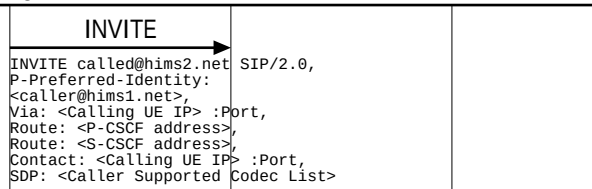
**Orig P-CSCF Interfaces (Caller and Called are IMS Subscribers)**

| Calling UE | IMS Network | | | | | Called UE | EventStudio System Designer 4.0 |
|---|---|---|---|---|---|---|---|
| Caller User Equipment | Visited IMS 1 | Home IMS 1 | Home IMS 2 | | | Called User Equipment | |
| Caller | Orig P-CSCF | Orig S-CSCF | Term I-CSCF | Term S-CSCF | Term P-CSCF | Called | 15-Dec-07 08:21 (Page 1) |

## IMS Routing of Initial SIP INVITE




The SIP phone sends the invite to called@hims2.net. The message contains Route entries for the terminal and the S-CSCF address that was extracted from the Service-Route header in the registration "200 OK" message. Security ports setup for IPSec SA establishment are used. "To" and "From" headers are also included in the message. These headers do not play a role in call processing.

Make sure that INVITE was received over the IPSec Security Association

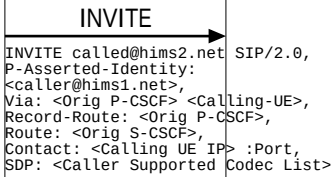
The INVITE was sent using the registration time SA so the P-CSCF accepts the request.

Make sure that the preferred public identity is currently registered

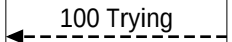
P-CSCF verifies that the preferred public identity specified in the INVITE is currently registered.
The S-CSCF address for the user was obtained at the time of registration (Service-Route header in the "200 OK" response to the REGISTER message.)

Use DNS to translate from scscf1.hims1.net to 'Orig S-CSCF' IP address

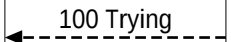
The originating P-CSCF queries the DNS to obtain the IP address of the S-CSCF in the called subscriber's home network. The S-CSCF address for the user was obtained at the time of registration (Service-Route header in the "200 OK" response to the REGISTER message).




The P-CSCF replaces the preferred identity header with the asserted identity header and forwards the message to the S-CSCF in the home network. It adds a Record-Route header with its own address.

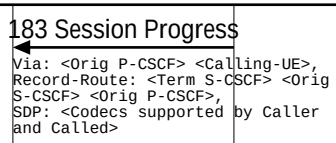



The P-CSCF just acknowledges the INVITE to the UE. The "100 Trying" message indicates that the call setup is in progress.



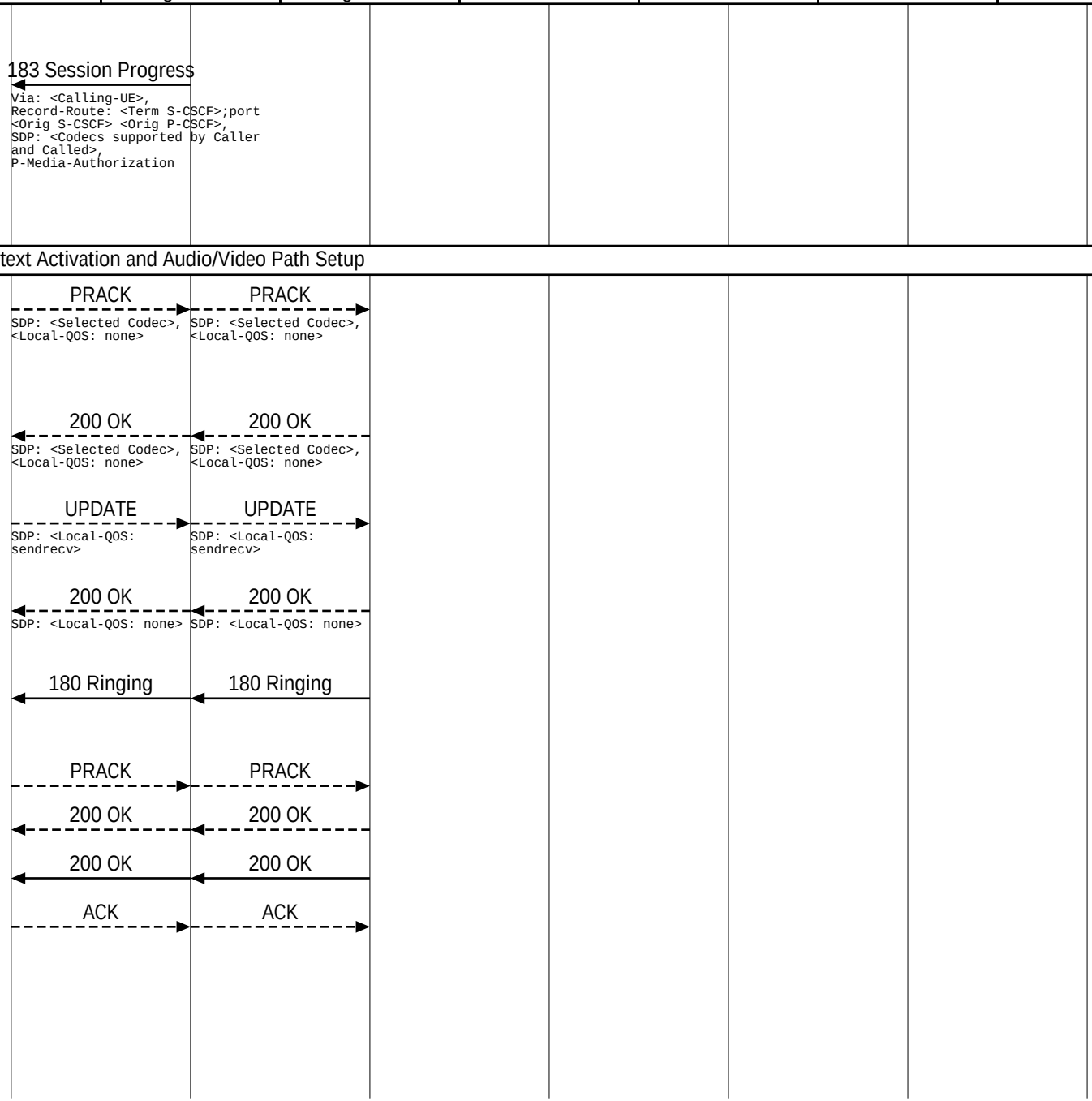

The S-CSCF acknowledges the INVITE that was received from P-CSCF.

## IMS Routing of First Response to the SIP Invite




Obtain a media authorization token from the PDF

The originating P-CSCF requests the Policy Decision Function (PDF) to generate a media authorization token. The token will be included




in the "183 Session Progress" sent to the originating UE.

Just like other nodes, the Orig P-CSCF removes its own entry from the Via header. The P-CSCF also updates the Record-Route header to include the protected port number in its entry. This forces the terminal to send all responses using the protected IPSec SA. The message also includes the media authorization token. This token will have to be passed to the GGSN in the PDP context activation request.

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 requiements of the session 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.

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 the called PDP context activation has not been completed.

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.

Notify the caller that that the call has been answered.

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