Push-to-talk over Cellular (PoC) service allows cell phones to be used as walkie-talkies. A group of users in a PoC session can communicate by simply pressing a button and speaking when the phone indicates it is OK to do so. The user releases the button when he or she is done speaking.

When a user begins to speak, the PoC server allocates resources and notifies other users in the PoC session that the user is speaking. The PoC server then delivers the speech packets to all the users in the session.

PoC is resource efficient as it allocates resources only when a user is actually speaking. This makes it suitable for applications where there are long gaps between individual session participants speaking.

This flow covers the case where PoC Client A invites PoC Client B to a Pre-established Session by sending a SIP REFER request to PoC Server A.

The PoC Server A indicates that it has received the SIP REFER request by sending a SIP 202 Accepted response.

The IMS Core A forwards the 202 Accepted response to the PoC Client A.

The IMS Core A forwards the REFER to Participating and Controlling PoC server A.

The IMS Core A forwards the REFER request to PoC Client A.

The IMS Core A forwards the INVITE to the PoC Client B.

The IMS Core A forwards the INVITE request to the PoC Client B.
PoC Client A invites PoC Client to a Pre-established Session Confirmed Indication with Auto Answer at PoC Client B (IMS PoC Client Invitation)

Wireless Network A

User Equipment A

IMS Network A

IMS Core A

IMS Network B

IMS Core B

User Equipment B

PoC Server A

PoC Client A

PoC Server B

PoC Client B

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The PoC Server A sends a SIP NOTIFY request via the IMS Core A towards the PoC Client A to inform about the progress of the session request.

The PoC Client A acknowledges the NOTIFY with 200 OK towards PoC Server A.

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PoC Server A invites PoC Client B

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The IMS Core B forwards the INVITE to PoC Server B.

The IMS Core A resolves the IMS Core B address of the PoC Client B and forwards the SIP INVITE request to the IMS Core B.

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The PoC Client B responds to the SIP INVITE request with a SIP 100 Trying provisional response.

The IMS Core B responds to the SIP INVITE request with a SIP 100 Trying provisional response.

The IMS Core B sends the SIP 200 (OK) final response to the SIP INVITE request to the IMS Core B. The SIP 200 (OK) response is sent along the signaling path. The SIP 200 (OK) response contains the SDP answer including the accepted media information (e.g. Codecs, IP address and port number(s) of the PoC Server B) and accepted Media Burst Control Protocol.

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Media Burst Control Protocol (MBCP) Session Setup using RTCP Port

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The PoC Server B sends the MBOP Connect to the PoC Client B. The message includes the PoC Session Identity.

The PoC Client B acknowledges the reception of the MBOP Connect message.

Push-to-Talk session activated

Indication to the user that the push-to-talk session has been activated.

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The PoC Server A sends a SIP NOTIFY request via the IMS Core A towards the PoC Client A to inform about the progress of the session request.
PoC Client A invites PoC Client to a Pre-established Session Confirmed Indication with Auto Answer at PoC Client B (IMS PoC Client Invitation)

<table>
<thead>
<tr>
<th>Wireless Network A</th>
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<th>IMS Network B</th>
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The PoC Client A acknowledges the NOTIFY with 200 OK towards PoC Server A.

The PoC Server A sends the MBGP Connect message to the PoC Client A and informs the PoC session identity.

The PoC Client A acknowledges the reception of the MBGP Connect message.

Indication to the user that the push-to-talk session has been activated.

The controlling PoC server allocates the floor to PoC Client A.

**Push-to-Talk session activated**

**Talk Burst from PoC Client A to B**

The floor has now been granted to PoC Client A.

Indicate to PoC Client B that the floor has been assigned to PoC Client.

Acknowledge the media burst taken message.

PoC Client A Speaking Indication

Notify the user that the floor has been granted to PoC Client A.

The PoC Client A sends the RTP Media to the PoC Client B via PoC Server A and PoC Server B.

**Floor is available indication**

PoC Client A released the "Push-to-Talk" button to signal that he or she has stopped speaking.

Release of the Push-to-Talk button results in the media floor being released.

The controlling PoC server free the floor as PoC Client A relinquishes the floor.

Indicate to the user that the floor is available for another user to speak.

Floor is available indication
PoC Client A invites PoC Client to a Pre-established Session Confirmed Indication with Auto Answer at PoC Client B (IMS PoC Client Invitation)

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**Floor is available indication**
Indication to the user that the floor is now available.

**Talk Burst from PoC Client B to A**

- **Push-to-Talk Button Pressed**
  PoC Client B wishes to speak so he or she presses the "Push-to-talk button" on the phone.
  Request the floor for the session.

- **The controlling PoC server allocates the floor to PoC Client B.**

- **The floor is granted.**

- **Permission to talk**
  Indicate to the user that the floor has now been granted.

- **MBCP Media Burst Taken**
  protocol = RTCP APP

- **MBCP Media Burst Acknowledgement**
  protocol = RTCP APP

- **PoC Client B Speaking Indication**

- **Voice**
  RTP Media

- **Voice**
  RTP Media

- **Push-to-Talk Button Released**
  PoC Client B released the "Push-to-Talk" button to signal that he or she has stopped speaking.
  The burst release is passed to the controlling PoC Server (PoC Server A)

- **The controlling PoC server free the floor as PoC Client B relinquishes the floor.**

- **Floor is available indication**
  Indicate to the user that the floor is available for speaking.

- **MBCP Media Burst Idle**
  protocol = RTCP APP

- **MBCP Media Burst Idle**
  protocol = RTCP APP