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	IMS				Wireless Network B	**EventStudio System Designer 4.0**
User Equipment A	IMS Network A		IMS Network B		User Equipment B	29-Jun-08 11:31 (Page 1)
PoC Client A	PoC Server A	IMS Core A	IMS Core B	PoC Server B	PoC Client B	

Push-to-talk over Cellular (PoC) service allows cell phones to 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 flows covers the case where PoC Client A invites PoC Client B to a Pre-established Session by sending SIP REFER request to PoC Server A.

This sequence diagram was generated with EventStudio System Designer 4.0 (http://www.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-poc-pre-established.zip.

IMS Registration and PoC Session Pre-establishment

IMS Registration and PoC Session Pre-establishment (Click here for details) — PoC Client A registers and pre-establishes the PoC session. Click on the action box to see details.

IMS Registration and PoC Session Pre-establishment (Click here for details) — PoC Client B registers and pre-establishes the PoC session. Click on the action box to see details.

Invite Client B to a session with SIP REFER

Push-to-Talk Button Pressed — The user selects a friend (PoC Client B) for the push to talk session and pressed the "Push-to-talk button".

REFER
Request-URI:sip:Pre-establishedSessionIdentityA @PoC-ServerA.networkA.net, Refer-To:<sip:PoC-UserB @networkB.net>
— A push-to-talk session currently not active, so initiate a PoC session establishment. The PoC Client A invites the PoC Client B to the Pre-established Session.

REFER
Request-URI:sip:Pre-establishedSessionIdentityA @PoC-ServerA.networkA.net, Refer-To:<sip:PoC-UserB @networkB.net>
— The IMS Core A forwards the REFER to Participating and Controlling PoC server A.

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

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

INVITE
Request-URI: <sip:PoC-UserB @networkB.net>, Referred-By:<sip:PoC-UserA @networkA.net>, Contact:<sip:SessionABCDEF @ PoC-ServerA.networkA.net: session1-1>; +g.poc.talkburst: isfocus, Supported codecs
— The PoC Server A invites the PoC Client B, who is indicated in the Refer-To header of the received SIP REFER request.

INVITE
Request-URI: <sip:PoC-UserB @networkB.net>, Referred-By:<sip:PoC-UserA @networkA.net>, Contact:<sip:SessionABCDEF @ PoC-ServerA.networkA.net: session1-1>; +g.poc.talkburst: isfocus, Supported codecs

100 Trying

NOTIFY

NOTIFY — 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.

200 (OK)

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

PoC Server A invites PoC Client B

INVITE
Request-URI: <sip:PoC-UserB @networkB.net>, Referred-By:<sip:PoC-UserA @networkA.net>, Contact:<sip:SessionABCDEF @ PoC-ServerA.networkA.net: session1-1>; +g.poc.talkburst: isfocus, Supported codecs
— 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.

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

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

100 OK (INVITE) | **100 OK (INVITE)** | **100 OK (INVITE)** — The PoC Server B receives the SIP INVITE request, identifies that auto answer is defined for the PoC Client B and that the PoC Client B has already a Pre-established Session established. Therefore the PoC Server B sends a 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.

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

MBCP Connect
protocol = RTCP APP
— The PoC Server B sends the MBCP Connect to the PoC Client B. The message includes the PoC Session Identity.

MBCP Media Burst Acknowledgement
protocol = RTCP APP
— The PoC Client B acknowledges the reception of the MBCP Connect message.

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

ACK | **ACK** | **ACK**

NOTIFY

NOTIFY — 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.

200 (OK)

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

MBCP Connect message
protocol = RTCP APP
— The PoC Server A sends the MBCP Connect message to the PoC Client A and informs the PoC session identity.

MBCP Media Burst Acknowledgement
protocol = RTCP APP
— The PoC Client A acknowledges the reception of the MBCP Connect message.

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

allocate
PoC Floor
— The controlling PoC server allocates the floor to PoC Client A.

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	IMS				Wireless Network B	EventStudio System Designer 4.0
User Equipment A	IMS Network A		IMS Network B		User Equipment B	
PoC Client A	PoC Server A	IMS Core A	IMS Core B	PoC Server B	PoC Client B	29-Jun-08 11:31 (Page 2)

Talk Burst from PoC Client A to B

MBCP Media Burst Granted
protocol = RTCP APP

Permission to talk
— The floor has now been granted to PoC Client A.

MBCP Media Burst Taken
protocol = RTCP APP,
Granted SSRC = PoC Client A
— Indicate to PoC Client B that the floor has been assigned to PoC Client.

MBCP Media Burst Acknowledgement
protocol = RTCP APP
— Acknowledge the media burst taken message.

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

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

Voice — **RTP Media** — **RTP Media** — **RTP Media** — **Voice**

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

MBCP Media Burst Release
protocol = RTCP APP
— Release of the Push-to-Talk button results in the media floor being released.

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

MBCP Media Burst Idle
protocol = RTCP APP
— PoC Server A informs all users in the PoC session that the floor is available for another user to speak.

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

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.

MBCP Media Burst Request
protocol = RTCP APP
MBCP Media Burst Request
protocol = RTCP APP,
MB-Priority
— Request the floor for the session.

allocate
PoC Floor
— The controlling PoC server allocates the floor to PoC Client B.

MBCP Media Burst Granted
protocol = RTCP APP
MBCP Media Burst Granted
protocol = RTCP APP
— 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,
Granted SSRC = PoC Client B

MBCP Media Burst Acknowledgement
protocol = RTCP APP

PoC Client B Speaking Indication — Notify the user that the floor has been granted to PoC Client B.

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

Voice — **RTP Media** — **RTP Media** — **RTP Media** — **Voice**

Push-to-Talk Button Released — PoC Client B released the "Push-to-Talk" button to signal that he or she has stopped speaking.

MBCP Media Burst Release
protocol = RTCP APP
MBCP Media Burst Release
protocol = RTCP APP
— The burst release is passed to the controlling PoC Server (PoC Server A)

free
PoC Floor
— The controlling PoC server free the floor as PoC Client B relinquishes the floor.

MBCP Media Burst Idle
protocol = RTCP APP
— PoC Server A informs all users in the PoC session that the floor is available for another user to speak.

Floor is available indication
protocol = RTCP APP
— 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

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