3GPP TSG CT Meeting #28   **CP-050071**
1ˢᵗ – 3ʳᵈ June 2005. Quebec, CANADA.

Source:	**TSG CT WG1**
Title:	**CR to Rel-6 WI "TEI6" for TSs 24.008 and 23.009 (SCUDIF related CRs)**
Agenda item:	**9.24**
Document for:	**APPROVAL**

This document contains 4 **CRs for Rel-6 WI "TEI6"**, that have been agreed by TSG CT WG1 meeting #38 and forwarded to TSG CT Plenary meeting #28 for approval.

TDoc #	Tdoc Title	Spec	CR #	Rev	CAT	C_Version	WI	Rel
C1-050738	SCUDIF: Introduction of a Network-initiated Service Upgrade capability	24.008	990	1	F	6.8.0	TEI6	Rel-6
C1-050739	SCUDIF: Introduction of a Network-initiated Service Upgrade indicator	24.008	991	1	F	6.8.0	TEI6	Rel-6
C1-050749	SCUDIF: Introduction of a new timer for service change	24.008	983	1	F	6.8.0	TEI6	Rel-6
C1-050764	Full RANAP support of network initiated SCUDIF	23.009	104	2	F	6.0.0	TEI6	Rel-6

CR-Form-v7.1

CHANGE REQUEST

⌘ **24.008** CR **990** ⌘ **rev** **1** ⌘ Current version: **6.8.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME **X** Radio Access Network ☐ Core Network **X**

Title: ⌘	SCUDIF: Introduction of a Network-initiated Service Upgrade capability

Source: ⌘	Ericsson, Orange, Nokia, Nortel Networks, Vodafone		
Work item code: ⌘	TEI6	***Date:*** ⌘	28/04/2005

Category: ⌘ **F**

Use <u>one</u> of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature)*,
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Release: ⌘ Rel-6

Use <u>one</u> of the following releases:
Ph2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*
Rel-7 *(Release 7)*

Reason for change: ⌘	It has to be ensured that the user's speech connection is not broken before user's terminal acknowledges a network-initiated service upgrade. This cannot be guaranteed for terminals not able to maintain the speech connection (e.g. Rel-5 terminals that implement SCUDIF). That implies that the network needs to know whether the mobile station is able to support the network-initiated service upgrade for SCUDIF calls as this has significantly different implications to the user. Therefore, a new indication in the Call Control Capabilities Information Element (IE) is therefore required to be used for the SETUP and CALL CONFIRMED messages to, indicate that the the mobile station supports the network-initiated service upgrade funtionality for SCUDIF as described in the stage 2 specification (i.e. TS 23.172).
Summary of change: ⌘	A new indication in the Call Control Capabilities Information Element (IE) is added in order to be included in the SETUP (MS to network direction) and CALL CONFIRMED messages.
Consequences if not approved: ⌘	The mobile terminal is unable to signal the support of the network-initiated service upgrade as defined in TS 23.172. This results in providing the network-initiated service upgrade to terminals which cannot take any advantage to this functionality (i.e. the Rel-5 terminals breaks the speech connection anyhow). This leads to a deterioration of the current Release 5 service which is unacceptable and not required.
Clauses affected: ⌘	5.2.1, 5.2.2.3.1, 10.5.4.5a

		Y	**N**			
Other specs ⌘		**X**		Other core specifications	⌘	TS 23.172 (CR40), TS 24.008 (CR991)
affected:			**X**	Test specifications		
			X	O&M Specifications		
Other comments: ⌘						

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

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3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

1st Change

5.2.1 Mobile originating call establishment

The call control entity of the mobile station initiates establishment of a CC connection by requesting the MM sublayer to establish a mobile originating MM connection and entering the "MM connection pending" state. There are two kinds of a mobile originating call: basic call and emergency call. The request to establish an MM connection shall contain a parameter to specify whether the call is a basic or an emergency call. This information may lead to specific qualities of services to be provided by the MM sublayers. Timer T303 is started when the CM SERVICE REQUEST message is sent.

For mobile stations supporting eMLPP basic calls may optionally have an associated priority level as defined in 3GPP TS 23.067 [88]. This information may also lead to specified qualities of service to be provided by the MM sublayers.

While being in the "MM connection pending" state, the call entity of the mobile station may cancel the call prior to sending the first call control message according to the rules given in subclause 4.5.1.7.

The mobile station supporting multicall that is initiating an emergency call shall release one or more existing call to ensure the emergency call can be established if the multicall supported information stored in the mobile station described in subclauses 5.2.1.2 and 5.2.2.1 indicates the network does not support multicall and some ongoing calls exists.

Having entered the "MM connection pending" state, upon MM connection establishment, the call control entity of the mobile station sends a setup message to its peer entity. This setup message is

- a SETUP message, if the call to be established is a basic call, and

- an EMERGENCY SETUP message, if the call to be established is an emergency call.

The mobile station then enters the "call initiated" state. Timer T303 is not stopped.

The setup message shall contain all the information required by the network to process the call. In particular, the SETUP message shall contain the called party address information.

If the mobile station supports multicall, it shall include the Stream Identifier (SI) information element. For the first call i.e. when there are no other ongoing calls the SI value shall be 1.

For speech calls the mobile station shall indicate all codecs that it supports for UTRAN in the *Supported Codec List* information element. Codecs for GERAN shall be indicated in the *Bearer Capability* information element, if this information element is included. Additionally, if the mobile station supports codecs for GERAN and UTRAN, it shall indicate the codecs for GERAN also in the *Supported Codec List* information element.

If the MS supports the enhanced network-initiated in-call modification procedure as specified in subclause 5.3.4.3, the MS shall indicate this in the *Call Control Capabilities* IE in the SETUP message.

If timer T303 elapses in the "MM connection pending" state, the MM connection in progress shall be aborted and the user shall be informed about the rejection of the call.

Next Change

5.2.2.3.1 Response to SETUP

Having entered the "call present state" the call control entity of the mobile station shall - with the exception of the cases described below - acknowledge the SETUP message by a CALL CONFIRMED message, and enter the "mobile terminating call confirmed" state.

If the mobile station supports multicall, it shall include the Stream Identifier (SI) information element in the CALL CONFIRMED message.

If the mobile station is located in the network supporting multicall, it shall never include the SI that is in use and shall include with either of the following two values:

- SI="no bearer";

- SI=new value (not used by any of the existing bearers).

If the mobile station supporting multicall is located in the network not supporting multicall, it shall include the SI with value 1.

The call control entity of the mobile station may include in the CALL CONFIRMED message to the network one or two bearer capability information elements to the network, either preselected in the mobile station or corresponding to a service dependent directory number (see 3GPP TS 29.007 [38]). The mobile station may also use the *backup bearer capability* IE, if provided by the network, to deduce the requested service (see 3GPP TS 27.001, subclause 8.3.3.1). The mobile station may also include one or two bearer capabilities in the CALL CONFIRMED message to define the radio channel requirements. In any case the rules specified in subclause 9.3.2.2 shall be followed.

NOTE: The possibility of alternative responses (e.g., in connection with supplementary services) is for further study.

For speech calls the mobile station shall indicate all codecs that it supports for UTRAN in the *Supported Codec List* information element. Codecs for GERAN shall be indicated in the *Bearer Capability* information element, if this information element is included. Additionally, if the mobile station supports codecs for GERAN and UTRAN, it shall indicate the codecs for GERAN also in the *Supported Codec List* information element.

If the MS supports the enhanced network-initiated in-call modification procedure as specified in subclause 5.3.4.3, the MS shall indicate this in the *Call Control Capabilities* IE in the CALL CONFIRMED message.

A busy MS which satisfies the compatibility requirements indicated in the SETUP message shall respond either with a CALL CONFIRMED message if the call setup is allowed to continue or a RELEASE COMPLETE message if the call setup is not allowed to continue, both with cause #17 "user busy".

If the mobile user wishes to refuse the call, a RELEASE COMPLETE message shall be sent with the cause #21 "call rejected".

In the cases where the mobile station responds to a SETUP message with RELEASE COMPLETE message the mobile station shall release the MM connection and enter the "null" state after sending the RELEASE COMPLETE message.

The network shall process the RELEASE COMPLETE message in accordance with subclause 5.4.

Next Change

10.5.4.5a   Call Control Capabilities

The purpose of the Call Control Capabilities information element is to identify the call control capabilities of the mobile station.

The Call Control Capabilities information element is coded as shown in figure 10.5.89/3GPP TS 24.008 and table 10.5.116/3GPP TS 24.008.

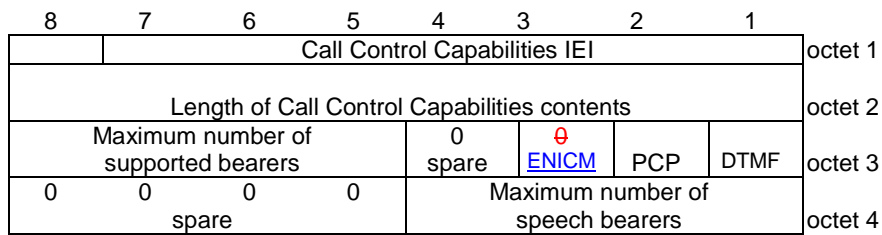The Call Control Capabilities is a type 4 information element with a length of 4 octets.

8	7	6	5	4	3	2	1	
		Call Control Capabilities IEI						octet 1
		Length of Call Control Capabilities contents						octet 2
Maximum number of supported bearers				0 spare	0 ENICM	PCP	DTMF	octet 3
0	0	0	0 spare		Maximum number of speech bearers			octet 4

Figure 10.5.89/3GPP TS 24.008 Call Control Capabilities information element

Table 10.5.116/3GPP TS 24.008: Call Control Capabilities

DTMF (octet 3, bit 1)
0   This value is reserved for earlier versions of the protocol.
1   This value indicates that the mobile station supports DTMF as specified in subclause 5.5.7 of the present document.

PCP (octet 3, bit 2)
0   This value indicates that the mobile station does not support the Prolonged Clearing Procedure
1   This value indicates that the mobile station supports the Prolonged Clearing Procedure.

ENICM (octet 3, bit 3)
0   This value indicates that the mobile station does not support the Enhanced Network-initiated In-Call Modification procedure.
1   This value indicates that the mobile station supports the Enhanced Network-initiated In-Call Modification procedure as specified in subclause 5.3.4.3 of the present document.

Maximum number of supported bearers (octet 3, bit 5 to bit 8)
0 0 0 0 1 bearer supported

All values are interpreted as the binary representation of the number of bearers supported.

Bit 5 of octet 3 is the least significant bit and bit 8 of octet 3 is the most significant bit.

Maximum number of speech bearers (octet 4, bit 1 to bit 4)

All values are interpreted as the binary representation of the number of bearers supported.

Bit 1 of octet 4 is the least significant bit and bit 4 of octet 4 is the most significant bit.

Note: In this version of the protocol, the MS should not indicate more than one speech bearer.

CR-Form-v7.1

CHANGE REQUEST

| ⌘ | **24.008** CR **991** | ⌘**rev** | **1** | ⌘ | Current version: | **6.8.0** | ⌘ |

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME **X** Radio Access Network ☐ Core Network **X**

Title: ⌘	SCUDIF: Introduction of the Network-initiated Service Upgrade indicator
Source: ⌘	Ericsson, Orange, Nokia, Nortel Networks, Vodafone
Work item code: ⌘	TEI6		***Date:*** ⌘	25/04/2005

Category: ⌘	**F**		***Release:*** ⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can
be found in 3GPP TR 21.900.

Use one of the following releases:
Ph2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*
Rel-7 *(Release 7)*

Reason for change: ⌘	In release 6 the Network Initiated Service change is introduced which allows the network to request an In-Call-Modification to the terminal. While the user is being notified of this and is deciding (this would involve verbal agreement with the other party) to accept the upgrade or not, the terminal must ensure that the speech connection is not broken. Thus the terminal handling for network initiated In-Call-Modification shall be specified. As this must not interfere with a terminal that does not support this the MSC must check if the terminal identified its support at call establishment (as specified in CR990). The terminal shall also be able to differentiate for SCUDIF calls between network-intiated upgrade and user-initiated upgrade (received from the far end) as these have significantly different implications to the user, and then mobile manufacturers may develop user interfaces to support/interact with this. The network initiated upgrade is infact not a forced upgrade from the network but a request to the user if he wishes to upgrade and thus must be differentiated from an upgrade request from the far end. This indication is only required at toward the first user that is contacted by the network as for the other party if it receives a modify request without this indication it knows it is a request that has been either initiated by the other user or sanction/accepted by the other user after being asked by the network if he wishes to upgrade. So for example the user will receive "Far end User Wishes to Upgrade to Multi-Media" if the terminal receives a Modify request without the NISU indentifier whereas if the terminal receives the identifier then the user will receive "The Network detects that it is now capable to upgrade to multi-media, do you wish to upgrade ?". Therefore, a new Information Element (IE) is required in the MODIFY message to, indicate that the in-call modification procedure is performed as result of a network-initiated service upgrade from speech to

		multimedia call.
Summary of change: ⌘		In-Call-Modification procedures clarified for network initiated service change and a new 'Network-initiated Service Upgrade indicator' IE is added to the MODIFY (Network to MS direction) message.
Consequences if not approved: ⌘		Network Initiated Service Upgrade procedure does not work properly. The remote terminal is unable to distinguish whether the in-call modification procedure triggered from the network is because of a user-initiated or network-initiated service change.

Clauses affected: ⌘	5.3.4.3.1, 5.3.4.3.2, 5.3.6.3, 9.3.13, new 9.3.13.x, new 10.5.4.3x			

		Y	N			
Other specs affected:	⌘	X		Other core specifications	⌘	TS 23.172(CR040), TS 24.008 (CR990)
			X	Test specifications		
			X	O&M Specifications		

Other comments: ⌘	

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<div style="border:2px solid black; text-align:center">

1st Change

</div>

5.3.4.3.1   Initiation of in-call modification

The procedure is initiated by the requesting originating side in the "active" state of the call. It shall send a MODIFY message including the new mode to be changed to. The requesting originating side shall also; start timer T323; and enter the "mobile originating modify" state (mobile station side) or the "mobile terminating modify" state (network side). ~~Any internal resources necessary to support the next call mode shall be reserved.~~ The new mode given in the MODIFY message shall be one of those already negotiated and agreed during the establishment phase of the call. If the data call direction is different from the direction of the call setup a reverse call setup direction IE shall be included in the MODIFY message; otherwise this IE shall not be included.

If the in-call modification is originated by the mobile station, the mobile station shall reserve any internal resources necessary to support the next call mode, ~~The MODIFY originating side shall~~ stop sending Bm-channel information; and stop interpreting received Bm-channel information according to the old call mode.

If the in-call modification is originated by the network, the network may reserve any internal resources necessary to support the next call mode. The network shall stop sending Bm-channel information and stop interpreting received Bm-channel information according to the old call mode at the latest when it changes the channel configuration.

Upon receipt of the MODIFY message, the destination side shall check to ensure that the requested call mode can still be supported and if so, it shall initiate the reservation of any resources necessary to support the next call mode and enter the "mobile originating modify" (network side) or "mobile terminating modify" state (mobile station side).

5.3.4.3.2   Successful completion of in-call modification

If the destination network/mobile station receives a MODIFY message with a new mode which is already the actual one of the call the network/mobile station shall remain in the "active" state; send a MODIFY COMPLETE message with the actual mode; and shall not initiate anything else.

If the requested mode is speech and if during call establishment the network received a *Supported Codec List* IE, the network shall use this list to select the codec for UTRAN. If no *Supported Codec List* information element is received, then for UTRAN the network shall select the default UMTS speech codec according to subclause 5.2.1.11.

Codecs for GERAN shall be selected from the codecs indicated in the *Supported Codec List* information element or in the *Bearer Capability* information element. If neither a *Supported Codec List* information element nor a *Bearer Capability* information element is received, then for GERAN the network shall select GSM full rate speech version 1.

If the *Supported Codec List* IE is received, then the network shall indicate the codec selected for Iu mode to the mobile station via RANAP and RRC protocol in the NAS Synchronisation Indicator IE (see subclause 5.2.1.11).

If the in-call modification was originated by the mobile station, the mobile station and the network shall proceed as follows:

> If the requested mode is not the actual one and can be supported by the network it shall change the channel configuration, if required, and step on to any internal resources necessary to support the next call mode. If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. After successful change of the channel configuration it shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode; send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (network side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message.

> Upon receipt of the MODIFY COMPLETE message the mobile station shall: initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (mobile station side).

If the in-call modification was originated by the network, the mobile station and the network shall proceed as follows:

> If the requested mode is not the actual one and can be supported by the mobile station it shall ~~step on to~~ reserve any internal resources necessary to support the next call mode.

NOTE: For a change from speech to a different call mode, user interaction may be required, before the mobile decides that the requested mode can be supported.

If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. The mobile station shall send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (mobile station side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message. If the old call mode is speech, Tthe mobile station shall continue sending Bm-channel information and interpreting received Bm-channel information for speech until the network modifies its channel configuration.

UponAfter receipt of the MODIFY COMPLETE message the network shall: reserve any internal resources necessary to support the next call mode, stop sending Bm-channel information, and stop interpreting received Bm-channel information according to the old call mode, unless these actions were already performed earlier. Furthermore, the network shall change the channel configuration, if required; after successful change of the channel configuration initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (network side).

The mobile station shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode as soon as a suitable channel for the new mode is available.

In both cases:

For an alternate speech/facsimile group 3 service (refer to subclause 5.3.4) the old resources may still be kept reserved.

The reaction of the originating side if it had included a reverse call setup direction IE in the MODIFY message, but the destination side did not include the IE in the MODIFY COMPLETE message is implementation dependent.

5.3.4.3.3   Change of the channel configuration

In case the requested bearer capability cannot be supported by the current channel configuration the network shall initiate the assignment procedure and change the channel configuration accordingly.

5.3.4.3.4   Failure of in-call modification

5.3.4.3.4.1   Network rejection of in-call modification

If the network cannot support the change to the requested call mode or if the change of the channel configuration fails the network shall: release the resources which had been reserved for the alternation: send a MODIFY REJECT message with the old bearer capability and with cause # 58 "bearer capability not presently available" to the initiating mobile station; and enter the "active" state. If the change of the channel configuration fails, the network shall return to the internal resources required for the old call mode.

Upon receipt of the MODIFY REJECT message with the old bearer capability the initiating mobile station shall: stop timer T323; release any resources which had been reserved for the alternation; resume sending user channel information according to the present call mode; resume interpreting received user channel information according to the present call mode; and enter the "active" state.

5.3.4.3.4.2   Mobile station rejection of in-call modification

If the mobile station cannot support the change to the requested call mode, the mobile station shall: release any resources which had been reserved for the alternation; send a MODIFY REJECT message with the old bearer capability and cause # 58 "bearer capability not presently available", and enter the "active" state.

Upon receipt of the MODIFY REJECT message the network shall: stop timer T323, release any resources which had been reserved for the alternation.

5.3.4.3.4.3   Time-out recovery

Upon expiration of T323 in either the mobile station or the network the procedures for call clearing shall be initiated with cause # 102 "recovery on timer expiry".

5.3.4.4   Abnormal procedures

If a MODIFY, MODIFY COMPLETE or MODIFY REJECT message is received in the "disconnect indication", "disconnect request" (mobile station side only) or "release request" state then the received message shall be discarded and no action shall be taken.

If a MODIFY COMPLETE message indicating a call mode which does not correspond to the requested one is received or if a MODIFY REJECT message indicating a call mode which does not correspond to the actual one is received then the received message shall be discarded and no action shall be taken.

If a MODIFY message indicating a call mode which does not belong to those negotiated and agreed during the establishment phase of the call, is received, then a MODIFY REJECT message with the actual call mode and with cause # 57 "bearer capability not authorized" shall be sent back.
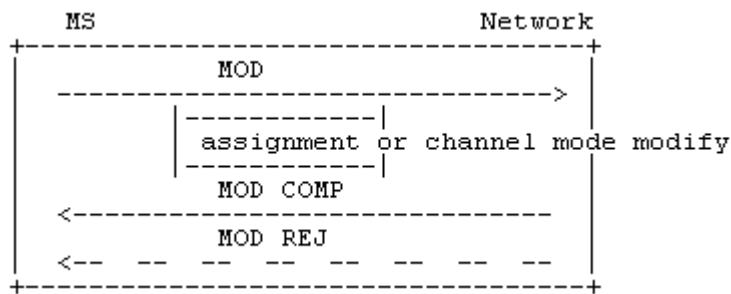
```
       MS                            Network
       +---------------------------------+
       |            MOD                  |
       |------------------------------->  |
       |   |------------|                |
       |   | assignment or channel mode modify
       |   |------------|                |
       |            MOD COMP             |
       | <-----------------------------  |
       |            MOD REJ              |
       | <--  --  --  --  --  --  --  -- |
       +---------------------------------+
```

Figure 5.10a/3GPP TS 24.008 In-call modification sequence initiated by MS

```
       MS                            Network
       +---------------------------------+
       |            MOD                  |
       | <-----------------------------  |
       |            MOD COMP             |
       |------------------------------->  |
       |            MOD REJ              |
       |  --  --  --  --  --  --  --  -> |
       |   |------------|                |
       |   | assignment or channel mode modify
       |   |------------|                |
       +---------------------------------+
```
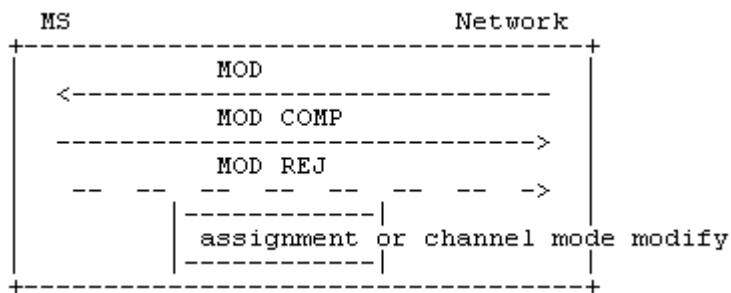
Figure 5.10b/3GPP TS 24.008 In-call modification sequence initiated by network

5.3.5   User initiated service level up- and downgrading (A/Gb mode and GERAN Iu mode only)

The user initiated service level up- and downgrading is applicable for non-transparent multislot data services, only. By means of this procedure the user can request a change of the "maximum number of traffic channels" and/or "wanted air interface user rate" parameters, to be assigned by the network.

5.3.5.1   Initiation of service level up- and downgrading

The procedure is initiated by the mobile station in the "active" state of the call. It shall:

-    send a MODIFY message including the wanted value of the "maximum number of traffic channels" and/or the "wanted air interface user rate" parameters;

-    not change any of the other, possibly negotiated, parameters of the bearer capability information element;

-    start timer T323; and

-    enter the "mobile originating modify" state.

Any internal resources necessary to support the next service parameters shall be reserved. If a dual service was negotiated at call setup, the mobile station shall initiate the service level up- or down-grading only during the data phase of the dual service.

Upon receipt of the MODIFY message, the network shall check if the indicated maximum number of traffic channels can be supported and enter the "mobile originating modify" state.

5.3.5.2   Successful completion of service level up- and downgrading

The network may upon reception of the MODIFY message initiate a change of the channel configuration assigned to the mobile station.

As a response to the MODIFY message the network sends a MODIFY COMPLETE message including the bearer capability negotiated at call setup and enters the "active" state.

Upon receipt of the MODIFY COMPLETE message the mobile station shall stop timer T323 and enter the "active" state.

5.3.5.3   Rejection of service level up- and downgrading

If a change of bearer service is requested together with a change of the "maximum number of traffic channels" and/or the "wanted air interface user rate", or if the current used service is not a data service where up- and downgrading is applicable, or if the receiver chooses not to grant the request, the network shall:

-   send a MODIFY REJECT message with bearer capability negotiated at call setup and with cause #58 "bearer capability not presently available";

-   enter the "active" state.

Upon receipt of the MODIFY REJECT message with the bearer capability negotiated at call setup, the mobile station shall: stop timer T323 and enter the "active" state.

5.3.5.4   Time-out recovery

Upon expiration of T323 in the mobile station the procedures for call clearing shall be initiated with cause #102 "recovery on timer expiry".

5.3.6   Support of multimedia calls

5.3.6.1   Service description

The 3GPP circuit-switched multimedia call is based on the 3G-324M [26.111], which is a 3GPP-variant of the ITU-T H.324 recommendation. CS Multimedia telephony is a Bearer Service, which utilizes the Synchronous Transparent Data service (BS30) [3].

At the multimedia call setup the required call type, 3G-324M, is indicated, for the network to be able to invoke appropriate interworking functionality. In the peer end the H.324 information is used to invoke the terminal application. In addition to H.324 indication the terminal must select Information Transfer Capability (ITC) for the multimedia call. The 'correct' ITC depends on the peer end and the transporting networks; an all-ISDN call is a UDI/RDI call, and a call, which involves PSTN, is an analog "3.1 kHz audio" call.

For the case when the setup of a multimedia call is not successful, fallback to speech is specified.

Users may also request a service change between UDI/RDI multimedia and speech modes during a call (see 3GPP TS 23.172 [97]).

5.3.6.2   Call establishment

For both mobile originating and mobile terminating calls, the normal call establishment procedures apply, with the exceptions specified in the following subclauses.

For further description of the function of MSC/IWF in the following clauses, see 3GPP TS 29.007 [38].

5.3.6.2.1 Mobile originated multimedia call establishment

At call setup the required call type, 3G-324M, is indicated by the originating MS in the SETUP message, with the *bearer capability IE* parameter Other Rate Adaptation set to "H.223 and H.245".

For analogue multimedia, the support of a fallback to speech is requested by including two *bearer capability IEs,* multimedia first and speech as the second BC in the SETUP message. The MS shall indicate fallback to speech by these two BC IEs and the associated Repeat Indicator set to "support of fallback".

For UDI/RDI multimedia, the support of a fallback and service change is requested by including two *bearer capability IEs*, with the first BC as the preferred service in the SETUP message. The MS shall indicate service change and fallback by these two BC IEs and the associated Repeat Indicator set to "support of service change and fallback".

The bearer compatibility checking in the network is according to 5.3.4.2.1.

If the MS requested for an analogue multimedia call with fallback to speech, or for a UDI/RDI multimedia call with fallback and service change, and the network accepts the call, the network has the following options for the inclusion of *bearer capability IEs* in the CALL PROCEEDING message:

- if the network accepts the requested analogue multimedia call and supports fallback to speech, both multimedia and speech *bearer capability IEs* shall be included;

- if the network accepts the requested UDI/RDI multimedia call and supports fallback and service change, both multimedia and speech *bearer capability IEs* shall be included. The order of the *bearer capability* IEs determines the preferred service, and the network may reverse the order of these IEs (see 3GPP TS 23.172 [97], subclause 4.2.1);

- if the network accepts a multimedia (only) call, a multimedia *bearer capability IE* shall be included;

- if the network accepts a speech (only) call, a speech *bearer capability IE* shall be included;

- for a UDI/RDI multimedia call, if the network accepts the requested speech call and supports service change, both multimedia and speech *bearer capability IEs* shall be included. The order of the *bearer capability* IEs determines the preferred service, and the network may reverse the order of these IEs (see 3GPP TS 23.172 [97], subclause 4.2.1);

- if the network received a UDI/RDI multimedia *bearer capability* IE with FNUR equal to 32kbit/s and a speech *bearer capability* IE in the SETUP message, the network shall not release the call, but shall reply with one *bearer capability* IE only, as specified in 3GPP TS 23.172 [97].

    NOTE: Service change and fallback for UDI/RDI multimedia calls is not supported with Fixed Network User Rate set to 32 kbit/s (see 3GPP TS 23.172 [97]).

If the MS requested for a multimedia call only, and the network accepts the call, the network shall always include a single multimedia *bearer capability IE* in the CALL PROCEEDING message.

The originating user shall determine (possibly by pre-configuration of the terminal) whether a digital connection is required or if the call will be an analog modem call. If the call is expected to be digital the multimedia *bearer capability* IE parameter ITC is set to UDI/RDI. In an analog call the multimedia *bearer capability* IE parameter ITC is set to "3,1 kHz audio ex PLMN". Additionally required modem type is indicated (Other Modem Type = V.34).

5.3.6.2.1.1 Fallback

If the network, during the setup of an H.324-call, detects that the transit network or the called end does not support an H.324 call (*e.g.* because of a failure in the modem handshaking in case of an analogue multimedia call), then the network initiates the in-call modification procedure (see subclause 5.3.4.3) towards the MS to modify the call mode to speech, if the MS had included a speech *bearer capability IE* in the SETUP message.

In case of a UDI/RDI multimedia call with service change and fallback, if the network detects that the called end does not support speech, then it initiates an in-call modification procedure towards the MS to modify the call mode to multimedia, if the first *bearer capability IE* was for a speech call.

5.3.6.2.2 Mobile terminating multimedia call

At call setup the required call type, 3G-324M, is indicated by the network in the SETUP message, with the *bearer capability IE* parameter. Other Rate Adaptation set to 'H.223 and H.245'. ITC is either '3,1 kHz audio ex PLMN' or 'UDI/RDI'.

For analogue multimedia, if the network supports fallback to speech and the subscriber has subscription to speech, two *bearer capability* IEs, multimedia first and speech as the second BC are included in the SETUP message. The network shall indicate fallback to speech by these two BC IEs and the associated Repeat Indicator set to "support of fallback".

For UDI/RDI multimedia, if the network supports fallback and service change, and the subscriber has subscription to speech, two *bearer capability IEs*, with the first BC as the preferred service are included in the SETUP message. The network shall indicate service change and fallback by these two BC IEs and the associated Repeat Indicator set to "service change and fallback".

The bearer capability IE(s) may (in the case of the single numbering scheme) be missing from the SETUP message.

The bearer compatibility checking in the MS is according to 5.3.4.2.2.

The MS shall indicate the supported call type(s) in the CALL CONFIRMED message, which is the acknowledgement to SETUP. If the network offered an analogue multimedia call with fallback to speech, or a UDI/RDI multimedia call with fallback and service change, the MS has the following options for the inclusion of *bearer capability IEs* in the CALL CONFIRMED message:

- if the MS/user accepts the offered analogue multimedia call and supports fallback to speech, both multimedia and speech *bearer capability IEs* shall be included;

- if the MS/user accepts the offered UDI/RDI multimedia call, and supports fallback and service change, both multimedia and speech *bearer capability IEs* shall be included. The order of the BC IEs determines the preferred service, and the MS/user may reverse the order of these IEs;

- if the MS/user accepts the offered multimedia call, but does not support fallback or service change, only a multimedia *bearer capability IE* shall be included;

- if the MS/user wishes a speech (only) call a speech *bearer capability IE* is included;

- for a UDI/RDI multimedia call, if the MS/user accepts the offered speech call and supports service change, both speech and multimedia *bearer capability IEs* shall be included. The order of the BC IEs determines the preferred service, and the MS/user may reverse the order of these IEs.

If the network offered a multimedia call only, and the MS/user accepts the call, the MS shall always include a single multimedia *bearer capability IE* in the CALL CONFIRMED message.

If the SETUP contained no *bearer capability IE* the network shall perform compatibility checking of the CALL CONFIRMED message in the same way as the compatibility checking of the SETUP message in the mobile originating call case, described in subclause 5.3.6.2.1.

5.3.6.2.2.1 Fallback to speech

If modem handshaking fails (in a modem call), the call mode will be modified to speech if a speech *bearer capability IE* was included. The modem signalling is inband, so the call must have reached the active state, when these conclusions about the presence of modems can be done. The call modifications are realized through the in-call modification procedure, by which the network requests the MS to modify the call mode (see subclause 5.3.4.3).

NOTE: Fallback from digital (UDI) H.324-call to speech after call setup is not a valid case at the terminating side.

5.3.6.3 In-call modification in the "active" state

The in-call modification procedure as described in chapter 5.3.4.3 shall be used to:

- trigger a service change between speech and UDI/RDI multimedia modes, when service change has been agreed at call setup; or

- trigger a network-initiated service upgrade from speech to UDI/RDI multimedia modes (see 3GPP TS 23.172 [97]). The network shall initiate this procedure only if the mobile station indicated support of the enhanced network-initiated in-call modification procedure in the Call Control Capabilities IE at call establishment. In this case, the MODIFY message shall include the *Network-initiated Service Upgrade indicator* IE; or

- modify the multimedia bearer capability for an analogue multimedia call (restricted to the network initiated in-call modification only). In this case, the network shall send a MODIFY message including the new Bearer Capability to be changed to. The following bearer capability parameters can be modified with the procedure (see 3GPP TS 29.007 [38]):

    [Editor's note: change format to B2]- Fixed Network User Rate (analogue multimedia calls only).

5.3.6.3.1   Void

5.3.6.3.2   Void

5.3.6.3.3   Void

5.3.6.3.3.1   Void

5.3.6.3.3.2   Void

Next Change

9.3.13   Modify

This message is sent by the mobile station to the network or by the network to the mobile station to request a change in bearer capability for a call.

See table 9.63/3GPP TS 24.008.

Message type: MODIFY

Significance: global

Direction: both

Table 9.63/3GPP TS 24.008: MODIFY message content

IEI	Information element	Type/Reference	Presence	Format	Length
	Call control protocol discriminator	Protocol discriminator 10.2	M	V	1/2
	Transaction identifier	Transaction identifier 10.3.2	M	V	1/2
	Modify message type	Message type 10.4	M	V	1
	Bearer capability	Bearer capability 10.5.4.5	M	LV	2-15
7C	Low layer comp.	Low layer comp. 10.5.4.18	O	TLV	2-18
7D	High layer comp.	High layer comp. 10.5.4.16	O	TLV	2-5
A3	Reverse call setup direction	Reverse call setup direction 10.5.4.22a	O	T	1
A4	Network-initiated Service Upgrade indicator	Network-initiated Service Upgrade indicator 10.5.4.3x	O	T	1

9.3.13.1　　　Low layer compatibility

This information element shall be included if it was included in the initial SETUP message.

9.3.13.2　　　High layer compatibility

This information element shall be included if it was included in the initial SETUP message.

9.3.13.3　　　Reverse call setup direction

This information element is included or omitted in the mobile to network direction according to the rules defined in subclause 5.3.4.3.1.

9.3.13.4　　　Void

9.3.13.x　　　Network-initiated Service Upgrade indicator

This information element shall be included only if the MODIFY message was sent by the network to switch from speech to UDI/RDI multimedia due to a network-initiated service upgrade.

Next Change

10.5.4.3x　　　Network-initiated Service Upgrade indicator

The purpose of the *Network-initiated Service Upgrade indicator* information element is to indicate to the mobile station that the in-call modification procedure is due to a network-initiated upgrade from speech to UDI/RDI multimedia (see 3GPP TS 23.172 [97]).

The *Network- initiated Service Upgrade indicator* information element is coded as shown in figure 10.5.118g/3GPP TS 24.008.

The *Network-initiated Service Upgrade indicator* is a type 2 information element with a length of 1 octet.
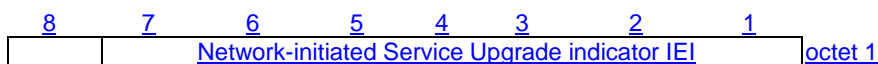
8	7	6	5	4	3	2	1	
	Network-initiated Service Upgrade indicator IEI							octet 1

Figure 10.5.118g/3GPP TS 24.008 Network-initiated Service Upgrade indicator information element

<div style="text-align:right">*CR-Form-v7.1*</div>

CHANGE REQUEST

| ⌘ | **24.008 CR 983** | ⌘**rev** | **1** | ⌘ | Current version: | **6.8.0** | ⌘ |

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects:　　UICC apps⌘ ☐　　　ME **X** Radio Access Network ☐　　Core Network ☐

Title: ⌘	SCUDIF: Introduction of a new timer for service change
Source: ⌘	Ericsson, LG Electronics
Work item code:⌘	TEI6　　　　　　　　　　　　　　　　**Date:** ⌘　11/04/2005
Category: ⌘	**F**　　　　　　　　　　　　　　　　　**Release:** ⌘　Rel-6

<div style="margin-left:2em">

Use <u>one</u> of the following categories:　　　　*Use <u>one</u> of the following releases:*
F *(correction)*　　　　　　　　　　　　Ph2　*(GSM Phase 2)*
A *(corresponds to a correction in an earlier release)*　R96　*(Release 1996)*
B *(addition of feature),*　　　　　　　　R97　*(Release 1997)*
C *(functional modification of feature)*　　R98　*(Release 1998)*
D *(editorial modification)*　　　　　　　R99　*(Release 1999)*
Detailed explanations of the above categories can　　Rel-4　*(Release 4)*
be found in 3GPP TR 21.900.　　　　　　　Rel-5　*(Release 5)*
　　　　　　　　　　　　　　　　　　　　Rel-6　*(Release 6)*
　　　　　　　　　　　　　　　　　　　　Rel-7　*(Release 7)*

</div>

Reason for change: ⌘	In Rel-5 the Service Change UDI/RDI Fallback (SCUDIF) was defined. This feature allows to change the service between speech and multimedia at any time during the call. A common scenario of service change is when the user wants to upgrade from speech call to multimedia (video telephony). The service change functionality re-uses the legacy in-call modification (ICM) procedure as specified by TS 24.008, sub-clause 5.3.4.3. However, because of the use of the legacy ICM procedure there is the possibility that the user (terminating mobile station) is indecisive or does not know about the request. This implies according to the legacy ICM procedure that T323 expiries in the originated mobile station, resulting in **disconnection** of the on-going call with cause #102 ("recovery on timer expiry"). Then, the service is lost (i.e. the complete loss of the call caused by initiation of service change) when speech is still possible and desirable to continue. Additionally, there is a **potentially a sizeable delay** (up to 30s) while the user accepts or rejects a service change. This means that the user, who triggers the service change, just hangs up after a short period of silence or seeing a progress window with no change of status. The value range of the timer should be lower than 30s to avoid the situation in which users hang up after a short period of time. In addition, the value range of the new timer has to allow for signalling faults over both air interfaces (i.e. O-MS and T-MS) as well as cover the time needed for the core network signalling involved in the service change (i.e. codec modification).

Summary of change: ⌘	A new timer is introduced in the mobile station for service change (SCUDIF) only. The solution is backwards compatible.	
Consequences if not approved: ⌘	The MS-initiated service change leads to disconnection of the on-going call when service change occurs, if the timer T323 expiries when continuation of the call is still possible with the originating mode (previously agreed mode, e.g. speech). This result in undesirable effects such as bad user perception and the service is degradated.	

Clauses affected: ⌘	5.3.4.3, 5.3.4.3.1, 11.3		

		Y	N		
Other specs affected: ⌘			X	Other core specifications ⌘	
			X	Test specifications	
			X	O&M Specifications	

Other comments: ⌘	

How to create CRs using this form:

Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm. Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<div style="border:2px solid black; text-align:center;">

1st Change

</div>

5.3.4.3   Changing the Call Mode

In order to change the call mode, the following in-call modification procedures shall be used.

Either side of the radio interface may act as the requesting user to invoke the in-call modification.

Upon each successful completion of the in-call modification procedure, the call changes to the next mode negotiated and agreed during the establishment phase of the call.

The in-call modification procedures are completely symmetrical at the radio interface.

NOTE: Considering a possible future evolution, in-call modification is specified as a symmetrical procedure.

5.3.4.3.1   Initiation of in-call modification

The procedure is initiated by the requesting originating side in the "active" state of the call. It shall send a MODIFY message including the new mode to be changed to; start timer T323; and enter the "mobile originating modify" state (mobile station side) or the "mobile terminating modify" state (network side). Any internal resources necessary to support the next call mode shall be reserved. The new mode given in the MODIFY message shall be one of those already negotiated and agreed during the establishment phase of the call. If the data call direction is different from the direction of the call setup a reverse call setup direction IE shall be included in the MODIFY message; otherwise this IE shall not be included. The MODIFY originating side shall stop sending Bm-channel information; and stop interpreting received Bm-channel information according to the old call mode.

Upon receipt of the MODIFY message, the destination side shall check to ensure that the requested call mode can still be supported and if so, it shall initiate the reservation of any resources necessary to support the next call mode; start T324 (mobile station side only) if the in-call modification procedure is triggered as a result of a service change from speech to UDI/RDI multimedia modes; and enter the "mobile originating modify" (network side) or "mobile terminating modify" state (mobile station side).

5.3.4.3.2   Successful completion of in-call modification

If the destination network/mobile station receives a MODIFY message with a new mode which is already the actual one of the call the network/mobile station shall remain in the "active" state; send a MODIFY COMPLETE message with the actual mode; and shall not initiate anything else.

If the requested mode is speech and if during call establishment the network received a *Supported Codec List* IE, the network shall use this list to select the codec for UTRAN. If no *Supported Codec List* information element is received, then for UTRAN the network shall select the default UMTS speech codec according to subclause 5.2.1.11.

Codecs for GERAN shall be selected from the codecs indicated in the *Supported Codec List* information element or in the *Bearer Capability* information element. If neither a *Supported Codec List* information element nor a *Bearer Capability* information element is received, then for GERAN the network shall select GSM full rate speech version 1.

If the *Supported Codec List* IE is received, then the network shall indicate the codec selected for Iu mode to the mobile station via RANAP and RRC protocol in the NAS Synchronisation Indicator IE (see subclause 5.2.1.11).

If the in-call modification was originated by the mobile station, the mobile station and the network shall proceed as follows:

> If the requested mode is not the actual one and can be supported by the network it shall change the channel configuration, if required, and step on to any internal resources necessary to support the next call mode. If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. After successful change of the channel configuration it shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode; send a MODIFY COMPLETE message with the new call mode included and enter the "active" state (network side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message.

Upon receipt of the MODIFY COMPLETE message the mobile station shall: initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (mobile station side).

If the in-call modification was originated by the network, the mobile station and the network shall proceed as follows:

If the requested mode is not the actual one and can be supported by the mobile station it shall step on to any internal resources necessary to support the next call mode. If the requested mode is a data or facsimile mode, it shall also perform the appropriate means to take the direction of the data call into account. The mobile station shall send a MODIFY COMPLETE message with the new call mode included, stop timer T324 and enter the "active" state (mobile station side). If the MODIFY message had contained a *reverse call setup direction* IE, the same IE shall be included in the MODIFY COMPLETE message.

Upon receipt of the MODIFY COMPLETE message the network shall: change the channel configuration, if required; after successful change of the channel configuration initiate the alternation to those resources necessary to support the next call mode; stop timer T323; and enter the "active" state (network side).

The mobile station shall start sending user information according to the next call mode and start interpreting received user channel information according to the next call mode as soon as a suitable channel for the new mode is available.

In both cases:

For an alternate speech/facsimile group 3 service (refer to subclause 5.3.4) the old resources may still be kept reserved.

The reaction of the originating side if it had included a reverse call setup direction IE in the MODIFY message, but the destination side did not include the IE in the MODIFY COMPLETE message is implementation dependent.

5.3.4.3.3 Change of the channel configuration

In case the requested bearer capability cannot be supported by the current channel configuration the network shall initiate the assignment procedure and change the channel configuration accordingly.

5.3.4.3.4 Failure of in-call modification

5.3.4.3.4.1 Network rejection of in-call modification

If the network cannot support the change to the requested call mode or if the change of the channel configuration fails the network shall: release the resources which had been reserved for the alternation: send a MODIFY REJECT message with the old bearer capability and with cause # 58 "bearer capability not presently available" to the initiating mobile station; and enter the "active" state. If the change of the channel configuration fails, the network shall return to the internal resources required for the old call mode.

Upon receipt of the MODIFY REJECT message with the old bearer capability the initiating mobile station shall: stop timer T323; release any resources which had been reserved for the alternation; resume sending user channel information according to the present call mode; resume interpreting received user channel information according to the present call mode; and enter the "active" state.

5.3.4.3.4.2 Mobile station rejection of in-call modification

If the mobile station cannot support the change to the requested call mode, the mobile station shall: stop timer T324; release any resources which had been reserved for the alternation; send a MODIFY REJECT message with the old bearer capability and cause # 58 "bearer capability not presently available", and enter the "active" state.

Upon receipt of the MODIFY REJECT message the network shall: stop timer T323, release any resources which had been reserved for the alternation.

5.3.4.3.4.3 Time-out recovery

Upon expiration of T323 in either the mobile station or the network the procedures for call clearing shall be initiated (see subclause 5.4) with cause # 102 "recovery on timer expiry".

Upon expiration of T324 the mobile station shall: release any resources which had been reserved for the alternation; send a MODIFY REJECT message with the old bearer capability and cause #58 "bearer capability not presently available"; and enter the "active" state.

5.3.4.4   Abnormal procedures

If a MODIFY, MODIFY COMPLETE or MODIFY REJECT message is received in the "disconnect indication", "disconnect request" (mobile station side only) or "release request" state then the received message shall be discarded and no action shall be taken.

If a MODIFY COMPLETE message indicating a call mode which does not correspond to the requested one is received or if a MODIFY REJECT message indicating a call mode which does not correspond to the actual one is received then the received message shall be discarded and no action shall be taken.

If a MODIFY message indicating a call mode which does not belong to those negotiated and agreed during the establishment phase of the call, is received, then a MODIFY REJECT message with the actual call mode and with cause # 57 "bearer capability not authorized" shall be sent back.
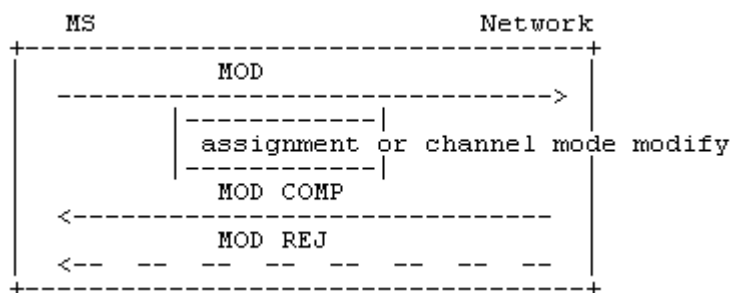
```
      MS                                     Network
      +-----------------------------------+
      |              MOD                   |
      |-------------------------------->   |
      |      |-----------|                  |
      |      | assignment or channel mode modify
      |      |-----------|                  |
      |            MOD COMP                 |
      |<--------------------------------    |
      |            MOD REJ                  |
      |<--  --  --  --  --  --  --  --      |
      +-----------------------------------+
```

Figure 5.10a/3GPP TS 24.008 In-call modification sequence initiated by MS

```
      MS                                     Network
      +-----------------------------------+
      |              MOD                   |
      |<--------------------------------    |
      |            MOD COMP                 |
      |-------------------------------->   |
      |            MOD REJ                  |
      | --  --  --  --  --  --  --  ->     |
      |      |-----------|                  |
      |      | assignment or channel mode modify
      |      |-----------|                  |
      +-----------------------------------+
```
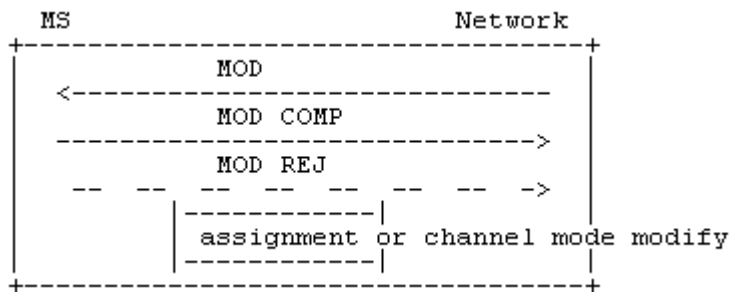
Figure 5.10b/3GPP TS 24.008 In-call modification sequence initiated by network

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Next Change

11.3   Timers of circuit-switched call control

Table 11.3/3GPP TS 24.008: Call control timers - MS side

TIM NUM.	TIM VAL	STATE OF CALL	CAUSE OF START	NORMAL STOP	AT FIRST EXPIRY	AT SECOND EXPIRY
T303	30s	Call initiated	CM SER RQ sent	CALL PROC, or REL COMP received	Clear the call	Timer is not restarted
T305	30s	Disconnect Request	DISC sent	REL or DISC received	REL sent.	Timer is not restarted
T308	30s	Release request	REL sent	REL COMP or REL received	Retrans. RELEASE restart T308	Call ref. release
T310 Note 1	30s	Outgoing call Proceeding	CALL PROC received	ALERT,CONN, DISC or PROG rec.	Send DISC	Timer is not restarted
T313	30s	Connect Request	CONN sent	CONNect ACKnowledge received	Send DISC	Timer is not restarted
T323	30s	Modify Request	MOD sent	MOD COMP or MOD REJ received	Clear the call	Timer is not restarted
T324	15s	Modify request	MOD received	MOD COMP or MOD REJ sent	MOD REJ with old bearer capability	Timer is not restarted
T332	30s	Wait for network info	START_CC sent	CC-EST. received	Clear the call	Timer is not restarted
T335	30s	CC-Est. Confirmed	CC-EST CONF.sent	RECALL received	Clear the call	Timer is not restarted
T336	10s		START DTMF sent	START DTMF ACK or START DTMF REJECT received	The MS considers the DTMF Procedure (for the digit) to be terminated	Timer is not restarted
T337	10s		STOP DTMF sent	STOP DTMF ACK received	The MS considers the DTMF procedure (for the current digit) to be terminated	Timer is not restarted

NOTE 1:   T310 is not started if progress indicator #1, #2, or #64 has been delivered in the CALL PROCEEDING message or in a previous PROGRESS message.

Table 11.4/3GPP TS 24.008: Call control timers - network side

TIM NUM.	DFT TIM VAL	STATE OF CALL	CAUSE FOR START	NORMAL STOP	AT FIRST EXPIRY	AT SECOND EXPIRY
T301 Note 1	Min180s	Call received	ALERT received	CONN received	Clear the call	Timer is not restarted
T303	Note 2	Call present	SETUP sent	CALL CONF or REL COMP received	Clear the call	Timer is not restarted
T305	30s	Disconnect Indication	DISC without progress indic. #8 sent or CCBS Possible	REL or DISC received	Network sends RELEASE	Timer is not restarted
T306	30s	Disconnect Indication	DISC with progress indic. #8 sent but no CCBS possible	REL or DISC received	Stop the tone/ announc. Send REL	Timer is not restarted
T308	Note 2	Release request	REL sent	REL COMP or REL received	Retrans. RELEASE restart T308	Release call reference
T310	Note 2	Incoming call proceeding	CALL CONF received	ALERT, CONN or DISC received	Clear the call	Timer is not restarted
T313	Note 2	Connect Indication	CON sent	CON ACK received	Clear the call	Timer is not restarted
T323	30s	Modify request	MOD sent	MOD COMP or MOD REJ received	Clear the call	Timer is not restarted
T331	Note 2	CC Connec. Pending	CM-SERV PROMPT sent	START CC received	Clear the call	Timer is not restarted
T333	Note 2	CC-Est. Present	START CC received	CC-EST.CONF or REL COMP received	Clear the call	Timer is not restarted
T334 Note 3	Min 15s	CC-Est. Confirmed	RECALL sent	SETUP received	Clear the call	Timer is not restarted
T338	Note 2	Disconnect indication	DISC with CCBS possible	REL or DISC received	stop any tone/ announc. Send REL	Timer is not restarted

NOTE 1: The network may already have applied an internal alerting supervision function; e.g. incorporated within call control. If such a function is known to be operating on the call, then timer T301 is not used.

NOTE 2: These time values are set by the network operator.

NOTE 3: When applied to the supplementary service CCBS, the timer T334 can either represent the recall timer T4 or the notification timer T10 (see 3GPP TS 23.093). Thus the timer T334 can take two different values. 3GPP TS 23.093 defines the range of these values.

CR-Form-v7.1

CHANGE REQUEST

⌘	**23.009** CR **104**	⌘**rev** **2** ⌘	Current version:	**6.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network **X**

Title:	⌘	Full RANAP support of network initiated SCUDIF
Source:	⌘	Nokia

Work item code:⌘	TEI6		*Date:* ⌘	15/04/2005

Category:	⌘	**F**		*Release:* ⌘	Rel-6

Use <u>one</u> of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use <u>one</u> of the following releases:
Ph2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*
Rel-7 *(Release 7)*

Reason for change:	⌘	CT3 and RAN3 have specified the solution for network-initiated service change for SCUDIF. For that solution to be complete there are requirements for 3G_MSC-A and 3G_MSC-B during handover/relocation. The information of alternative radio access bearer needs to be sent inside MSC and from anchor MSC towards non-anchor MSC and non-anchor MSC needs to be able to send the RAB parameters for the alternative radio access bearer to the RNS-B.

Summary of change:⌘	For a SCUDIF call the handling of the information of the alternative radio access bearer in 3G_MSC-A and 3G_MSC-B has been added.

Consequences if not approved:	⌘	The network-initiated service change for SCUDIF functionality would be incomplete.

Clauses affected:	⌘	2, 4.3.1, 4.4.1

		Y	N			
Other specs affected:	⌘	X		Other core specifications	⌘	29.002 – CR#751, 29.010 – CR#111
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

2   References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1]   ITU-T Recommendation Q.118: "Abnormal conditions - Special release arrangements".

[2]   Void.

[2a]   3GPP TR 21.905: "3G Vocabulary".

[3]   3GPP TS 43.068: "Voice Group Call Service (VGCS); Stage 2".

[4]   3GPP TS 45.008: "Radio Subsystem Link Control".

[5]   3GPP TS 48.008: "Mobile Switching Centre - Base Station System (MSC-BSS) Interface Layer 3 specification".

[6]   3GPP TS 48.058: "Base Station Controler - Base Transceiver Station (BSC-BTS) Interface Layer 3 specification".

[7]   3GPP TS 49.008: "Application of the Base Station System Application Part (BSSAP) on the E-interface".

[8]   3GPP TS 29.010: "Information Element Mapping between Mobile Station - Base Station System (MS-BSS) and Base Station System - Mobile-services Switching Centre (BSS-MSC); Signalling procedures and the Mobile Application Part (MAP)".

[9]   3GPP TS 22.129: "Handover Requirements between UMTS and GSM or other Radio Systems".

[10]   3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols; Stage 3".

[11]   3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".

[12]   3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[13]   3GPP TS 25.303: "UE functions and inter-layer procedures in connected mode".

[14]   3GPP TS 25.331: "Radio Resource Control (RRC) Protocol Specification".

[15]   3GPP TS 29.108: "Application of the Radio Access Network Application Part (RANAP) on the E-interface".

[16]   ITU-T Recommendation G.711: "Pulse code modulation (PCM) of voice frequencies".

[17]   3GPP TS 23.135: "Multicall supplementary service; Stage 2".

[18]   3GPP TS 23.236: "Intra Domain Connection of RAN Nodes to Multiple CN Nodes".

[19]   3GPP TS 23.221: "Architectural Requirements".

[20]   3GPP TS 25.401: "UTRAN Overall Description".

[21]   3GPP TS 23.195: "Provision of UE Specific Behaviour Information to Network Entities".

[xx]   3GPP TS 23.172: "Technical realization of Circuit Switched (CS) multimedia service; UDI/RDI fallback and service modification".

****   NEXT MODIFIED SECTION   ****

4.3.1   Role of 3G_MSC-A

In the Intra-3G_MSC handover/relocation case, the 3G_MSC-A (simply termed 3G_MSC) controls the call, the mobility management and the radio resources before, during and after an Intra-3G_MSC handover/relocation. When RANAP or BSSMAP procedures have to be performed, they are initiated and driven by 3G_MSC-A.

In a network implementing the "Flexible Iu interface for handover/relocation" option, 3G_MSC-A may optionally use a global title based on the Global RNC-Id for the addressing of the Iu interface messages towards the target RNC.

For handover/relocation to an area where "Intra Domain Connection of RAN Nodes to Multiple CN Nodes" is applied, 3G_MSC-A can have multiple target CN nodes for each handover/relocation target in a pool-area as specified in 3GPP TS 23.236 [18].

In the case of intra-MSC handover of a speech call, 3G_MSC-A controls the transcoder in the core network. The 3G_MSC-A determines if a transcoder is required to be inserted or released in the CN.

In the case of Inter-3G_MSC relocation, 3G_MSC-A links out the transcoder.

In the Inter-3G_MSC relocation case, 3G_MSC-A is the 3G_MSC that controls the call and the mobility management of the UE during the call, before, during and after a basic or subsequent relocation. When RANAP procedures related to dedicated resources have to be performed towards the UE, they are initiated and driven by 3G_MSC-A. The 3G_MSC-A - 3G_MSC-B interface works as a 3G_MSC - RNS interface for the RANAP procedures. The Direct Transfer signalling is relayed transparently by 3G_MSC-B between 3G_MSC-A and the UE.

During a successful relocation the order to perform location reporting at change of Service Area is not transferred to the target RNS. In the Intra-3G_MSC-A relocation case, the 3G_MSC-A re-issues the Location Reporting Control towards the target RNS. In the Inter-3G_MSC relocation case, 3G_MSC-A keeps the control of the Location Report Control procedure. However, re-issuing the Iu-LOCATION-REPORTING-CONTROL messages due to subsequent Intra-3G_MSC-B relocations is the responsibility of 3G_MSC-B.

During a basic relocation, 3G_MSC-A initiates and controls all the relocation procedure, from its initiation (reception of Relocation Required from RNS-A on Iu-interface) until its completion (reception of Relocation Complete from 3G_MSC-B on E-interface).

During a subsequent relocation back to 3G_MSC-A, 3G_MSC-A acts as an RNS towards 3G_MSC-B, which controls the relocation procedure until the termination in 3G_MSC-A of the handover radio resources allocation (sending of the Relocation Request Acknowledge to 3G_MSC-B from 3G_MSC-A). Then all relocation related messages shall terminate at 3G_MSC-A (e.g. Relocation Detect/Complete from RNS-B, Relocation Cancel from RNS-A).

During a subsequent relocation to a third 3G_MSC, 3G_MSC-A works towards 3G_MSC-B' as described above in the basic relocation paragraph and towards 3G_MSC-B as described above in subsequent relocation paragraph.

In the Inter-System, inter-3G_MSC handover case, 3G_MSC-A is the 3G_MSC which controls the call and the mobility management of the UE/MS during the call, before, during and after a basic or subsequent inter-system handover. When BSSAP procedures related to dedicated resources have to be performed towards the UE/MS, they are initiated and

driven by 3G_MSC-A. The 3G_MSC-A – MSC-B interface works as a 3G_MSC – BSS interface for a subset of BSSMAP procedures. These BSSMAP procedures described in 3GPP TS 09 08 [7] are those related to dedicated resources. The DTAP signalling is relayed transparently by MSC-B between 3G_MSC-A and the UE/MS.

During a basic inter-system UMTS to GSM handover, 3G_MSC-A initiates and controls all the handover procedure, from its initiation (reception of Relocation Required from RNS-A on Iu-interface) until its completion (reception of Handover Complete from MSC-B on E-interface).

During a subsequent inter-system UMTS to GSM handover back to 3G_MSC-A, 3G_MSC-A acts as a BSS towards 3G_MSC-B, which controls the handover procedure until the termination in 3G_MSC-A of the handover radio resources allocation (sending of the Handover Request Acknowledge to 3G_MSC-B from 3G_MSC-A). Then all handover related messages shall terminate at 3G_MSC-A (e.g. Handover Detect/Complete from BSS-B, Relocation Cancel from RNS-A).

During a subsequent inter-system UMTS to GSM handover to a third 3G_MSC, 3G_MSC-A works towards MSC-B' as described above in the basic inter-system handover paragraph and towards 3G_MSC-B as described above in subsequent inter-system handover paragraph.

During a basic inter-system GSM to UMTS handover, 3G_MSC-A initiates and controls all the handover procedure, from its initiation (reception of Handover Required from BSS-A on A-interface) until its completion (reception of Handover Complete from 3G_MSC-B on E-interface).

During a subsequent inter-system GSM to UMTS handover back to 3G_MSC-A, 3G_MSC-A acts as an RNS towards MSC-B, which controls the handover procedure until the termination in 3G_MSC-A of the handover radio resources allocation (sending of the Handover Request Acknowledge to MSC-B from 3G_MSC-A). Then all handover related messages shall terminate at 3G_MSC-A (e.g. Relocation Detect/Complete from RNS-B, Handover Failure from BSS-A).

During a subsequent inter-system GSM to UMTS handover to a third 3G_MSC, 3G_MSC-A works towards 3G_MSC-B' as described above in the basic inter-system handover paragraph and towards MSC-B as described above in subsequent inter-system handover paragraph.

3G_MSC-A may assign a priority level defined as RAB parameter in 3GPP TS 25.413 [11] for each bearer. In case of relocation of a multicall configuration the 3G_MSC-B or the target RNC shall select the bearers to be handed over according to the priority level, if the target cell is not able to accommodate all bearers. If a selection has to be made between bearers of the same priority level, then the selection criteria are implementation dependent.

For network sharing (see 3GPP TS 25.401 [20], subclause 7.2.3) 3G MSC-A shall send the SNA information to 3G_MSC-B except for emergency calls.

If 3G_MSC-A supports the optional supplementary service Multicall (See 3GPP TS 23.135) and UE is engaged with multiple bearers the following description applies:

- In the Intra-3G_MSC relocation case, the 3G-MSC-A tries to relocate all bearers to a new RNS.

- In the basic relocation case, the 3G-MSC-A tries to relocate all bearers to 3G_MSC-B. If 3G_MSC-A receives an indication that the 3G_MSC-B does not support multiple bearers, then 3G_MSC-A shall be able to select one bearer to be handed over according to 3GPP TS 22.129 [9] and tries again to relocate the selected bearer.

- In the subsequent relocation to a third 3G_MSC-B' case, the 3G-MSC-A tries to relocate all bearers to 3G_MSC-B'. If 3G_MSC-A receives an indication that the 3G_MSC-B' does not support multiple bearers, then 3G_MSC-A shall be able to select one bearer to be handed over according to 3GPP TS 22.129 [9] and tries again to relocate the selected bearer.

- In the Intra-3G_MSC inter-system UMTS to GSM handover case and the basic inter-system UMTS to GSM handover case, the 3G_MSC-A shall be able to select one bearer to be handed over according to 3GPP TS 22.129 [9] and tries to handover the selected bearer.

- In all cases described above, 3G_MSC-A shall release some calls which has been carried by the bearers failed to set up in new RNS or the bearers not to be handed over.

If 3G_MSC-A supports the "Provision of UE Specific Behaviour Information to Network Entities" (see 3GPP TS 23.195 [21]), it shall send UESBI-Iu to the RNS-B during intra-3G_MSC handover/relocation and during subsequent inter-3G_MSC handover/relocation back to 3G_MSC-A. Furthermore, 3G_MSC-A shall send UESBI-Iu to the target MSC during basic and subsequent inter-MSC handover, and basic and subsequent inter-3G_MSC handover/relocation.

For a SCUDIF call (see 3GPP TS 23.172 [xx]) 3G_MSC-A may send information of the alternative radio access bearer to the target RNS during the intra-3G_MSC handover/relocation and to the target MSC during basic and subsequent inter-3G_MSC handover/relocation or assignment.

<table>
<tr><td align="center">****   **NEXT MODIFIED SECTION**   ****</td></tr>
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4.4.1   Role of 3G_MSC-B

In the Intra-3G_MSC handover/relocation case, the 3G_MSC-B keeps the control of the whole Intra-3G_MSC handover/relocation procedure. 3G_MSC-B notifies MSC-A or 3G_MSC-A of intra-3G_MSC-B InterSystem handover and intra GSM handovers, by using the A-HANDOVER-PERFORMED message.

- If the security algorithms have been changed during an intra-3G_MSC-B SRNS relocation; or

- if the codec type or codec modes of the Iu Selected codec have been changed during this relocation and the Iu Supported Codecs List was received by 3G_MSC-B before,

then 3G_MSC-B shall indicate the changed parameters, i.e. the selected UMTS algorithm(s) and/or the codec type and codec modes of the Iu Selected codec, to MSC-A or 3G_MSC-A in the MAP-PROCESS-ACCESS-SIGNALLING request.

Encapsulated in the MAP-PROCESS-ACCESS-SIGNALLING request 3G_MSC-B shall send:

- an A-HANDOVER-PERFORMED message, when encapsulated BSSAP is used on the E interface; or

- an Iu-LOCATION-REPORT message, when encapsulated RANAP is used on the E interface.

On reception of an order to perform location reporting at change of Service Area from 3G_MSC-A, 3G_MSC-B shall be responsible to re-issue the Iu-LOCATION-REPORTING-CONTROL message after subsequent Intra-3G_MSC-B relocations/handovers. This shall be performed immediately after the successful completion of the Relocation Resource Allocation procedure.

In a network implementing the "Flexible Iu interface for handover/relocation" option, in the Intra-3G_MSC handover/relocation case, 3G_MSC-B may optionally use a global title based on the Global RNC-Id for the addressing of the Iu interface messages towards the target RNC.

For subsequent inter-MSC handover/relocation to an area where "Intra Domain Connection of RAN Nodes to Multiple CN Nodes" is applied, 3G_MSC-B can have multiple target CN nodes for each handover target in a pool-area as specified in 3GPP TS 23.236 [18].

The role of 3G_MSC-B is also to provide transcoder resources. For speech calls in UMTS, 3G_MSC-B shall select an Iu Selected codec from the Iu Supported Codecs List provided by MSC-A/3G_MSC-A in the MAP-PREPARE-HANDOVER request. If the Iu Supported Codecs List was not received, 3G_MSC-B shall select the appropriate default speech codec.

If an intra-3G_MSC-B intersystem handover to UMTS is performed, and the Iu Supported Codecs List was received by 3G_MSC-B during the basic inter MSC handover/relocation procedure, then 3G_MSC-B shall indicate the Iu Selected codec to MSC-A or 3G_MSC-A in MAP-PROCESS-ACCESS-SIGNALLING request.

In the Inter-3G_MSC relocation case, the role of 3G_MSC-B (3G_MSC-B') is only to provide radio resources control within its area. This means that 3G_MSC-B keeps control of the radio resources connection and release towards RNS-B. 3G_MSC-B will do some processing on the RANAP information received on the E-interface or the RANAP information received on the Iu-interface whereas it will relay the Direct Transfer information transparently between Iu-interface and E-interface. 3G_MSC-A initiates and drives RANAP procedures towards 3G_MSC-B, while 3G_MSC-B controls them towards its RNSs to the extent that 3G_MSC-B is responsible for the connections of its RNSs. The release of the dedicated resources between 3G_MSC-B and RNS-B is under the responsibility of 3G_MSC-B and RNS-B, and is not directly controlled by 3G_MSC-A. When clearing is to be performed due to infhormation received from RNS-B, 3G_MSC-B shall transfer this clearing indication to 3G_MSC-A, to clear its connection with RNS-B, to terminate the dialogue with 3G_MSC-A through the E-interface, and to release its circuit connection with 3G_MSC-A, if any. In the same way, the release of the connection to its RNS-B, is initiated by 3G_MSC-B, when the dialogue with 3G_MSC-A ends normally and a release is received from the circuit connection with 3G_MSC-A, if any, or when the dialogue with the 3G_MSC-A ends abnormally.

When a release is received by 3G_MSC-B for the circuit connection with 3G_MSC-A then 3G_MSC-B shall release the circuit connection.

In the Inter-system UMTS to GSM Inter-3G_MSC handover case, the role of 3G_MSC-B (3G_MSC-B') is only to provide radio resources control within its area. This means that 3G_MSC-B keeps control of the radio resources connection and release towards BSS-B. 3G_MSC-B will do some processing on the BSSMAP information received on the E-interface or the BSSMAP information received on the A-interface whereas it will relay the DTAP information transparently between A-interface and E-interface. 3G_MSC-A initiates and drives a subset of BSSMAP procedures towards 3G_MSC-B, while 3G_MSC-B controls them towards its BSSs to the extent that 3G_MSC-B is responsible for the connections of its BSSs. The release of the dedicated resources between 3G_MSC-B and BSS-B is under the responsibility of 3G_MSC-B and BSS-B, and is not directly controlled by 3G_MSC-A. When clearing is to be performed due to information received from BSS-B, 3G_MSC-B shall transfer this clearing indication to 3G_MSC-A, to clear its connection with BSS-B, to terminate the dialogue with 3G_MSC-A through the E-interface, and to release its circuit connection with MSC-A, if any. In the same way, the release of the connection to its BSS-B, is initiated by 3G_MSC-B, when the dialogue with 3G_MSC-A ends normally and a release is received from the circuit connection with 3G_MSC-A, if any, or when the dialogue with the MSC-A ends abnormally.

When a release is received by 3G_MSC-B for the circuit connection with 3G_MSC-A then 3G_MSC-B shall release the circuit connection.

In the Inter-system GSM to UMTS Inter-3G_MSC handover case, the role of 3G_MSC-B (3G_MSC-B') is only to provide radio resources control within its area. This means that 3G_MSC-B keeps control of the radio resources connection and release towards RNS-B. 3G_MSC-B will do some processing on the BSSMAP information received on the E-interface or the RANAP information received on the Iu-interface whereas it will relay the Direct Transfer information transparently between Iu-interface and E-interface. MSC-A initiates and drives a subset of BSSMAP procedures towards 3G_MSC-B, while 3G_MSC-B controls them towards its RNSs to the extent that 3G_MSC-B is responsible for the connections of its RNSs. The release of the dedicated resources between 3G_MSC-B and RNS-B is under the responsibility of 3G_MSC-B and RNS-B, and is not directly controlled by MSC-A. When clearing is to be performed due to information received from RNS-B, 3G_MSC-B shall transfer this clearing indication to MSC-A, to clear its connection with RNS-B, to terminate the dialogue with MSC-A through the E-interface, and to release its circuit connection with MSC-A, if any. In the same way, the release of the connection to its RNS-B, is initiated by 3G_MSC-B, when the dialogue with MSC-A ends normally and a release is received from the circuit connection with MSC-A, if any, or when the dialogue with the MSC-A ends abnormally.

When a release is received by 3G_MSC-B for the circuit connection with MSC-A then 3G_MSC-B shall release the circuit connection.

At intra-PLMN handover/relocation, 3G_MSC-B shall send Service Handover related information to the BSC/RNC if and only if this Service Handover information is received from 3G_MSC-A. 3G_MSC-B shall not modify Service Handover related information received from a 3G_MSC-A within the same PLMN.

For network sharing (see 3GPP TS 25.401 [20], subclause 7.2.3) when SNA information is received by 3G_MSC-B from 3G_MSC-A, 3G MSC-B shall send the SNA information to the RNS.

If 3G_MSC-B does not support the optional supplementary service Multicall (see 3GPP TS 23.135) and 3G_MSC-A requests to relocate multiple bearers, 3G_MSC-B shall indicate that it does not support multiple bearers to 3G_MSC-A.

If 3G_MSC-B supports the optional supplementary service Multicall (see 3GPP TS 23.135) and UE is engaged with multiple bearers the following description applies:

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- In the basic relocation case, the 3G_MSC-B shall be able to allocate a Handover Number for each bearer. The 3G_MSC-B shall also be able to select some bearers to be handed over according to the priority level defined as RAB parameters in 3GPP TS 25.413 [11] so that the number of bearers will fulfill the maximum number of bearers supported by the 3G_MSC-B. If a selection has to be made between bearers of the same priority level, then the selection criteria are implementation dependent.

- In the Intra-3G_MSC relocation case, the 3G_MSC-B tries to relocate all bearers to a new RNS.

- In the subsequent relocation back to the 3G_MSC-A or to a third 3G_MSC-B' case, the 3G_MSC-B tries to request to the 3G_MSC-A to relocate all bearers to the 3G_MSC-A or to the 3G_MSC-B'.

- In the Intra-3G_MSC inter-system UMTS to GSM handover case and the subsequent inter-system UMTS to GSM handover back to the 3G_MSC-A or to a third MSC-B' case, the 3G_MSC-B shall be able to select one bearer to be handed over according to 3GPP TS 22.129 [9] and tries to handover the selected bearer.

If 3G_MSC-B supports the "Provision of UE Specific Behaviour Information to Network Entities" (see 3GPP TS 23.195 [21]), and if it received UESBI-Iu from MSC-A or 3G_MSC-A during the basic inter-MSC handover/relocation, then 3G_MSC-B shall store the UESBI-Iu and forward it to RNS-B during basic inter-MSC handover/relocation and subsequent intra-3G_MSC-B handover/relocation.

If 3G_MSC-B supports SCUDIF calls (see 3GPP TS 23.172 [xx]), and if it received information of alternative radio access bearer from 3G_MSC-A during the basic inter-MSC handover/relocation or assignment, then 3G_MSC-B shall store that information and forward it to RNS-B during basic inter-MSC handover/relocation or assignment and subsequent intra-3G_MSC-B handover/relocation.