GSM_Mobile Interfaces (Intra MSC Handover Call Flow)

Highway	GSM Coverage				GSM Equipment	EventHelix.com/EventStudio 2.5
GSM Mobile	Bethesda		Rockville		MSC VLRs	
Mobile	Bethesda Cell	Bethesda BSC	Rockville Cell	Rockville BSC	Maryland MSC VLR	31-Dec-04 08:05 (Page 1)

This call flow was generated with EventStudio 2.5 (http://www.EventHelix.com/EventStudio).

How does a GSM mobile phone maintain a call even when moving from one cell to another?

The calls are maintained by handing over a call from one cell to another. This call flow covers a simple case of call handover in GSM. Here a user has an active call and is moving from the Rockville Cell to the Bethesda Cell. As the user moves, the call will be handed over by the Rockville Cell to the Bethesda Cell.

The GSM Mobile has an active call in the Rockville Cell.

1:RR MEASUREMENT REPORT
Signal Quality = GOOD

When a call is active, the mobile periodically reports the signal quality to the network via the Measurement Report message. This message is sent in every SACCH frame with a periodicity of 480 ms. The measurement report also includes the signal quality measurements for neighboring cells.

The user reaches the boundary between the Rocville Cell and Bethesda cell.

2:RR MEASUREMENT REPORT
Signal Quality = POOR

The mobile is at the edge of the Rockville cell and it reports that it is seeing a much weaker signal from the Rockville cell.

3:RR HANDOVER COMMAND
Handover Reference, TCH

The Rockville BSC extracts the RR HANDOVER COMMAND message from the BSSMAP message and sends it to the mobile.

Tune to the channel specified in the handover command

The extracts the destination channel information from the message and tunes to the assigned channel.

4:RR HANDOVER ACCEPT
Access Burst, Handover Reference

After tuning to the assigned channel, the mobile starts sending the handover accept message. Note that this message is sent as an access burst as the mobile is not completely synchronized to send normal bursts.

5:T3124

The T3124 timer is started to await the PHYSICAL INFORMATION message from the network.

6:RR PHYSICAL INFORMATION
Handover Reference

The mobile applies the received corrections and can now send TCH bursts on the channel. TCH bursts contain the speech from the user.

7:T3124

T3124 is stopped as PHYSICAL INFORMATION message has been received.

8:RR SABM

Mobile sends a SABM to establish the signaling connection.

9:RR UA

The BSC replies with a UA message.

10:RR HANDOVER COMPLETE

The mobile uses the signaling connection to indicate that the handover has been completed.

Release call resources in Rockville BSC.

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How does a GSM mobile phone maintain a call even when moving from a cell controlled by one MSC to a cell controlled by a different MSC?

The calls are maintained by handing over the call from the source MSC to the target MSC. The MAP/E protocol is used to manage the interactions between the source MSC and the target MSC.

In this example, a user has an active call and is moving from the Rockville Cell to the Bethesda Cell. As the user moves, the call will be handed over by the Rockville Cell to the Bethesda Cell. The Bethesda cell and the Rockville cell are controlled by different MSCs, thus an Inter-MSC hardover will be performed from the Rockville MSC to the Bethesda MSC.

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