
This scenario describes the call setup for a GSM originating call. A mobile user calling a land line subscriber is covered here. Copyright © 2000-2008 EventHelix.com Inc. All Rights Reserved.

Enable Ciphering

Since the subscriber has been successfully authenticated, the MSC initiates ciphering of the data being sent on the channel. The channel is ciphered so as to protect the call from eavesdropping. Ciphering on the radio link is enabled in three steps. As a first step, the BSS starts expecting ciphered data from the mobile but continues to send data in clear. Since the mobile has not been informed about the ciphering, all data received from the mobile will be in error. The BSS sends the CIPHERING MODE COMMAND to the mobile. The mobile will be able to receive this message as the transmission from the BSS is still in clear.

As a second step, the Mobile receives the message and enables ciphering in transmit and receive directions. The action will result in all BSS data being received in error. (The BSS is still transmitting data in clear.) Ciphering has already been enabled, so this message is transmitted with ciphering. The BSS will receive this message as it is already expecting ciphered data in the receive direction. The third and final step in the ciphering handshake. The BSS enables the ciphering in transmit direction. From this point on, ciphering is enabled in both directions. BSS replies back to the MSC, indicating that ciphering has been successfully enabled.

 Call Setup

The Mobile sends the setup message to establish a voice call. The message contains the dialed digits and other information needed for call establishment. The mobile is informed that the call setup is in progress.

At this point, the mobile phone displays a message on the screen to indicate that call setup is being attempted.

Mode Modify

The MSC allocates a voice circuit on one of the digital trunks between the MSC and the BSS.
BSSMAP ASSIGNMENT REQUEST

Voice circuit

MSC informs the BSS about the allocated voice circuit. The call is also switched from signaling to voice.

The BSS notifies the Mobile about the changeover to voice mode.

Mobile acknowledges.

The BSS responds back to the MSC.

The MSC routes the call and sends the call towards the called subscriber.

The PSTN indicates to the MSC that it has received all the digits and the called subscriber is being rung.

The BSSMAP ASSIGNMENT COMPLETE

The BSS responds back to the MSC.

ISUP INITIAL ADDRESS MESSAGE

SS7, Dialed Digits

The MSC routes the call and sends the call towards the called subscriber.

The PSTN indicates to the MSC that it has received all the digits and the called subscriber is being rung.

The BSSMAP ASSIGNMENT COMPLETE

The BSS responds back to the MSC.

ISUP ADDRESS COMPLETE MESSAGE

SS7

The PSTN indicates to the MSC that it has received all the digits and the called subscriber is being rung.

The BSSMAP ASSIGNMENT COMPLETE

The BSS responds back to the MSC.

ISUP ANSWER

SS7

The called subscriber answers the call.

Acknowledge the receipt of CC CONNECT.

Display that the call has been connected.

CC ALERTING

The MSC informs the mobile that the called subscriber is being alerted via a ring

Alerting Tone

CC CONNECT

The MSC informs the mobile that the called subscriber is being alerted via a ring

Connected

ISUP ANSWER

SS7

The called subscriber answers the call.

Acknowledgethe receipt of CC CONNECT.

Display that the call has been connected.

CC CONNECT ACKNOWLEDGE

Mobile acknowledges.

The call has entered the conversation phase. The speech path has been setup between the mobile subscriber and the land-line subscriber.

Conversation

Speech

The call has entered the conversation phase. The speech path has been setup between the mobile subscriber and the land-line subscriber.

Call Release

End Button

LEG: Mobile initiates call release

The mobile subscriber hits End to clear the call.

The mobile initiates call release on the PSTN side.

The MSC disconnects the voice path and also releases the voice circuit between the BSS and the MSC.

The MSC informs the Mobile that it has initiated call release

TheMSC informs the PSTN that the call release has been completed.

The PSTN informs that call release has been completed at its end.

Mobile indicates that the call has been released.

Call Released Indication

Call Release complete

BSSMAP CLEAR COMMAND

Call release has been completed, now the RR connection is released by the MSC.

The BSS initiates RR release with the mobile.

The BSS informs the the MSC that the RR connection has been released.

The mobile sends a disconnect message to release the LAPm connection.

The BSS replies with an Unnumbered Acknowledge message.

The BSS releases the TCH channel.

Mobile goes back to the default display to indicate that call has been completely released.

RR CONNECTION RELEASE

BSSMAP CLEAR COMPLETE

Call release has been completed, now the RR connection is released by the MSC.

The BSS initiates RR release with the mobile.

The BSS informs the the MSC that the RR connection has been released.

The mobile sends a disconnect message to release the LAPm connection.

The BSS replies with an Unnumbered Acknowledge message.

The BSS releases the TCH channel.

Mobile goes back to the default display to indicate that call has been completely released.

RR DISC

The mobile sends a disconnect message to release the LAPm connection.

The BSS replies with an Unnumbered Acknowledge message.

The BSS releases the TCH channel.

Mobile goes back to the default display to indicate that call has been completely released.

RR UA

The BSS replies with an Unnumbered Acknowledge message.

The BSS releases the TCH channel.

Mobile goes back to the default display to indicate that call has been completely released.