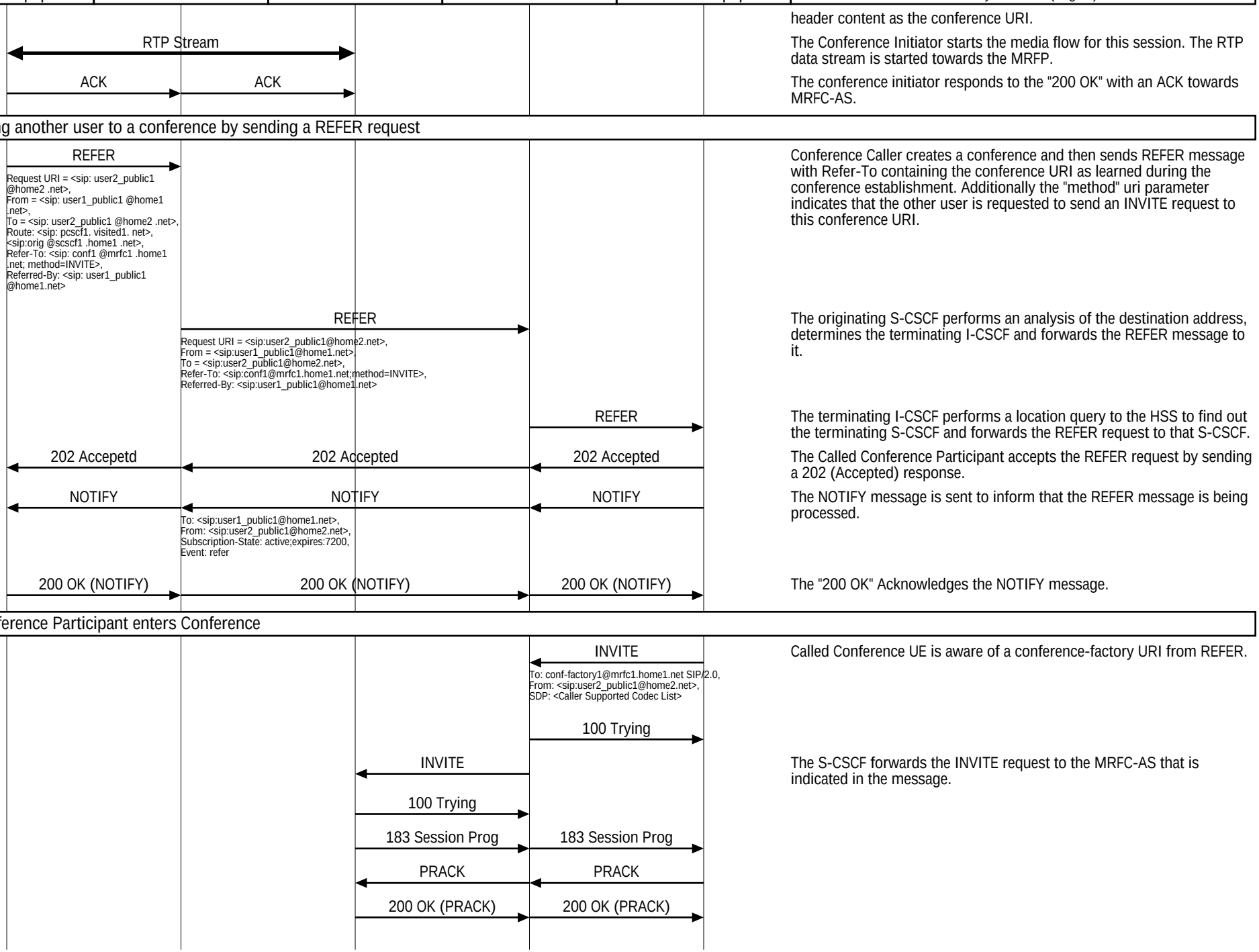
The Conference Initiator UE determines which media flows should be used for this session, and which codecs should be used for each of those media flows. If there is any change, Conference Caller sends a new codec request in PRACK.

The MRFC-AS acknowledges the PRACK request with a 200 (OK) response.

When the resource reservation is completed, the Conference Initiator UE sends the UPDATE request towards the MRFC-AS

The MRFC-AS acknowledges the UPDATE with a 200 (OK) response.

The MRFC-AS sends "200 OK" as a final response to INVITE request. MRFC creates a focus for the newly created conference, assigns it conference URI and returns it in Contact header. On receiving 200 (OK) with isfocus parameter, the Conference initiator stores the Contact



header content as the conference URI.

The Conference Initiator starts the media flow for this session. The RTP data stream is started towards the MRFP.

The conference initiator responds to the "200 OK" with an ACK towards MRFC-AS.

Conference Caller creates a conference and then sends REFER message with Refer-To containing the conference URI as learned during the conference establishment. Additionally the "method" uri parameter indicates that the other user is requested to send an INVITE request to this conference URI.

The originating S-CSCF performs an analysis of the destination address, determines the terminating I-CSCF and forwards the REFER message to it.

The terminating I-CSCF performs a location query to the HSS to find out the terminating S-CSCF and forwards the REFER request to that S-CSCF.

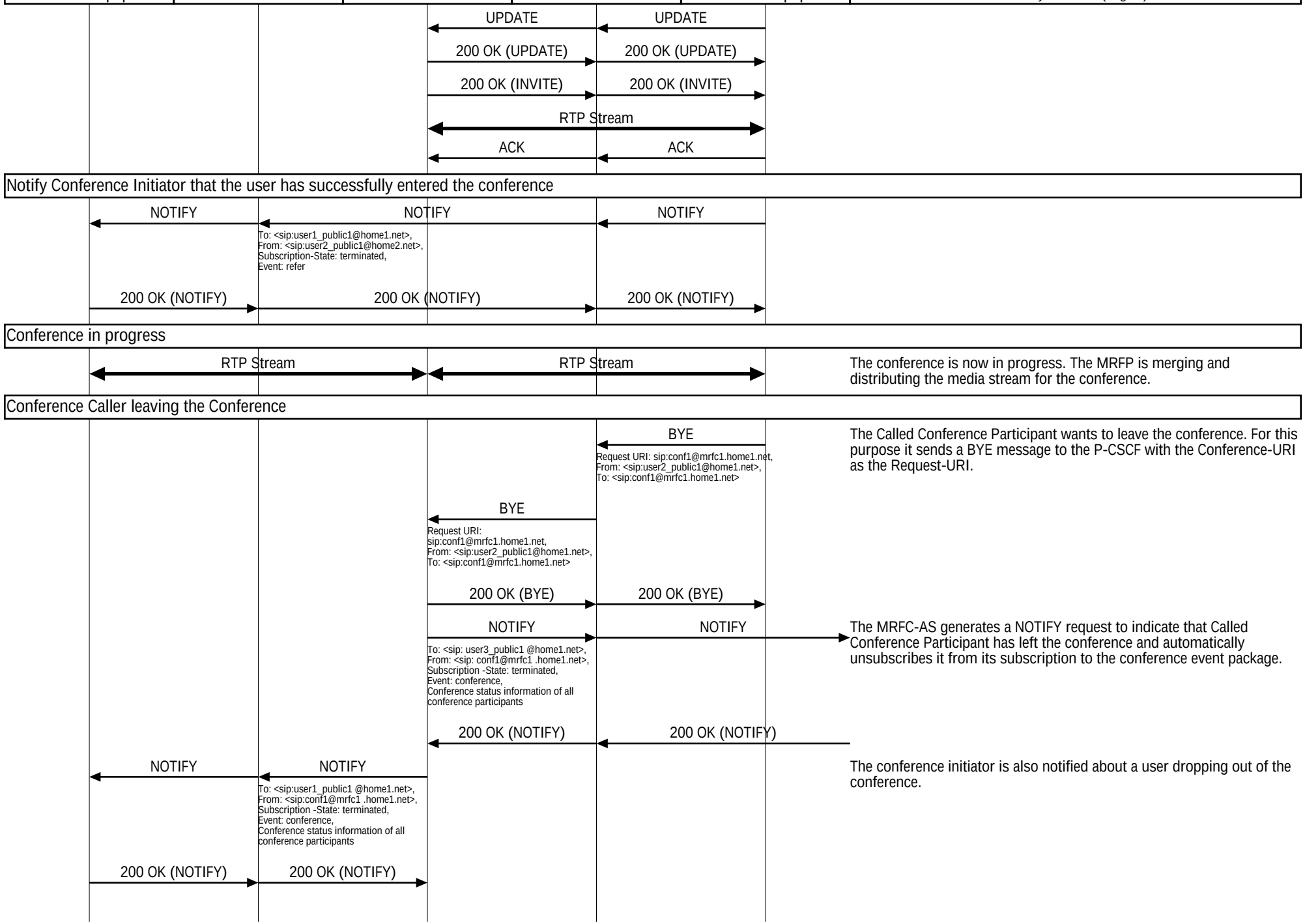
The Called Conference Participant accepts the REFER request by sending a 202 (Accepted) response.

The NOTIFY message is sent to inform that the REFER message is being processed.

The "200 OK" Acknowledges the NOTIFY message.

Called Conference UE is aware of a conference-factory URI from REFER.

The S-CSCF forwards the INVITE request to the MRFC-AS that is indicated in the message.


UPDATE
UPDATE
200 OK (UPDATE)
200 OK (UPDATE)
200 OK (INVITE)
200 OK (INVITE)
RTP Stream
ACK
ACK
Notify Conference Initiator that the user has successfully entered the conference
NOTIFY
NOTIFY
NOTIFY
To: <sip:user1_public1@home1.net>,
From: <sip:user2_public1@home2.net>,
Subscription-State: terminated,
Event: refer
200 OK (NOTIFY)
200 OK (NOTIFY)
200 OK (NOTIFY)
Conference in progress
RTP Stream
RTP Stream
The conference is now in progress. The MRFP is merging and distributing the media stream for the conference.
Conference Caller leaving the Conference
BYE
Request URI: sip:conf1@mrfc1.home1.net,
From: <sip:user2_public1@home1.net>,
To: <sip:conf1@mrfc1.home1.net>
The Called Conference Participant wants to leave the conference. For this purpose it sends a BYE message to the P-CSCF with the Conference-URI as the Request-URI.
BYE
Request URI:
sip:conf1@mrfc1.home1.net,
From: <sip:user2_public1@home1.net>,
To: <sip:conf1@mrfc1.home1.net>
200 OK (BYE)
200 OK (BYE)
NOTIFY
NOTIFY
To: <sip: user3_public1 @home1.net>,
From: <sip: conf1@mrfc1 .home1.net>,
Subscription -State: terminated,
Event: conference,
Conference status information of all conference participants
The MRFC-AS generates a NOTIFY request to indicate that Called Conference Participant has left the conference and automatically unsubscribes it from its subscription to the conference event package.
200 OK (NOTIFY)
200 OK (NOTIFY)
NOTIFY
NOTIFY
To: <sip:user1_public1 @home1.net>,
From: <sip:conf1@mrfc1 .home1.net>,
Subscription -State: terminated,
Event: conference,
Conference status information of all conference participants
The conference initiator is also notified about a user dropping out of the conference.
200 OK (NOTIFY)
200 OK (NOTIFY)