

3GPP TSG CN Plenary Meeting #19
12th - 14th March 2003. Birmingham, U.K.

NP-030078

Source: TSG CN WG3
Title: CR on Rel-5 Work Item SCUDIF.
Agenda item: 8.7
Document for: APPROVAL

Introduction:

This document contains 1 CRs on **Rel-5 Work Item SCUDIF**, including the corresponding mirror CRs (as required).

The CR has been agreed by TSG CN WG3 and is forwarded to TSG CN Plenary meeting #19 for approval.

WG_tdoc	Title	Spec	CR	Rev	Cat	Rel	C_Ver	Work Item
N3-030133	Two-step HLR interrogation for SCUDIF calls	23.172	007	1	F	Rel-5	5.1.0	SCUDIF

CR-Form-v7

CHANGE REQUEST

№ **23.172 CR 007** № rev **1** № Current version: **5.1.0** №

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

Title:	№ Two step HLR interrogation for SCUDIF calls		
Source:	№ TSG_CN WG3 [L.M. Ericsson]		
Work item code:	№ SCUDIF	Date:	№ 20/01/2003
Category:	№ F	Release:	№ Rel-5
	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: 2 (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)

Reason for change:	№ No proper checking of subscription & forwarding options are performed by the GMSC for services provided by SCUDIF (speech & multimedia)
Summary of change:	№ Two interrogations are performed in the GMSC towards the HLR, including a backward compatibility mechanism for supporting older HLRs.
Consequences if not approved:	№ No check is possible in the GMSC for one of the services (speech or multimedia) requested in the codec list. The subscription and call forwarding state of the services offered by the SCUDIF feature (speech and multimedia) cannot be properly checked.

Clauses affected:	№ 2, 3.2, 4.3.3										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications	Y	N	X			X		X	№ 29.002	
Y	N										
X											
	X										
	X										
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.

First modified section

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 and/or edition number or version number) 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] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 23.153: "Out of Band Transcoder Control; Stage 2".
- [3] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core network protocols; Stage 3".
- [4] 3GPP TS 26.103: "Speech Codec List for GSM and UMTS".
- [5] 3GPP TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".
- [6] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".
- [7] 3GPP TS 29.205: "Application of Q.1900 series to bearer-independent circuit-switched core network architecture; Stage 3".
- [8] 3GPP TS 22.101: "Service aspects; Service principles".
- [9] 3GPP TS 33.106: "3GPP Security; Lawful Interception Requirements".
- [10] [3GPP TS 29.002: "Mobile Application Part \(MAP\) specification"](#).

Next modified section

3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TR 21.905 [1] and the following apply:

Editor's note: To be completed.

BC	Bearer Capability
BC1	First Bearer Capability in a message (preferred service)
BC2	Second Bearer Capability in a message (less preferred service)
BCa	Bearer Capability of the currently selected service
BCb	Bearer Capability of the service to switch to
BCmm	Bearer Capability multimedia
BCsp	Bearer Capability speech
MMI	Man-Machine Interface
MSRN	Mobile Station Roaming Number
O-MSC	Originating MSC

O-UE	Originating UE
RI	Repeat Indicator
SCUDIF	Service Change and UDI/RDI Fallback
T-MSC	Terminating MSC
T-UE	Terminating UE

Next modified section

4.3.3 Terminating side

4.3.3.1 HLR interrogation

The HLR interrogation performed by the GMSC shall be done with a two-step interrogation using the Two-Step Indicator parameter in the Send Routing Information service, defined in 3GPP TS 29.002 [10]. The first Send Routing Information request is sent with a speech ISDN BC IE and the Two-Step Indicator parameter set to "two-step request". Depending on the reply from the HLR, the GMSC does the following:

- if the reply includes a MSRN IE (roaming number) but not the Two-Step Indicator parameter, the HLR is not able to handle properly the two-step interrogation, and the second Send Routing Information shall not be sent. Instead, the GMSC removes the 3G.324M multimedia codec from the codec list, and proceeds with the codec negotiation procedure to the terminating MSC indicated by the roaming number;
- if the reply includes a MSRN IE (roaming number) and the Two-Step Indicator parameter (set to "two-step confirm"), the HLR is able to handle properly the two-step interrogation, and a second Send Routing Information request shall be sent to the HLR with an ISDN BC IE indicating the multimedia service and the Two-Step Indicator parameter set to "two-step suppression", which indicates to the HLR that it shall suppress the Provide Roaming Number request to the terminating VMSC;
- if the reply does not include a MSRN IE (i.e. no Provide Roaming Number request has been sent from the HLR to the terminating VMSC during the first request), a second Send Routing Information request shall be sent to the HLR with an ISDN BC IE indicating the multimedia service (but no Two-Step Indicator parameter).

In case a second Send Routing Information request has been sent to the HLR, and depending on the reply from the HLR, the GMSC does the following:

- if one of the replies indicates "call barred" or any error indicating the unavailability of the service, the GMSC shall fallback to the service which is not barred or unavailable (see clause 4.3.6 for the actual fallback procedure) and proceed with the call setup to the destination associated with the non-barred service. If both replies indicate that the service is barred or unavailable, the call shall be disconnected instead;
- else, if one of the replies includes a Forwarded-To Number IE, the GMSC shall fallback to the preferred service (see clause 4.3.6 for the actual fallback procedure) and proceed with the call setup to the destination associated with the selected service. However, if both replies indicate the same Forwarded-To Number IE, no fallback is performed, and the GMSC shall proceed instead with the codec negotiation procedure to the destination indicated by this IE;
- else, as a MSRN (roaming number) has been provided in the first reply, and no indication of a barred call, unavailable service or forwarded number is indicated in the second reply, the GMSC shall proceed with the codec negotiation procedure to the terminating VMSC indicated by the roaming number.

4.3.3.2 Terminating MSC Handling

The terminating MSC receives the list of supported codec types, including the 3G-324.M codec. It shall then send a SETUP message towards the terminating UE including a Repeat Indicator with the value "service change and fallback" and two BC-IEs, according to the following rule:

- if the 3G-324.M codec is the first (preferred) codec in the list of supported codecs, then the first BC-IE in the SETUP message is the multimedia BC-IE, and the second BC-IE is the speech BC-IE (see figure 4.17);
- if the 3G-324.M codec is in the list of supported codec types, but not in the first position, then the first BC-IE in the SETUP message is the speech BC-IE, and the second BC-IE is the multimedia BC-IE (see figure 4.18).

The terminating UE answers according to its capabilities in the CALL CONFIRMED message. The terminating MSC shall determine the Selected Codec and construct the list of available codecs according to the following rules:

- if no Repeat Indicator is included, and only a speech BC-IE is received, the MSC shall choose a speech codec as the Selected Codec according to the normal mechanism, and no 3G-324.M codec shall be inserted in the list of available codecs (see figure 4.19);
- if no Repeat Indicator is included, and only a multimedia BC-IE is received, the MSC shall choose the 3G-324.M codec as the Selected Codec, and only the 3G-324.M codec shall be inserted in the list of available codecs (see figure 4.20);
- if the Repeat Indicator is included, and the speech BC-IE is the first BC-IE and the multimedia BC-IE is the second BC-IE, the MSC shall choose a speech codec as the Selected Codec according to the normal mechanism, and both the 3G-324.M codec and speech codecs shall be inserted in the list of available codecs (see figure 4.21);
- if the Repeat Indicator is included, and the multimedia BC-IE is the first BC-IE and the speech BC-IE is the second BC-IE, the Selected Codec shall be the 3G-324.M codec, and both the 3G-324.M codec and speech codecs shall be inserted in the list of available codecs (see figure 4.22).

NOTE: If the UE sends a CALL CONFIRMED message without Repeat Indicator and BCs, it indicates that it accepts the proposed settings sent in the SETUP message, which are then used by the MSC to select the relevant case.

The Selected Codec and the list of available codecs shall be sent back to the originating MSC according to the normal codec negotiation procedure.

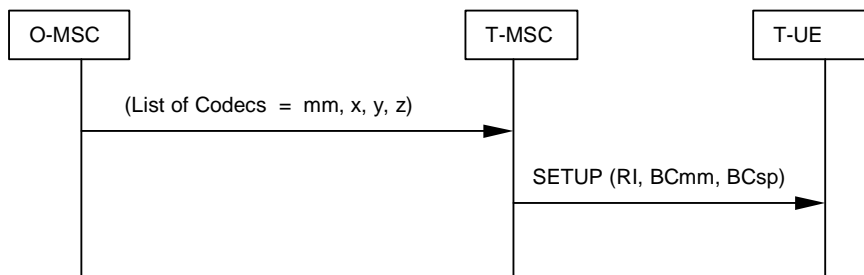


Figure 4.17: 3G-324M codec first

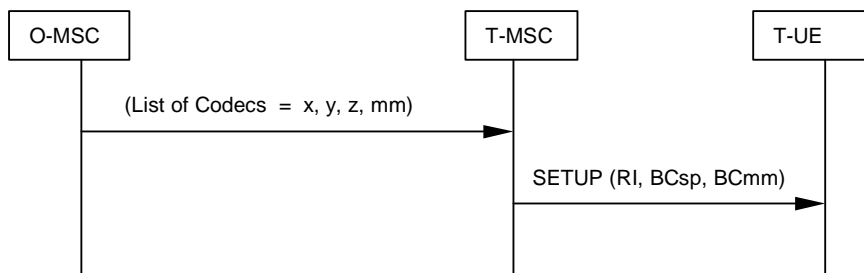
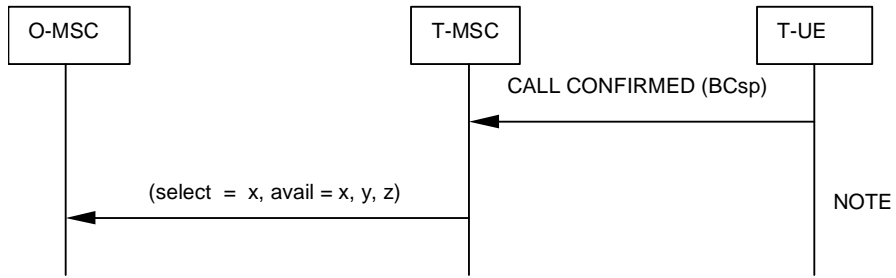


Figure 4.18: Speech codec first



NOTE: The actual speech codec is selected according to OoBTC procedures.

Figure 4.19: Speech only

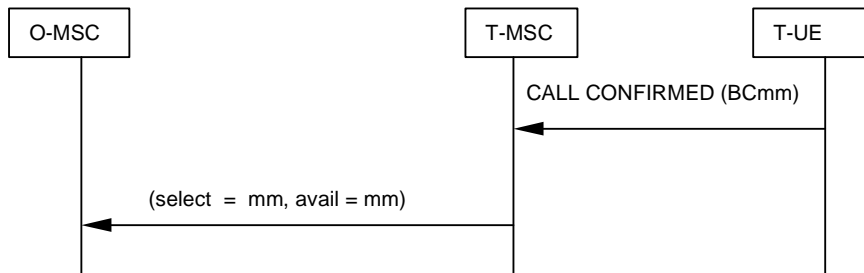
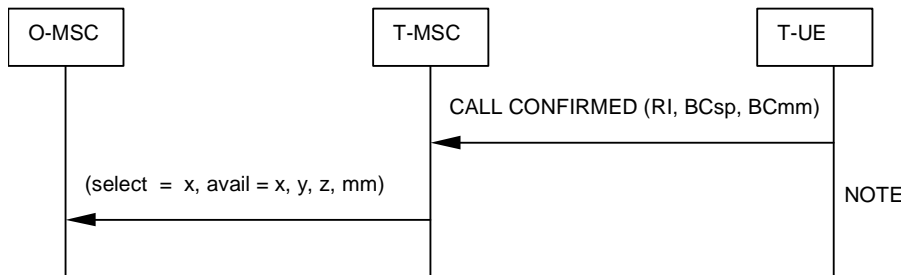
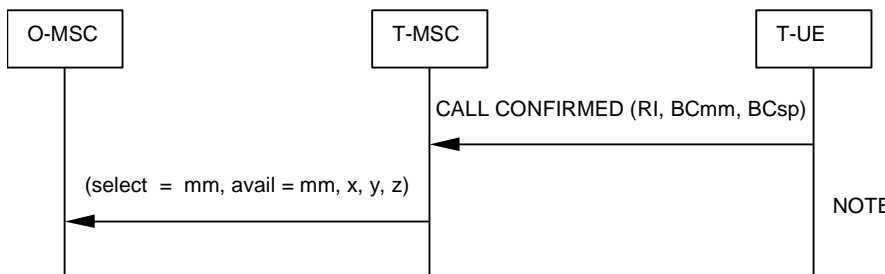


Figure 4.20: Multimedia only



NOTE: The actual speech codec is selected according to OoBTC procedures.

Figure 4.21: Speech preferred



NOTE: The actual list of speech codecs is built according to OoBTC procedures.

Figure 4.22: Multimedia preferred

Next modified section