Term S-CSCF Interfaces (Caller and Called are IMS Subscribers)

Calling UE
- Called User Equipment
  - Visited IMS 1
  - Home IMS 1

IMS Network
- Home IMS 2
- Term I-CSCF
- Term S-CSCF
- Term P-CSCF

Called UE
- Called User Equipment
  - Home IMS 2

IMS Routing of Initial SIP INVITE

INVITE
- INVITE called@hims2.net SIP/2.0,
  - P-Asserted-Identity: caller@hims1.net,
  - Via: <Term I-CSCF> <Orig S-CSCF>
  - Orig P-CSCF <Calling-UE>,
  - Route: <Term S-CSCF>,
  - Record-Route: <Orig S-CSCF> <Orig P-CSCF>,
  - Contact: <Calling UE IP> :Port,
  - SDP: <Caller Supported Codec List>

As a part of the message processing, a route entry is added for the Term S-CSCF. A new Via header is added to record that the message traversed this I-CSCF. The message is forwarded to the first route header (in this case, the "Term S-CSCF").

Map from public request URI to the registered address

INVITE
- INVITE CALLED-IP SIP/2.0,
  - P-Asserted-Identity: caller@hims1.net,
  - Via: <Term S-CSCF> <Term I-CSCF>
  - Orig P-CSCF <Calling-UE>,
  - Route: <Term P-CSCF>,
  - Record-Route: <Term S-CSCF> <Orig S-CSCF> <Orig P-CSCF>,
  - Contact: <Calling UE IP> :Port,
  - SDP: <Caller Supported Codec List>

The public URI in the SIP INVITE is replaced with the called subscriber’s registered IP address and port number. The message is routed to the P-CSCF IP address that was recorded at the time of registration. The Via and Record-Route headers are updated.

IMS Routing of First Response to the SIP Invite

183 Session Progress
- Via: <Term S-CSCF> <Term I-CSCF>
  - Orig S-CSCF <Orig P-CSCF>
  - Contact: <Calling UE IP> :Port,
  - SDP: <Codecs supported by Caller and Called>

The P-CSCF removes its own Via header entry and addresses the message to the top via header (Term S-CSCF in this case). The P-CSCF also removes the secure port from the Record-Route.

183 message just retraces the path of the original INVITE. Each note removes its own entry from the Via header and forwards the message to the Via entry at the top. The Record-Route header is not touched.

PDP Context Activation and Audio/Video Path Setup

PRACK
- SDP: <Selected Codec>, <Local-QOS: none>

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 requirements of the session are not
The called subscriber acknowledges the PRACK. The message also indicates that the 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 the call has been answered.

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