This sequence diagram describes the call setup of a call from one IMS subscriber to another IMS subscriber. The call is roaming in another IMS supporting network. The called subscriber is in the home IMS network.

The call flow focuses on the IMS routing of SIP dialog. The major steps in the call flow are:

1. **IMS Routing of Initial SIP INVITE**
2. **IMS Routing of First Response to the SIP Invite**
3. **P-CSCF Context Activation and Audio Video Path Setup**

This sequence diagram was generated with EventStudio System Designer 4.0 (http://www.EventHelix.com/EventStudio). Copyright © 2007 EventHelix.com Inc. All Rights Reserved.
Now all the resources for the call are in place. Ring the PRACK
The called subscriber acknowledges the PRACK.

Term S-CSCF
ACK
PRACK
Home IMS 1
The caller acknowledges the ringing message.
The called subscriber answers the call.
Home IMS 2
ACK
Called User
Inform the caller that the called subscriber is being rung.
PRACK
Notify the caller that the call has been answered.

Orig S-CSCF
PDP Context Activation and Audio/Video Path Setup
IMS Routing of First Response to the SIP Invite
IMS Originating to IMS Terminating Call (Caller and Called are IMS Subscribers)

Caller PDP Context Activation

PRACK

BEGIN

PRACK

200 OK

BEGIN

UPDATE

UPDATE

UPDATE

UPDATE

UPDATE

END

180 Ringing

180 Ringing

180 Ringing

180 Ringing

180 Ringing

183 Session Progress

Call: Caller-ID: <Called-UE>, Recv-Route: <Orig S-CSCF>
Via: <Term P-CSCF>;port <Term P-CSCF>
Record-Route: <Term S-CSCF>;port <Term S-CSCF>
Contact: <Orig S-CSCF>, <Orig P-CSCF>
P-Media-Authorization: <Orig S-CSCF> <Orig P-CSCF>

Record-Route: <Term S-CSCF>;port <Term S-CSCF>
Contact: <Orig S-CSCF>, <Orig P-CSCF>

Caller now sends a PRACK to inform the called subscriber about the selected codec. The message also indicates that currently the resources needed for meeting the Quality of Service (QoS) requirements are not available.

The called subscriber acknowledges the PRACK. The message also indicates that quality of service for the session is not met for the called subscriber.

The Caller examines the received common codecs list and selects the codec to activate.

The Caller now sends a PRACK to inform the called subscriber about the selected codec. The message also indicates that currently the resources needed for meeting the Quality of Service (QoS) requirements are not available.

Now that the codec to be used has been selected, the PDP context activation is initiated for allocating resources for meeting the Quality of Service (QoS) requirements for the codecs.

The called subscriber acknowledges the PRACK. The message also indicates that quality of service for the session is not met for the called subscriber.

The final codec at the called side is decided. So initiate the PDP context activation to allocate resources for meeting the QoS of the terminating leg of the call.

The caller PDP context activation has been completed.

Since the caller PDP context has been activated, notify the called end that the caller can now meet the quality of service in the send and receive direction.

The caller replies back to the called user. Note that the Local QoS is still set to none as called PDP context activation has not been completed.

The called PDP context activation has been completed. At this point, the caller and the called PDP contexts are both active. The QoS for the call can now be met.

Ringing: Now all the resources for the call are in place. Ring the allocated subscriber to notify the user about the incoming call.

Inform the caller that the called subscriber is being rung. This serves as an implicit indication to the caller that the QoS at the called side has also been met.

The caller acknowledges the ringing message.

The called subscriber acknowledges the PRACK.

The called subscriber answers the call.

Notify the called that the call has been answered.

The caller acknowledges the "200 OK" message. The call is now ready to enter conversation mode.