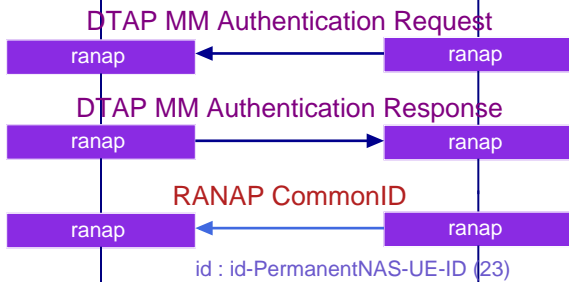A 3G-UMTS originating call is described here. Setup radio bearers and RANAP signaling are covered in detail. You can click on most RANAP messages to see the full content of the message.

This call flow has been generated with from a Wireshark PCAP file using VisualEther (http://www.eventhelix.com/VisualEther/). The generated call flow was later modified with EventStudio (http://www.eventhelix.com/EventStudio/) to add comments and terminal level interactions.

DTAP MM CM Service Request

ranap → ranap

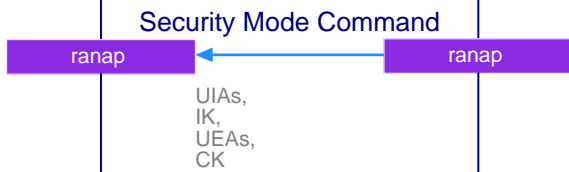BCD Digits : 123456780000000

The CM Service Request is the first message to be received for the call from the RNC. This message also sets up the SCCP connection between the RNC and the Core Network.
The "CM Service Request" also marks the start of an Iu connection.

Core Network decides that the terminal needs to be authenticated.

DTAP MM Authentication Request

ranap ← ranap

DTAP MM Authentication Response

ranap → ranap

RANAP CommonID

ranap ← ranap

id : id-PermanentNAS-UE-ID (23)

IMSI is sent to the RNC.

Core Network sends new keys for ciphering and integrity protection.
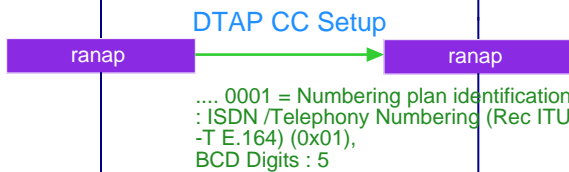
Security Mode Command

ranap ← ranap

UIAs,
IK,
UEAs,
CK

Core Network initiates ciphering and integrity Protection. The "MSC/VLR" sends the Security Mode Command message to RNC.

Security Mode Complete

ranap → ranap

DTAP MM CM Service Accept

ranap ← ranap

The Core Network accepts the service request.

DTAP CC Setup

ranap → ranap

.... 0001 = Numbering plan identification : ISDN /Telephony Numbering (Rec ITU-T E.164) (0x01),
BCD Digits : 5

Call Setup request is received from the RNC.

DTAP CC Call Proceeding

ranap ← ranap

"Core Network" signals that the call setup is proceeding.

RANAP RAB -Assignment

ranap → ranap

id : id -RAB -SetupOrModifiedList (52),
id : id -RAB -SetupOrModifiedItem (51),
id : id -Ass -RAB -Parameters (90)

RNC responds to Core Network after completing RB Setup with the Terminal.

DTAP CC Alerting

ranap ← ranap

Ask RNC to Notify the terminal that the subscriber is bering rung.

DTAP CC Connect

ranap ← ranap

Notify the RNC that the called subscriber has answered.

DTAP CC Connect Acknowledge

| ranap | → | ranap |
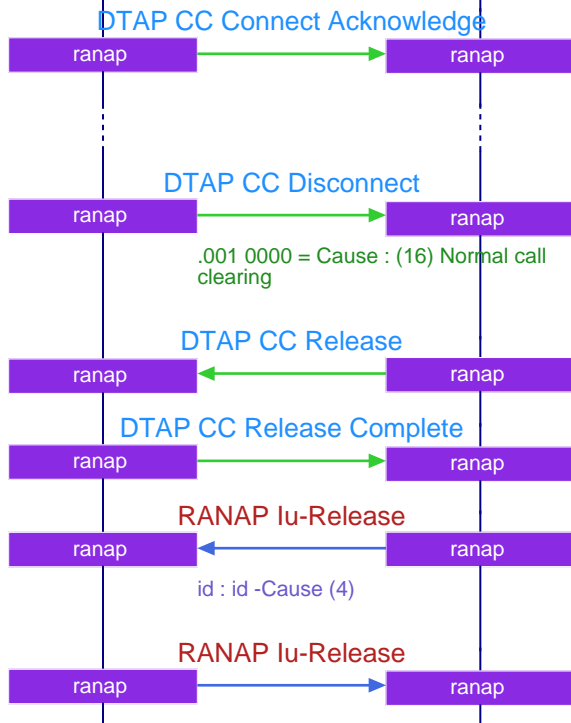
RNC responds back with completion of connect.

DTAP CC Disconnect

| ranap | → | ranap |

.001 0000 = Cause : (16) Normal call clearing

RNC sends call disconnect to the Core Network.

DTAP CC Release

| ranap | ← | ranap |

Core Network releases the session.

DTAP CC Release Complete

| ranap | → | ranap |

RNC signals release complete to Core Network

RANAP Iu-Release

| ranap | ← | ranap |

id : id -Cause (4)

Core Network initiates the Iu release.

RANAP Iu-Release

| ranap | → | ranap |

RNC signals back the release of the Iu connection.

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Explore more call flow diagrams at: http://www.eventhelix.com/realtimemantra/telecom/