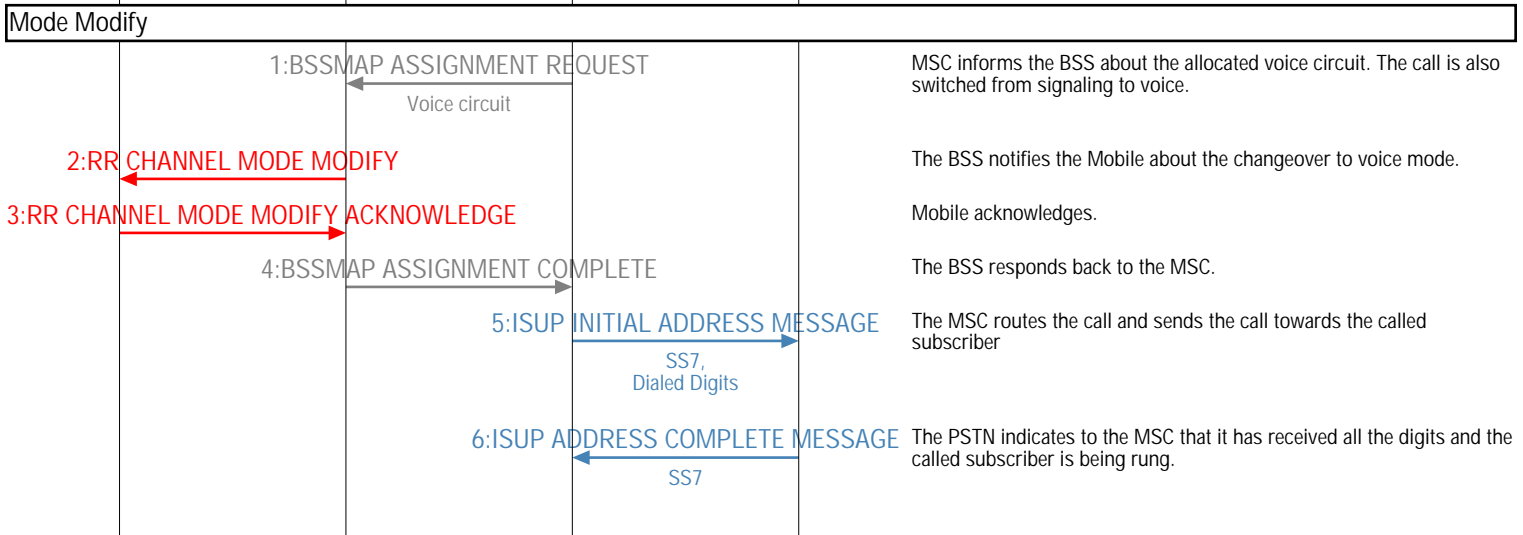
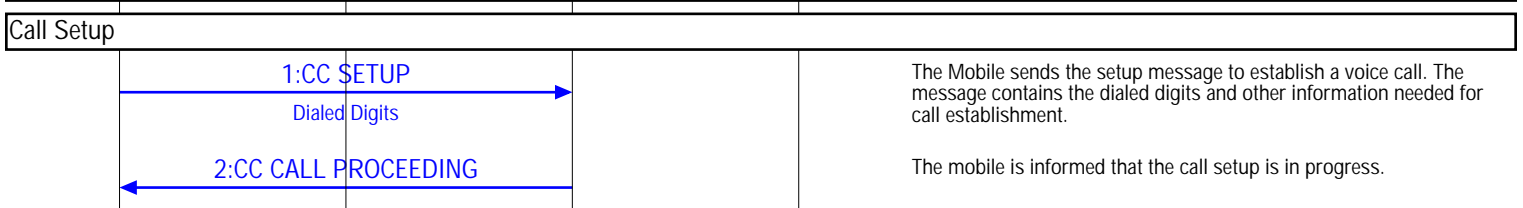
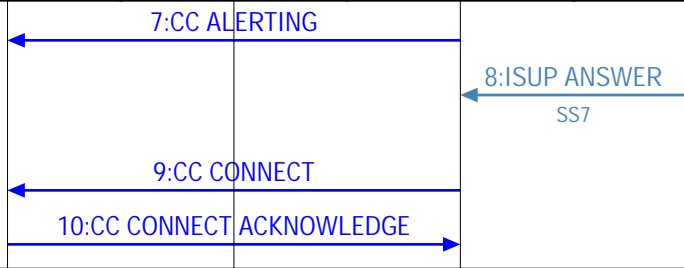


RR Connection Establishment Completed



Processor Interfaces (GSM Originating Call)

Cell	Mobile Network		Fixed Network	EventStudio System Designer 4.0
Mobile Station	Base Stations	NSS	PSTN	23-Feb-07 06:54 (Page 2)

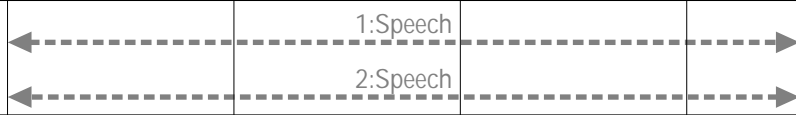


The MSC informs the mobile that the called subscriber is being alerted via a ring
The called subscriber answers the call.

The MSC informs the mobile that the call has been answered.

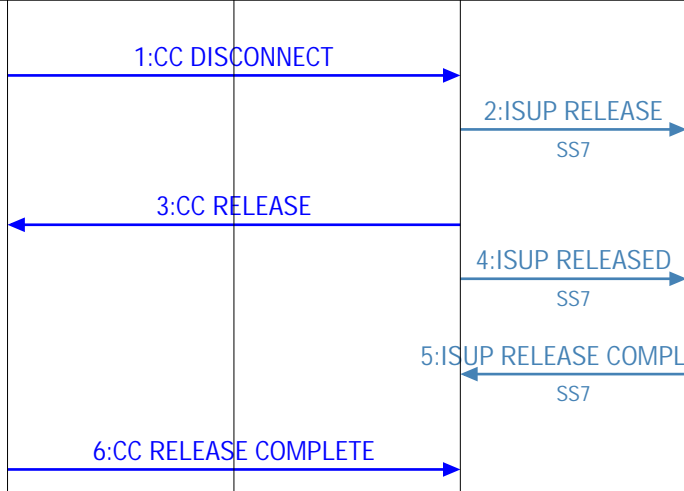
Acknowledge the receipt of CC CONNECT.

Conversation



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

Call Release



LEG: Mobile initiates call release
The mobile sends the disconnect message to the MSC.

The MSC initiates release on the PSTN side.

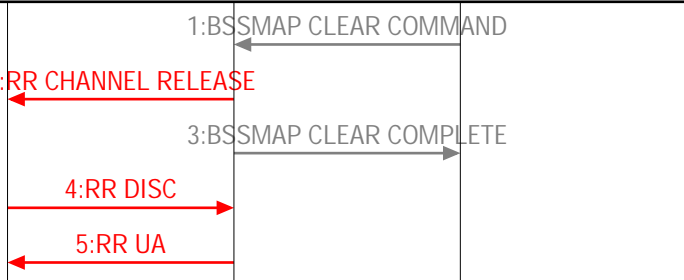
The MSC informs the Mobile that it has initiated call release

The MSC 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.

RR Connection Release



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.

Processor Interfaces (Mobile Terminated Call)				
Cell	Mobile Network		Fixed Network	EventStudio System Designer 4.0
Mobile Station	Base Stations	NSS	PSTN	23-Feb-07 06:54 (Page 3)

LEG: GSM Mobile Terminated Call

1: BSSMAP PAGING

2: RR PAGING REQUEST TYPE 1

Begin RR Connection Establishment

1: RR CHANNEL REQUEST

RACH

2: RR IMMEDIATE ASSIGNMENT

AGCH,
Radio_Resource = (TCH, Frequency, Timeslot),
Time Correction,
Frequency Correction

RR connection establishment is triggered by sending the Channel Request message. This message requests the Base Station System (BSS) for allocation for radio resources for the RR connection setup. The mobile now waits for an assignment on the Access Grant Channel (AGCH). At this point the mobile is listening to the AGCH for a reply.

The BSS transmits the radio resource assignment to the Mobile via the AGCH channel. The message also contains the time and frequency corrections. The time corrections allow the mobile to time its transmissions so that they reach the BSS only in the specified slot. The frequency corrections correct for the Doppler shift caused by the mobile's motion.

The BSS replies with Unnumbered Acknowledge (UA) to complete the LAPm setup handshake

The BSS receives the CM Service Request message from the mobile and forms a "BSSMAP COMPLETE LAYER 3 INFORMATION". The BSS then piggy backs the message on the SCCP connection request message.

LEG: Initiate Authentication Procedure

3: RR SABM + RR PAGING RESPONSE

TCH,
SAPI = 0

4: RR UA

TCH,
SAPI = 0

5: SCCP CONNECTION REQUEST + MM CM SERVICE REQUEST

SS7

6: MM AUTHENTICATION REQUEST

RAND

7: MM AUTHENTICATION RESPONSE

SRES

Enable Ciphering

1: BSSMAP CIPHER MODE COMMAND

2: RR CIPHERING MODE COMMAND

mode = CLEAR

3: RR CIPHERING MODE COMPLETE

mode = CIPHERED

4: BSSMAP CIPHER MODE COMPLETE

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.

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.

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.

BSS replies back to the MSC, indicating that ciphering has been successfully enabled.

RR Connection Establishment Completed

Call Setup

1: CC SETUP

Dialed Digits

2: CC CALL PROCEEDING

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.

Mode Modify

1: BSSMAP ASSIGNMENT REQUEST

Voice circuit

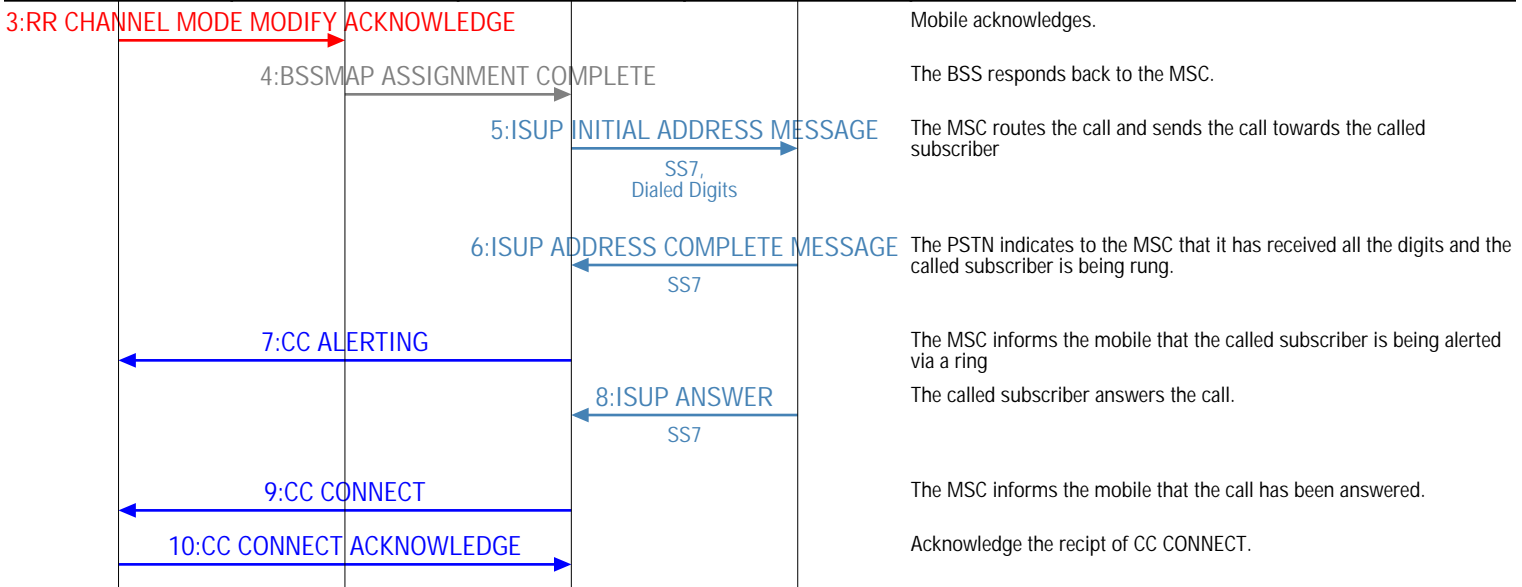
2: RR CHANNEL MODE MODIFY

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

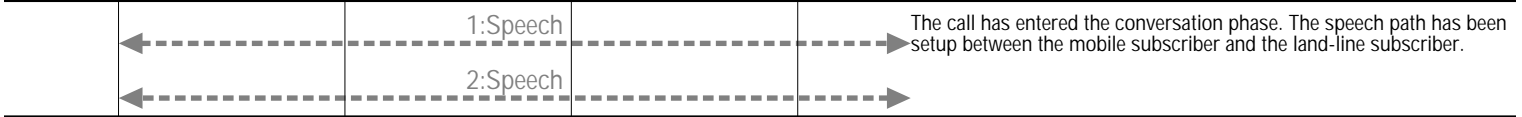
The BSS notifies the Mobile about the changeover to voice mode.

Processor Interfaces (Mobile Terminated Call)

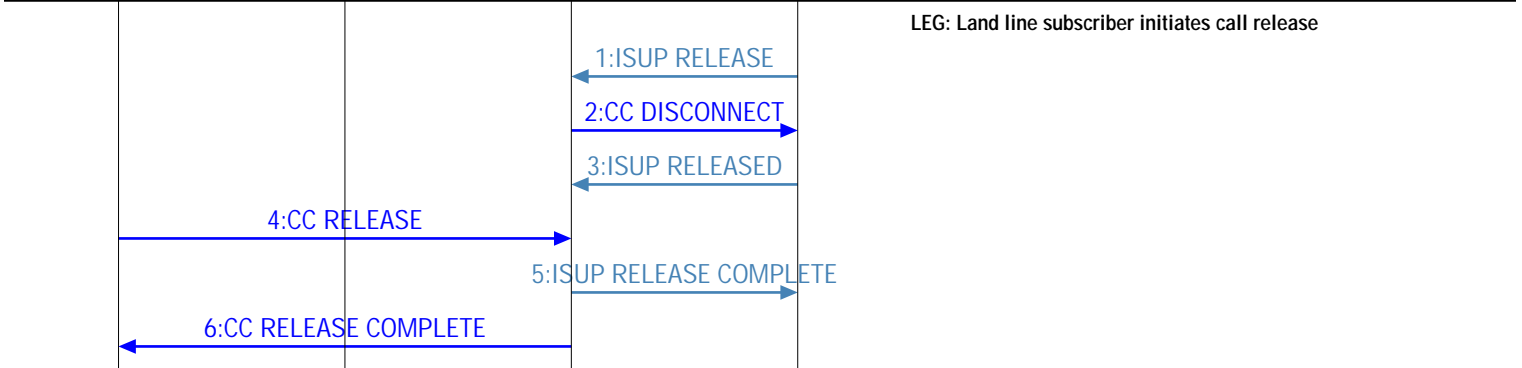
Cell	Mobile Network	Fixed Network	EventStudio System Designer 4.0
Mobile Station	Base Stations	NSS	PSTN
			23-Feb-07 06:54 (Page 4)



Conversation



Call Release



RR Connection Release

