TSGS#21(03)0377

Source: **TSG SA WG2**
Title: **CRs on 23.195**
Agenda Item: **7.2.3**

The following Change Requests (CRs) have been approved by TSG SA WG2 and are requested to be approved by TSG SA plenary #21.
Note: the source of all these CRs is now S2, even if the name of the originating company(ies) is still reflected on the cover page of all the attached CRs.

Tdoc #	Title	Spec	CR #	cat	Version in	REL	WI	S2 meeting
S2-033263	Iu mode correction	23.195	001r3	F	5.0.0	5	LATE_UE	S2-34
S2-033031	Clean up of diagrams	23.195	002r2	F	5.0.0	5	LATE_UE	S2-34
S2-033116	Additional text for section 6 on (physical) location of FIB function	23.195	003r2	C	5.0.0	5	LATE_UE	S2-34
S2-032712	Roll out issue for RANAP-BSSMAP interworking	23.195	004r1	F	5.0.0	5	LATE_UE	S2-33

Note: CR #001r3 was revised by MCC after the meeting in cooperation with the contributor and rapporteur. A sentence where a "," is inserted by CR# 001r2 is deleted by CR# 004r1. The new CR# 001r3 avoids overlaps with CR# 004r1, and the only change between CR# 001r2 and CR# 001r3 is that the "," is not introduced in A.7.

3GPP TSG-SA2 Meeting #33
Sophia Antipolis, France, 7th – 11th July 2003

Tdoc ⌘S2-032712
rev of S2-032611

CR-Form-v7

CHANGE REQUEST

⌘ **23.195** **CR** 4 ⌘ **rev** **1** ⌘ Current version: **5.0.0** ⌘

*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 ☒

Title:	⌘	Roll out issue for RANAP-BSSMAP interworking
Source:	⌘	Vodafone
Work item code:	⌘	Late UE
Date:	⌘	02.07.2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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:
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:	⌘	Annex A.7 contained an open issue relating to the rollout of Early UE capable RNCs before the MSCs were upgraded. This issue has now been studied and the behaviour within the MSC is understood. A new open issue with regard to RANAP error handling is raised.
Summary of change:	⌘	Text is added to indicate that 29.010 mandates that all RANAP causes should be mapped to a single A interface cause value.
Consequences if not approved:	⌘	The specification remains incomplete.

Clauses affected:	⌘	2, A.7			
Other specs Affected:	⌘	**Y**	**N**		
			N	Other core specifications	⌘
			N	Test specifications	
			N	O&M Specifications	
Other comments:	⌘				

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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.

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 Recommendations I.130: "General modelling methods – Method for the characterisation of telecommunication services supported by an ISDN and network capabilities of an ISDN".

[2] ITU-T Recommendation Q.65: "Methodology – Stage 2 of the method for the characterization of services supported by an ISDN".

[3] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

[4] 3GPP TS 23.060: "General Packet Radio Service (GPRS) Service description; Stage 2".

[5] 3GPP TS 23.009: "Handover procedures".

[6] 3GPP TS 25.331: "Radio Resource Control (RRC) protocol specification".

[7] 3GPP TS 44.018: "Mobile radio interface layer 3 specification; Radio Resource Control (RRC) protocol".

[8] 3GPP TS 44.008: "Mobile radio interface layer 3 specification".

[9] 3GPP TS 25.413: "UTRAN Iu interface Radio Access Network Application Part (RANAP) signalling".

[10] 3GPP TS 23.236: "Intra-domain connection of Radio Access Network (RAN) nodes to multiple Core Network (CN) nodes".

[11] 3GPP TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface".

[12] 3GPP TS 23.116: "Super-Charger technical realization; Stage 2".

[13] 3GPP TR 25.994: "Measures employed by the UMTS Radio Access Network (UTRAN) to overcome early User Equipment (UE) implementation faults".

[14] 3GPP TR 25.995: "Measures employed by the UMTS Radio Access Network (RAN) to cater for legacy User Equipment (UE) which conforms to superseded versions of the RAN interface specification".

[15] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[16] 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)”.

Annex A (Informative): Compatibility with network entities not supporting the PUESBINE Feature

A.1 General

This annex gives information on the interworking between network entities that support the PUESBINE Feature and those that do not. Where this interworking leads to actual requirements on a network entity, then these requirements should be documented in the main body of this TS.

A.2 Inter SGSN relocation

From an SGSN that does not support the PUESBINE Feature to an SGSN that does support the PUESBINE Feature:

The target RNC will not receive the UESBI-Iu in the Relocation Request message and adopts some generic behaviour. The later arrival of UESBI-Iu at RNC is used by the RNC for any future processing for that UE.

From an SGSN that does support the PUESBINE Feature to an SGSN that does not support the PUESBINE Feature:

The target RNC does not receive the UESBI-Iu, but, this is reasonable considering that the RNC's "default" SGSN does not support the PUESBINE Feature. GTP error handling should ensure that reception of the IMEISV is ignored by an SGSN that does not support the PUESBINE Feature.

A.3 Inter SGSN Routing Area Update

From an SGSN that does not support the PUESBINE Feature to an SGSN that does support the PUESBINE Feature:

If an SGSN that supports the PUESBINE Feature does not receive the IMEISV from the old SGSN, then the new SGSN shall get the IMEISV from the MS.

From an SGSN that does support the PUESBINE Feature to an SGSN that does not support the PUESBINE Feature:

GTP error handling should ensure that reception of the IMEISV is ignored by an SGSN that does not support the PUESBINE Feature.

A.4 Iu interface issues

If UESBI-Iu is not received for a UE, then the RNC assumes that the UE has some default capability. This default capability is RNC implementation dependent.

The RNC can assume that a CN that supports the PUESBINE Feature will deliver the UESBI-Iu before the RANAP Security Mode command.

RANAP error handling should ensure that reception of the UESBI-Iu is ignored by an RNC that does not support the PUESBINE Feature.

A.5 Gs issues

If the MSC does not receive the IMEISV in the Gs interface Location Update Request message, then the MSC obtains the IMEISV from the UE at the next Iu-cs/A interface connection establishment.

Gs interface error handling should ensure that reception of the IMEISV in the Gs interface Location Update Request message is ignored by an MSC that does not support the PUESBINE Feature.

A.6 Inter-MSC issues

If the anchor MSC does not pass the UESBI-Iu information to the relay MSC, then the target RNC[/BSS] does not receive the UESBI-Iu information. This is handled as an "Iu interface issue" (see clause A.4).

MAP error handling should ensure that reception of the UESBI-Iu is ignored by a relay MSC that does not support the PUESBINE Feature.

A.7 RNC - BSS issues

~~If the RNC sends the new Relocation Request Reject cause value then~~As specified in 3GPP TS 29.010 [16], ~~the~~an MSC that does not support the PUESBINE feature will map RANAP cause values into the ~~needs to be able to map this into an appropriate~~ A interface cause value "no radio resource available".

~~Does the RANAP error handling and/or 29.010 provide a default mapping?~~

~~Editor's note: check the CN 4 status of this?~~

A interface error handling procedures should ensure that reception of the new Cause value is treated in a backwards compatible manner by a BSS that does not support the PUESBINE Feature.

A.8 A interface issues

With regard to the new Handover Reject Cause value, see clause A.7.

With regard to using the "old BSS to new BSS information" IE to transfer the "don't handover to UMTS flag" between BSSs, then existing A interface error handling procedures should ensure that this flag is ignored by a BSS that does not support the PUESBINE Feature.

[If a BSS supports the PUESBINE Feature and the UESBI-Iu is not received for, then the BSS assumes that the UE has some default capability. This default capability is BSS implementation dependent.]

[If UESBI-Iu is sent across the A interface, then existing A interface error handling procedures should ensure that the UESBI-Iu is ignored by a BSS that does not support the PUESBINE Feature.]

3GPP TSG-SA WG2 Meeting #34 **Tdoc ⌘ S2-033031**
Brussels, Belgium, 18th – 22nd August 2003

CR-Form-v7

CHANGE REQUEST

⌘ **23.195** **CR** **002** ⌘ **rev** **2** ⌘ Current version: **5.0.0** ⌘

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

Title:	⌘	Clean up of diagrams
Source:	⌘	Nokia
Work item code:	⌘	LATE_UE
Date:	⌘	13/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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)*
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Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one 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:	⌘	Figures 5.2.3-1 and 5.2.5-1 were unclear
Summary of change:	⌘	Figures 5.2.3-1 and 5.2.5-1 have been redrawn. Additionally in the figure 5.2.3-1 the GMM Identification procedure have been changed optional, since GMM Authentication and Ciphering procedure can already obtain the IMEISV and in the figure 5.2.5-1 the GMM Identification procedure have been added as optional procedure (step 3b and 3c) to figure.
Consequences if not approved:	⌘	Unclear figures in the approved specification. Unaligment with the figures and text below the figures.

Clauses affected:	⌘	5.2.3 and 5.2.5

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

Other comments:	⌘	If this version of the CR is accepted, it is proposed that it replaces the earlier revision of the same CR accepted in the last meeting.

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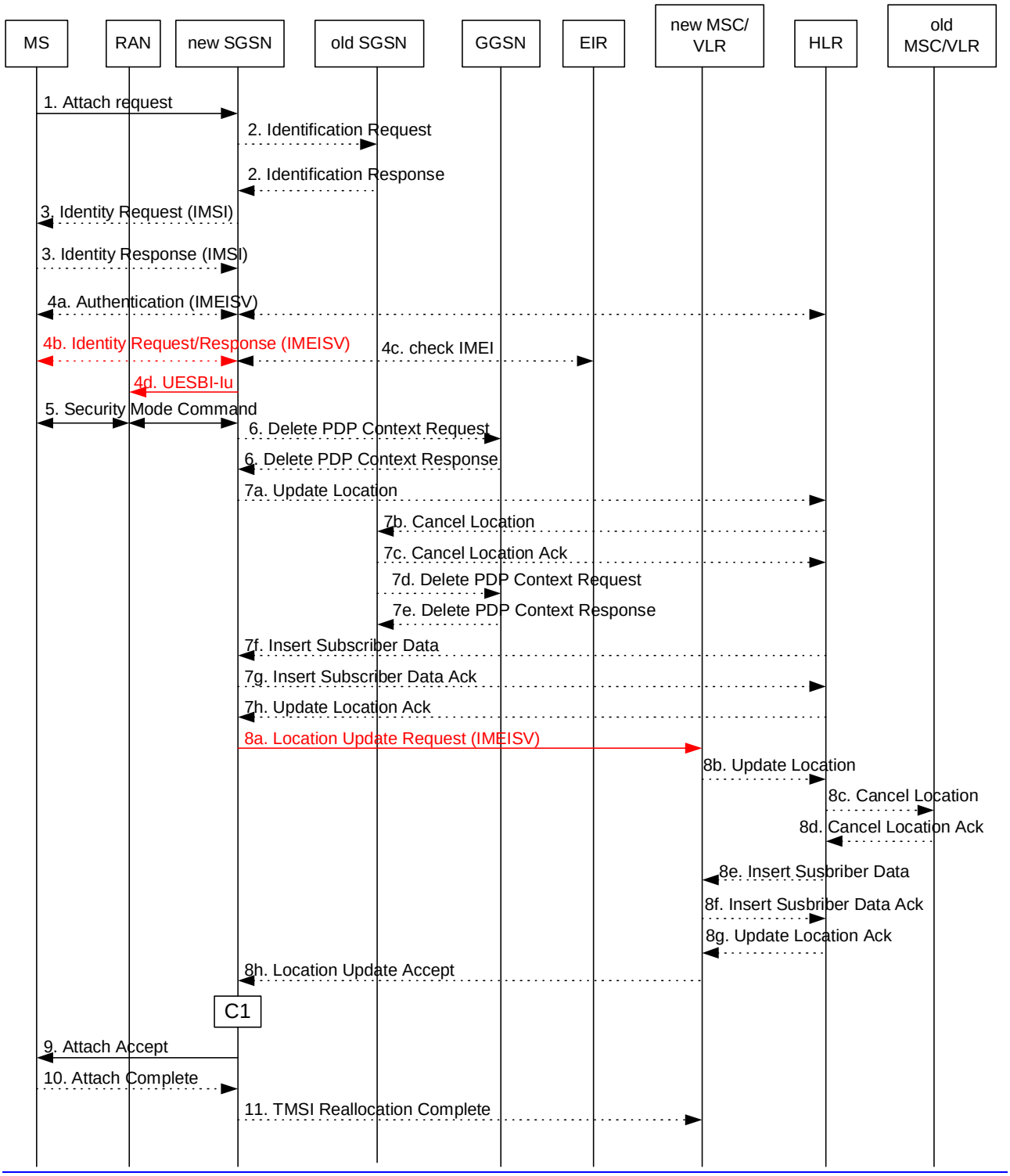
3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

5.2.3 Combined PS and CS attach with Gs

The Combined GPRS / IMSI Attach procedure is illustrated in Figure 5.2.3-1 (copied from 3GPP TS 23.060 [4]).



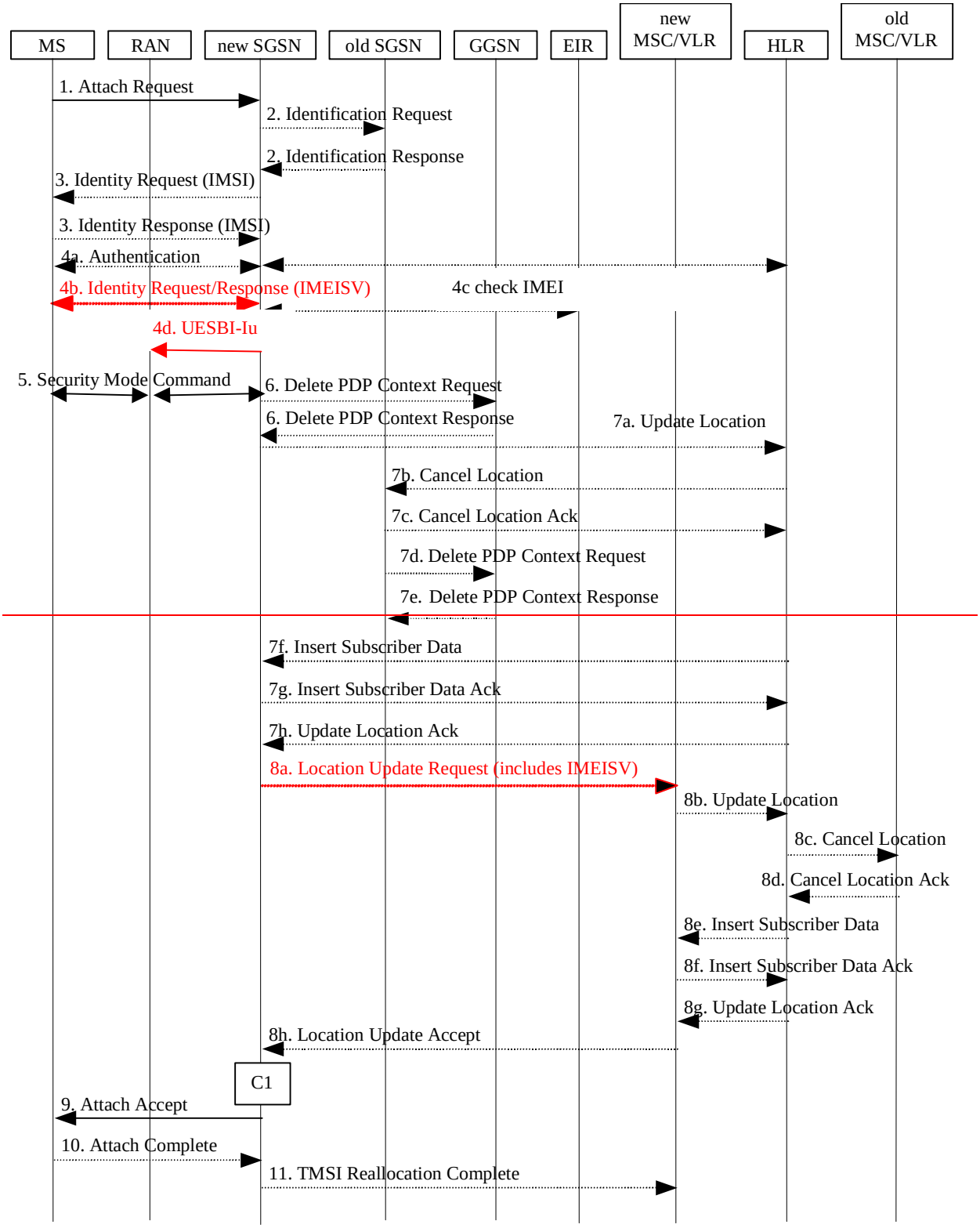


Figure 5.2.3-1: Combined GPRS / IMSI attach procedure

1-4) Steps 1-3 are as described in TS 23.060 [4].

4a,b,c) The equipment checking functions are defined in the clause "Identity Check Procedures" in 23.060 [4]. The SGSN shall obtain and store the IMEISV. Equipment checking with the EIR is optional.

The SGSN can use either the GMM Identification procedure or the GMM Authentication and Ciphering procedure to obtain the IMEISV (see TS 24.008 [3]).

If the GMM Identification procedure is used to obtain the IMEISV (and the GMM Identification Request is sent before the GMM Authentication and Ciphering Request message), then it depends upon the SGSN implementation as to whether the UESBI-Iu information is sent to the RNC before or after the GMM Authentication and Ciphering Request message.

4d, 5) The SGSN shall send the UESBI-Iu information to the RNC before sending the RANAP Security Mode Command message to the RNC.

If the RNC does not receive the UESBI-Iu information before the RANAP Security Mode Command, then the RNC should assume that no UESBI-Iu information is available for this UE (for example, because the SGSN does not support the PUESBINE Feature).

6-7) Steps 6 and 7 are as described in TS 23.060 [4].

8a) The SGSN shall send the IMEISV to the MSC in the Gs interface Location Update Request message.

If the MSC does not receive the IMEISV in Gs interface Location Update Request message (eg because the SGSN does not support the PUESBINE Feature) then the MSC shall obtain the IMEISV from the UE at the next Iu-cs or A interface connection establishment.

8) Steps 8b to 8h are as described in TS 23.060 [4].

9-11) Steps 9 to 11 are as described in TS 23.060 [4].

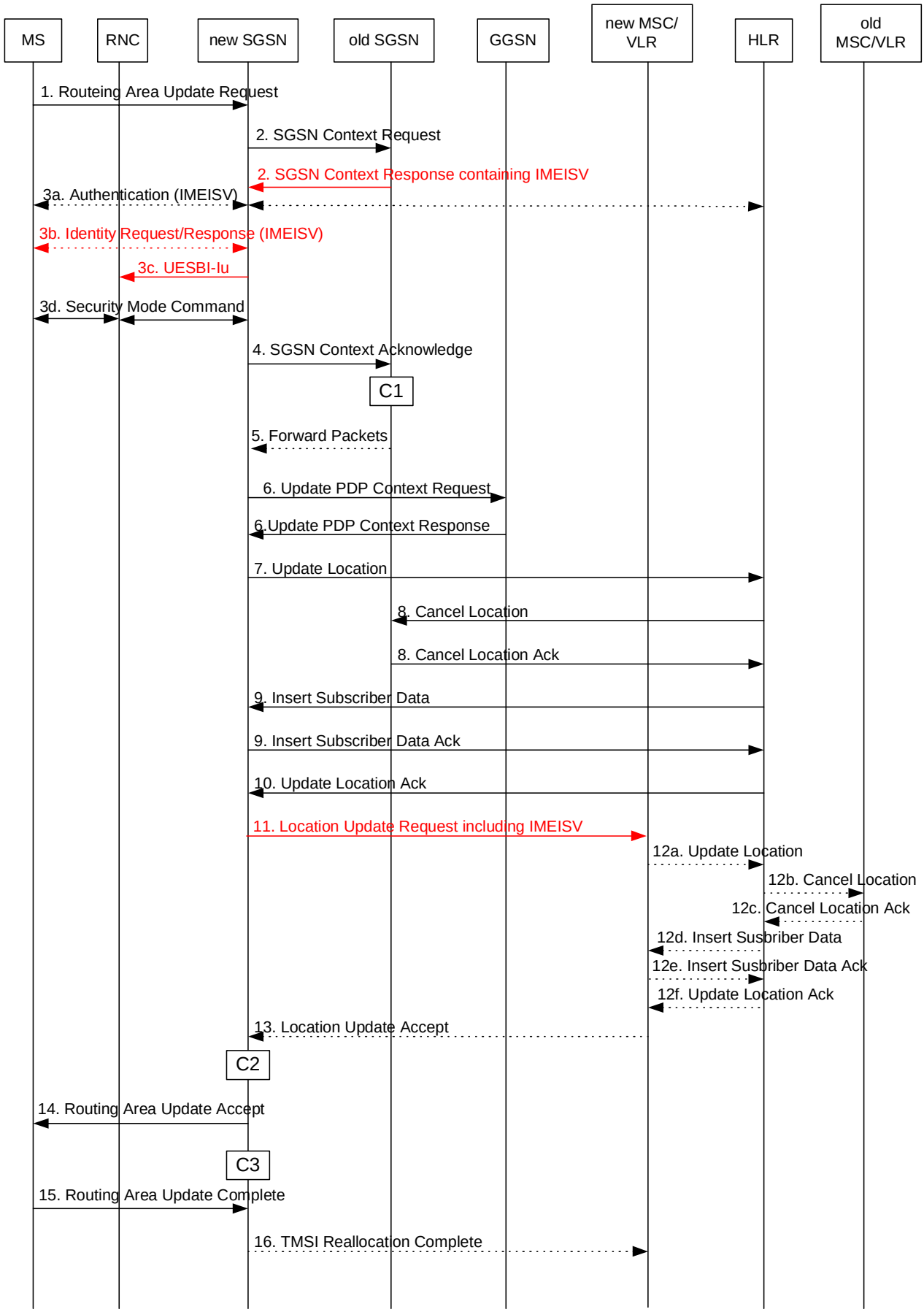
5.2.4 PS inter-SGSN routeing area update without Gs

The IMEISV shall be transferred from the old SGSN to the new SGSN at inter-SGSN Routeing Area Update in the SGSN Context Response message (see TS 29.060 [11]). GTPv1 is assumed to be available in both SGSNs. The new SGSN shall transfer the UESBI-Iu to the RNC over the Iu-ps interface.

In the case of inter-SGSN RA Update from an SGSN not supporting the PUESBINE Feature to an SGSN that does support the PUESBINE Feature, then, the new SGSN shall obtain the IMEISV from the mobile using signalling specified in TS 24.008 [3] and then send the UESBI-Iu to the RNC.

5.2.5 Inter-SGSN routeing area update with Gs

The Combined RA / LA Update (inter-SGSN) procedure is illustrated in Figure 5.2.5-1 (copied from 3GPP TS 23.060 [4]).


MS
RNC
new SGSN
old SGSN
GGSN
new MSC/ VLR
HLR
old MSC/VLR
1. Routeing Area Update Request
2. SGSN Context Request
2. SGSN Context Response containing IMEISV
3a. Authentication (IMEISV)
3b. Identity Request/Response (IMEISV)
3c. UESBI-Iu
3d. Security Mode Command
4. SGSN Context Acknowledge
C1
5. Forward Packets
6. Update PDP Context Request
6.Update PDP Context Response
7. Update Location
8. Cancel Location
8. Cancel Location Ack
9. Insert Subscriber Data
9. Insert Subscriber Data Ack
10. Update Location Ack
11. Location Update Request including IMEISV
12a. Update Location
12b. Cancel Location
12c. Cancel Location Ack
12d. Insert Susbriber Data
12e. Insert Susbriber Data Ack
12f. Update Location Ack
13. Location Update Accept
C2
14. Routing Area Update Accept
C3
15. Routing Area Update Complete
16. TMSI Reallocation Complete

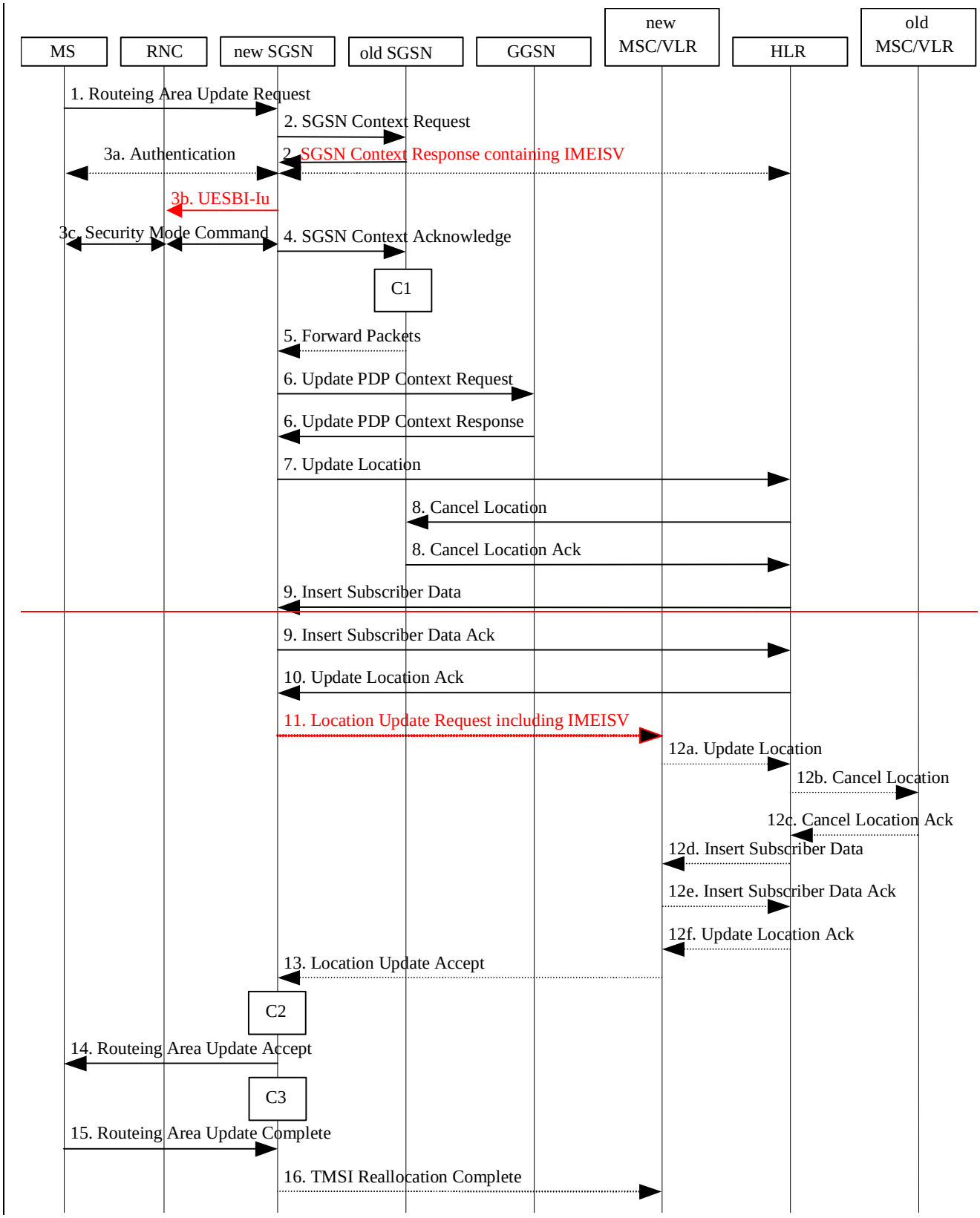


Figure 5.2.5-1: Combined RA / LA update in the case of inter-SGSN RA ppdate procedure

1) The MS sends a Routeing Area Update Request to the new SGSN (see TS 23.060 [4]).

2) The new SGSN sends SGSN Context Request to the old SGSN and the old SGSN returns the SGSN Context Response message (see TS 23.060 [4]).

The IMEISV shall be sent by the old SGSN to the new SGSN at inter-SGSN Routeing Area Update in the SGSN Context Response message (see TS 29.060 [11]). GTPv1 is assumed to be available in both SGSNs.

The new SGSN derives the UESBI-Iu from the IMEISV.

3a, b, c, d)If the new SGSN does not receive the IMEISV from the old SGSN (eg because the old SGSN does not support the PUESBINE Feature) then the new SGSN shall either use the GMM Identification procedure or the GMM Authentication and Ciphering procedure~~GMM signalling~~ to obtain the IMEISV from the UE (see TS 24.008 [3]).

~~3a, b, c)~~ The new SGSN shall transfer the UESBI-Iu to the RNC over the Iu interface~~, and, perform authentication~~. The order of 3a and ~~3b~~ 3c is dependent upon the implementation of the SGSN.

The SGSN shall send the UESBI-Iu information to the RNC before sending the RANAP Security Mode Command message to the RNC.

If the RNC does not receive the UESBI-Iu information before the RANAP Security Mode Command, then the RNC should assume that no UESBI-Iu information is available for this UE (for example, because the SGSN does not support the PUESBINE Feature) (unless, in the case of non-combined RA update, the RNC has already received UESBI-Iu from the Iu-cs interface).

4 -10) Steps 4 to 10 are as described in TS 23.060 [4].

11) The SGSN shall send the IMEISV to the MSC in the Gs interface Location Update Request message.

If the MSC does not receive the IMEISV in Gs interface Location Update Request message (eg because the SGSN does not support the PUESBINE Feature) then the MSC shall obtain the IMEISV from the UE at the next Iu-cs or A interface connection establishment.

12-16) Steps 12 to 16 are as described in TS 23.060 [4].

3GPP TSG-SA2 Meeting #34
Brussels, Belgium, 18-2/8/03

Tdoc ⌘S2-033116
rev of S2-032711

CR-Form-v7

CHANGE REQUEST

⌘ **23.195** **CR** **3** ⌘ **rev** **2** ⌘ Current version: **5.0.0** ⌘

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

Title:	⌘	UESBI mapping from IMEISV in SGSN and MSC
Source:	⌘	Siemens and Vodafone
Work item code:	⌘	Late UE
Date:	⌘	21/8/2003
Category:	⌘	**C**
Release:	⌘	Rel-5

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R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change: ⌘

TSG RAN decided the UESBI-Iu is a bitmap of UE faults. The CN derives the UESBI-Iu by mapping from the IMEISV. Two approaches are under discussion: a mapping by local databases in SGSN or MSC or a mapping by a centralized database interrogated by SGSN/MSC. The TSG SA #20 has given the task of resolving this issue to SA2.

The local database approach requires higher administration effort especially in multi vendor environments. A centralized database may delay service setup times or reduce overall availability depending on link and database availability. A combination of both approaches is proposed. SGSN/MSC have local databases for mapping TAC+SVN to Iu bitmap. These local databases are maintained by O+M. In addition the local databases may derive the mapping information from a central database. The use of a central database is optional, which allows for an introduction of the Early UE feature without implementing a central database and new interfaces.

Annex B.1 contains already a description for this approach. It is proposed to update this annex and move it to chapter 6 “Operational Aspects of Handling Fault Information”.

Summary of change: ⌘

Informative text from Annex B.1 is updated and moved as normative text to chapter 6 “Operational Aspects of Handling Fault Information”. Annex B is deleted.

Consequences if not approved: ⌘

No standardised approach for UESBI mapping from IMEISV in SGSN and MSC.

Clauses affected:	⌘	3.2, 6, Annex B				
Other specs affected:	⌘	**Y**	**N**		⌘	
		X		Other core specifications		TS 29.002
			X	Test specifications		
			X	O&M Specifications		
Other comments:	⌘					

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3.2 Abbreviations

For the purposes of the present document, the abbreviations given in 3GPP TS 21.905 [15] and the following apply:

FIB Register	Faulty IMEISV to Bitmap Register
PUESBINE	Provision of UE Specific Behaviour Information to Network Entities
UE	User Equipment
UESBI	UE Specific Behaviour Information
UESBI-Uu	UE Specific Behaviour Information - Uu
UESBI-Iu	UE Specific Behaviour Information – Iu

6 Operational aspects of handling fault information

~~Editor's note: text for this clause will be derived from the contents of Annex B once decisions on "Bitmap vs IMEISV on Iu" and "standardised vs O+M" have been made.~~

6.1 General Aspects

SGSN and MSC derive the UESBI-Iu by mapping from the IMEISV's TAC+SVN. Local databases in the SGSN and MSC provide the mapping information. Local databases are maintained by O+M functionality. This functionality shall allow for setting/not setting any of the bits/parameters within the UESBI-Iu for each TAC+SVN. In addition a FIB Register (a central database) may be used in the network to provide the mapping information to the local databases.

6.2 FIB Register

The MSC/SGSN interrogates the FIB Register when a not yet known TAC+SVN is to be mapped by the MSC/SGSN. The MSC/SGSN stores in its local database the mapping information received from the FIB Register.

The MSC/SGSN should periodically interrogate the FIB Register to update the mapping information stored in its local database. The period and timing is configuration specific (e.g. to permit the updates to be obtained during periods of lower network activity such as the night and/or weekend). Each signalling message between MSC/SGSN and FIB Register retrieves the UESBI-Iu for just one TAC+SVN.

No functionality is expected on the FIB Register to MSC/SGSN interface for the FIB Register to "push" updated UESBI-Iu to the MSC/SGSNs. Instead, it shall be possible to trigger the MSC/SGSN by O+M mechanisms to update its local database for a specific TAC+SVN.

The FIB Register may be implemented as a stand-alone node, co-located with an EIR, or co-located with any other node (eg HLR).

Note: The FIB Register is expected to process many fewer messages than an EIR, and, might have lesser availability requirements than an EIR.

Annex B (informative): void~~Operational aspects of handling fault information~~

~~One or both of clauses B.1.1 or B.1.2 shall be chosen. B.1.1 shall be chosen if the UESBI-Iu mapping from IMEISV shall be done with standardised signalling. B.1.2 shall be chosen if the CN entities shall be provisioned with the~~

~~IMEISV to UESBI-Iu mapping with OAM. Then the text needs to be modified to stage 2 parlance and moved to clause 6.~~

~~B.1 If UESBI-Iu is BMUEF~~

~~B.1.1 UESBI-Iu mapping from IMEISV in SGSN and MSC using standardised signalling~~

~~The SGSN and MSC derive the UESBI-Iu by mapping from the IMEISV's TAC+SVN. Locally cached databases in the SGSN and MSC provide the mapping information. A central database (ie the Faulty IMEISV to BMUEF register) should be used to provide the mapping information to the local databases. The central database is interrogated by a local database when a not yet known TAC+SVN is to be mapped by the local database. The local database stores the mapping information received from the central database.~~

~~The local databases should periodically interrogate the central database to update the mapping information. The period is configuration specific. Each signalling message between MSC/SGSN and central database retrieves the BMUEF for just one TAC+SVN.~~

~~No functionality is expected on the FIB to MSC/SGSN interface for the FIB to "push" updated BMUEF to the MSC/SGSNs. Instead, it shall be possible to trigger the MSC/SGSN to update the locally cached mapping.~~

~~Signalling between the MSC/SGSN and central database (ie the Faulty IMEISV to BMUEF register) shall be based on MAP. The FIB may be implemented in an EIR, but it shall be possible to implement the FIB register on a standalone node (ie it shall be possible for an operator to deploy the FIB without having to deploy an EIR). The FIB function is expected to process many fewer messages than an EIR, and, might have lesser availability requirements than an EIR.~~

~~B.1.2 UESBI-Iu mapping from IMEISV in SGSN and MSC via O+M~~

~~Distributed conversion databases in SGSNs and MSCs can be updated using O&M functionality in the network. Existing O+M procedures can be utilized, so there is no need for further standardisation.~~

~~The O+M functionality shall give the operator full control over setting/not setting any of the bits/parameters within the BMUEF for each TAC+SVN. This is necessary because the RNC(s) may be supplied by different vendors to the CN entities.~~

~~Additional O+M care is needed to ensure that the BMUEF at MSC and SGSN are synchronised (eg when SGSN and MSC are supplied by different vendors).~~

3GPP TSG-SA WG2 Meeting #34
Brussels, Belgium, 18th – 22nd August 2003

Tdoc ⌘ S2-033263
revision of S2-033115

CR-Form-v7

CHANGE REQUEST

⌘ **23.195** **CR** **001** ⌘ **rev** **3** ⌘ Current version: **5.0.0** ⌘

*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 ☐

Title:	⌘	Iu mode correction
Source:	⌘	Nokia
Work item code:	⌘	LATE_UE
Date:	⌘	13/8/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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:
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:	⌘	Since GERAN Iu mode introduces a new GERAN specific RRC on the radio interface, the Early UE handling is useful for GERAN Iu mode also. The same procedures apply for GERAN Iu mode as for UTRAN. Therefore, the relevant parts of the text are modified to take into account the GERAN Iu mode as well.
Summary of change:	⌘	A note is added to apply the Iu procedures also for BSCs with Iu interface. The inter-system handover wording is modified to reflect Iu mode and A/Gb mode.
Consequences if not approved:	⌘	GERAN Iu mode is not included in the Early UE handling.

Clauses affected:	⌘	4.1; 5.2.8 - 5.2.13; A.7

Other specs affected:	⌘	Y	N		⌘	
		X		Other core specifications	⌘	3GPP TS 43.051
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	This document is revised by MCC after the meeting in cooperation with the contributor and rapporteur. A sentence where a "," is inserted by CR#1r2 is deleted by CR#4r1. The new CR#1r3 avoids overlaps with CR#4r1, and the only change between CR#1r2 and CR#1r3 is that the "," is not introduced in A.7.

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.

4 General description

4.1 UESBI

Due to the potential problems that may happen in the standard or in its implementation by different types of UE, it may be needed to transfer to the RAN "information on the specific behavior of particular sets of UE" with regard to some 3GPP features. This aims at helping the infrastructure to handle UE(s) already in the field that are facing problems to support some 3GPP features. This "information on the specific behavior of particular sets of UE" is called UE Specific Behavior Information (UESBI).

UESBI actually corresponds to 2 different sets of information:

- UESBI-Uu which is sent from UE to RAN using signalling specified in the RRC protocol (TS 25.331 [6])
- UESBI-Iu which is sent by CN to UTRAN/GERAN over the Iu interface and is derived from IMEISV retrieved by CN from UE.

UESBI-Uu and UESBI-Iu may have a different nature, their coding is defined in RRC and RANAP respectively, and have different handling within the network. Whether or not UESBI-Uu or UESBI-Iu is used to describe an inter-operability issue will be determined on a case by case basis and all uses should be documented in TRs such as 25.994 [13] and 25.995 [14]. As a result of this process, RAN nodes should not receive conflicting information in UESBI-Uu and UESBI-Iu.

The SRNC uses both UESBI-Iu and UESBI-Uu to derive the specific behaviour of the UE.

In the context of this specification, the terms RNS and RNC refer also to a GERAN BSS or BSC (respectively) when serving UE in Iu mode.

*****NEXT CHANGE*****

5.2.8 PS domain transfer of UESBI-Iu to ~~RNC~~RAN

5.2.8.1 MS Initiated Service Request Procedure

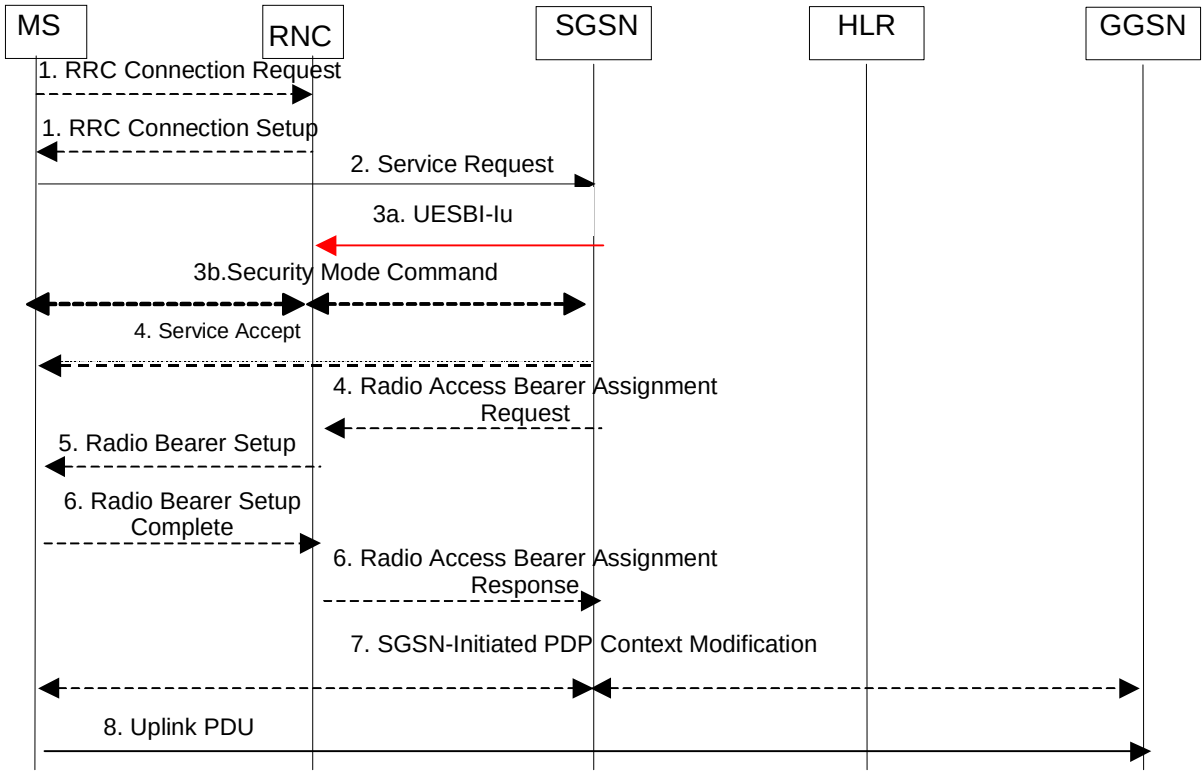

Figure 5.2.8.1-1: MS Initiated Service Request Procedure

1) The MS establishes an RRC connection (assuming that none exists for CS traffic).

2) The MS sends a Service Request (P-TMSI, RAI, CKSN, Service Type) message to the SGSN. Service Type specifies the requested service. Service Type indicates one of the following: Data or Signalling.

3a, b) The SGSN shall send the UESBI-Iu to the RNC before the RANAP Security Mode Command is sent. The authentication procedure (if it is to be performed) can be done before or after sending the UESBI-Iu to the RNC.

If the RNC does not receive the UESBI-Iu information before the RANAP Security Mode Command, then the RNC should assume that no UESBI-Iu information is available for this UE (for example, because the SGSN does not support the PUESBINE Feature) (and unless the RNC has already received UESBI-Iu on an existing CS domain Iu connection).

4-8) Steps 4 to 8 are as described in TS 23.060. [4]

5.2.8.2 Network Initiated Service Request Procedure

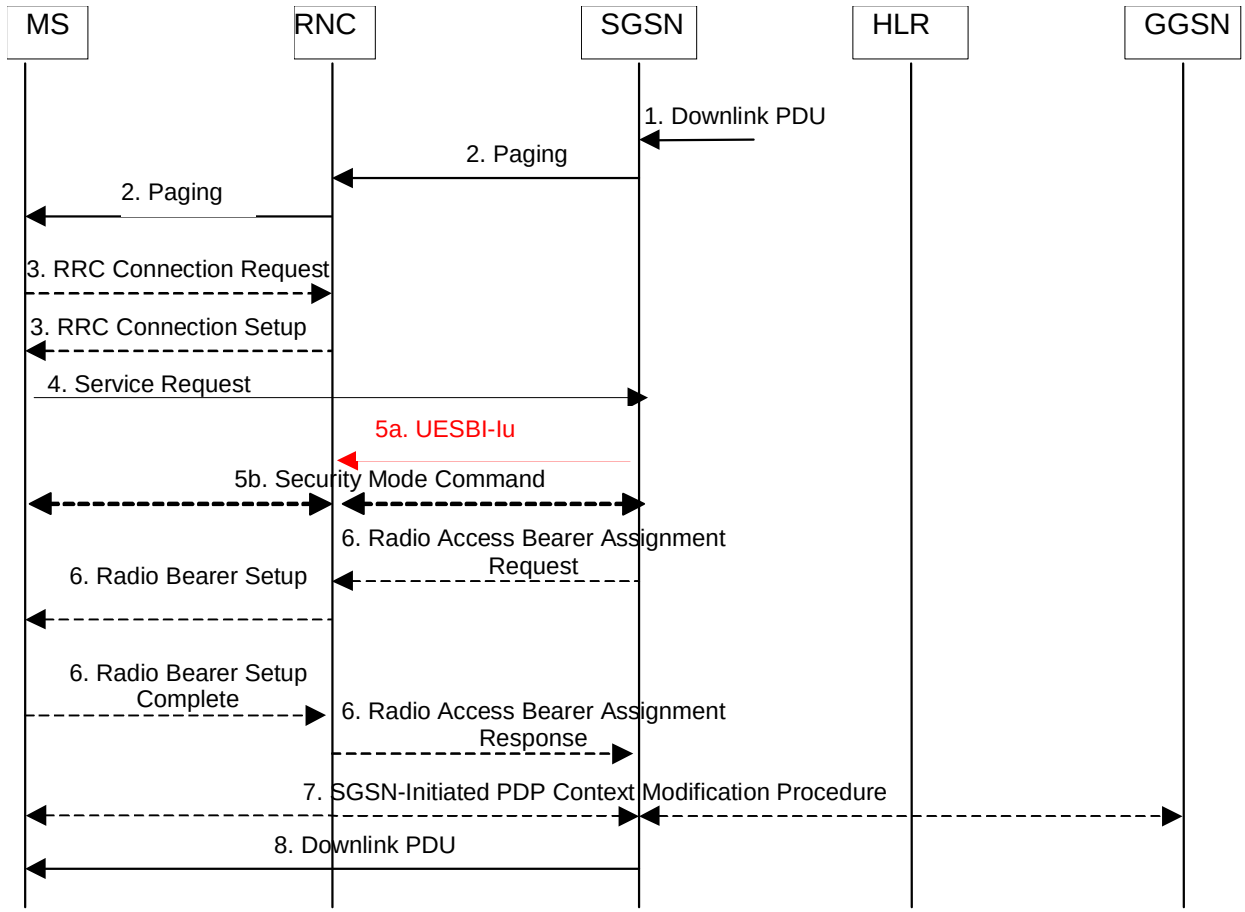

Figure 5.2.8.2-1: Network Initiated Service Request Procedure

1-4) Steps 1 to 4 are as described in TS 23.060 [4].

The MS sends a Service Request (P-TMSI, RAI, CKSN, Service Type) message to the SGSN. Service Type specifies Paging Response.

5a, b) The SGSN shall send the UESBI-Iu to the RNC before the RANAP Security Mode Command is sent. The Authentication procedure (if it is to be performed) can be done before or after sending the UESBI-Iu to the RNC.

If the RNC does not receive the UESBI-Iu information before the RANAP Security Mode Command, then the RNC should assume that no UESBI-Iu information is available for this UE (for example, because the SGSN does not support the PUESBINE Feature) (and unless the RNC has already received UESBI-Iu on an existing CS domain Iu connection).

6-8) Steps 6 to 8 are as described in TS 23.060 [4].

5.2.9 Intra- and inter-MSC handover ~~GSM to UMTS~~from A/Gb mode to Iu mode

For the intra-3G_MSC ~~GSM to UMTS~~A/Gb mode to Iu mode handover procedure described in 3GPP TS 23.009 [5], the UESBI-Iu shall be sent from the 3G_MSC to the target RNS in the Iu Relocation Request message.

The Basic Inter-MSC Handover ~~GSM to UMTS~~A/Gb mode to Iu mode is illustrated in Figure 5.2.9-1 (copied from 3GPP TS 23.009 [5]).

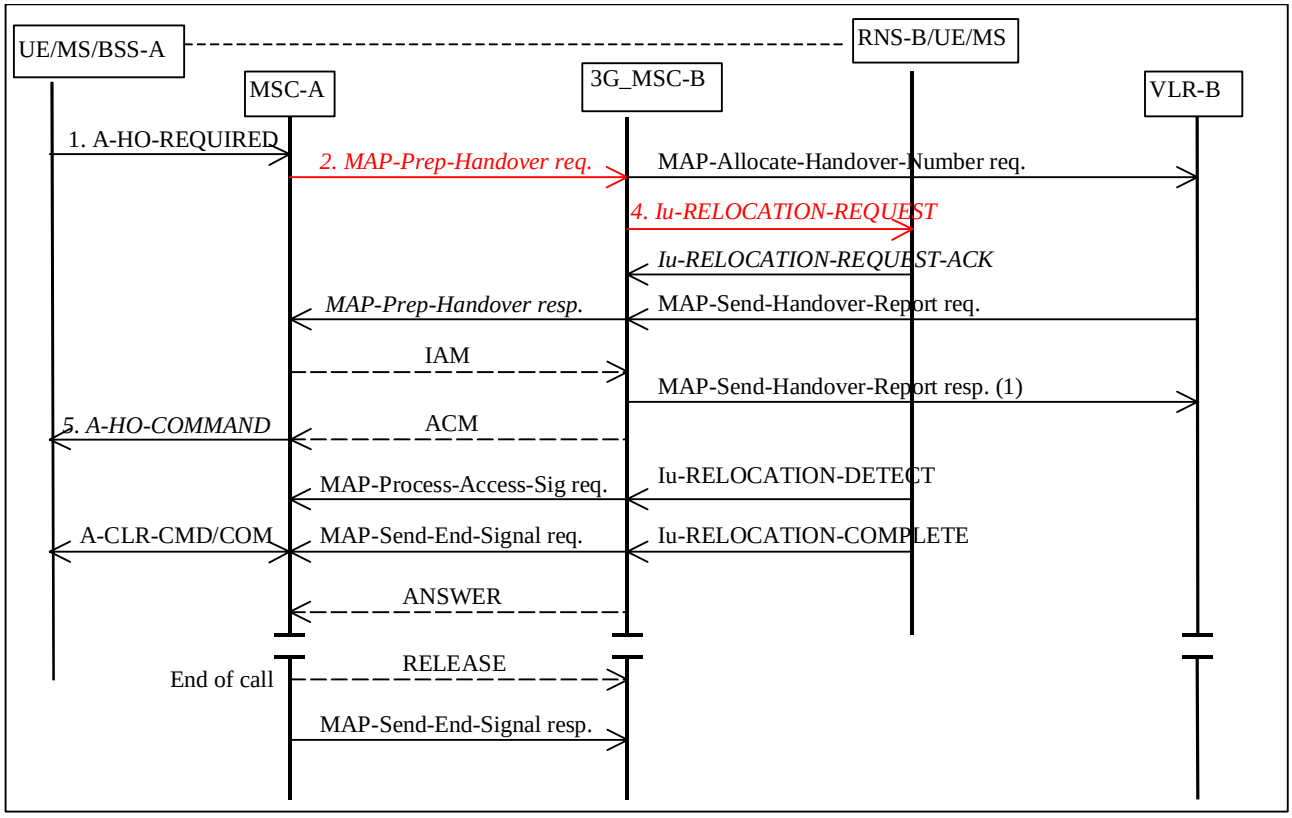

Figure 5.2.9-1 ~~GSM to UMTS~~A/Gb mode to Iu mode inter-MSC handover

~~GSM to UMTS~~A/Gb mode to Iu mode handover is initiated as described in 3GPP TS 23.009 [5].

1 The UESBI-Iu is NOT sent by BSS-A to MSC-A.

2 MSC-A derives the UESBI-Iu from the IMEISV The UESBI-Iu shall be sent by MSC-A to 3G_MSC-B in the MAP_Prepare_Handover request message.

If 3G_MSC-B did not receive the UESBI-Iu (for example because MSC-A does not support the PUESBINE Feature) then 3G_MSC-B shall ignore this fact.

3 3G_MSC-B shall store the UESBI-Iu in case it is needed for a later inter RNC [/BSS] intra MSC-B handover .

4 3G_MSC-B shall include the UESBI-Iu in the Iu-RELOCATION-REQUEST message sent to the target RNC.

If the RNC does not receive the UESBI-Iu in the Iu-RELOCATION REQUEST message (eg because either MSC-A or MSC-B does not support the PUESBINE Feature) then the RNC shall not reject the Iu-RELOCATION REQUEST because the UESBI-Iu is missing.

The rest of the steps are as described in 3GPP TS 23.009 [5].

For subsequent Inter-MSC handover, MSC-A shall transfer the UESBI-Iu to MSC-B'.

5.2.10 Inter-MSC handover GSM to GSM in A/Gb-mode

In the Basic inter-MSC handover procedure (GSM to GSM) described in 3GPP TS 23.009 [5], UESBI-Iu shall be transferred from MSC-A to MSC-B. One reason for this is because UESBI-Iu may be needed in the case that there is a later ~~inter-system~~ handover from ~~GSM to UMTS~~A/Gb mode to Iu mode under MSC-B.

The Inter-MSC Handover GSM to GSM is illustrated in Figure 5.2.10-1 (copied from 3GPP TS 23.009 [5]).

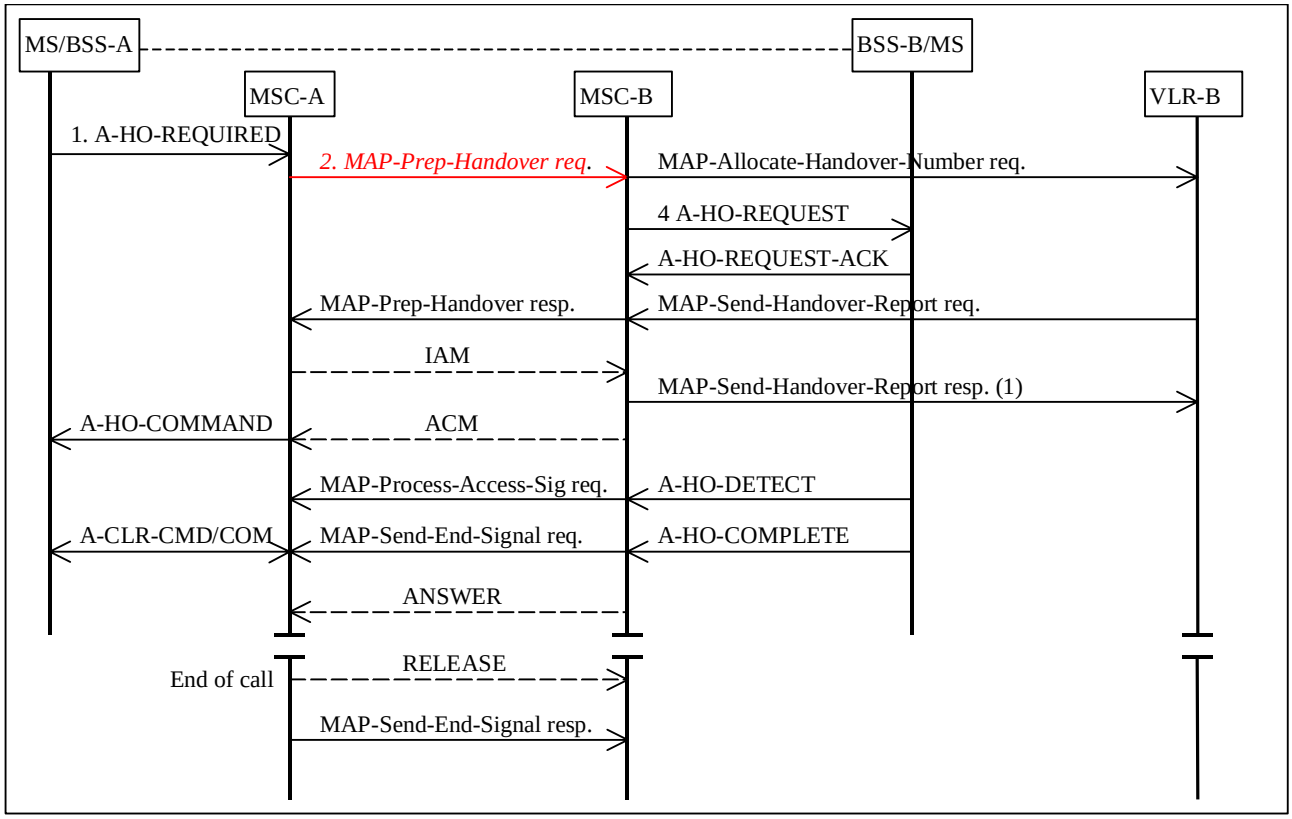

Figure 5.2.10-1. GSM to GSM inter-MSC handover

Inter-MSC GSM to GSM handover is initiated as described in 3GPP TS 23.009 [5].

1 The UESBI-Iu is NOT sent by BSS-A to MSC-A.

2 MSC-A derives the UESBI-Iu from the IMEISV. The UESBI-Iu shall be sent by MSC-A to MSC-B in the MAP_Prepare_Handover request message.

If MSC-B did not receive the UESBI-Iu (for example because MSC-A does not support the PUESBINE Feature) then MSC-B shall ignore this fact.

3 MSC-B shall store the UESBI-Iu in case it is needed for a later ~~BSS to RNC~~A/Gb mode to Iu mode intra MSC-B handover.

[4 If MSC-A supports the transfer of UESBI-Iu on the A interface, then the UESBI-Iu shall be sent to the BSS in the Handover Request message.]

The rest of the steps are as described in 3GPP TS 23.009 [5].

For Subsequent Inter-MSC handover, MSC-A shall transfer the UESBI-Iu to MSC-B'.

5.2.11 Inter-MSC handover ~~UMTS~~ Iu mode to ~~GSM~~A/Gb-mode

In the Basic inter-MSC handover procedure ~~(UMTS to GSM)~~(Iu mode to A/Gb mode) described in 3GPP TS 23.009 [5], UESBI-Iu shall be transferred from MSC-A to MSC-B. This is because UESBI-Iu may be needed in the case that there is a later ~~inter-system~~ handover from ~~GSM to UMTS~~A/Gb mode to Iu mode under MSC-B.

The Inter-MSC Handover Iu mode to A/Gb mode ~~UMTS to GSM~~ is illustrated in Figure 5.2.11-1 (copied from 3GPP TS 23.009 [5]).

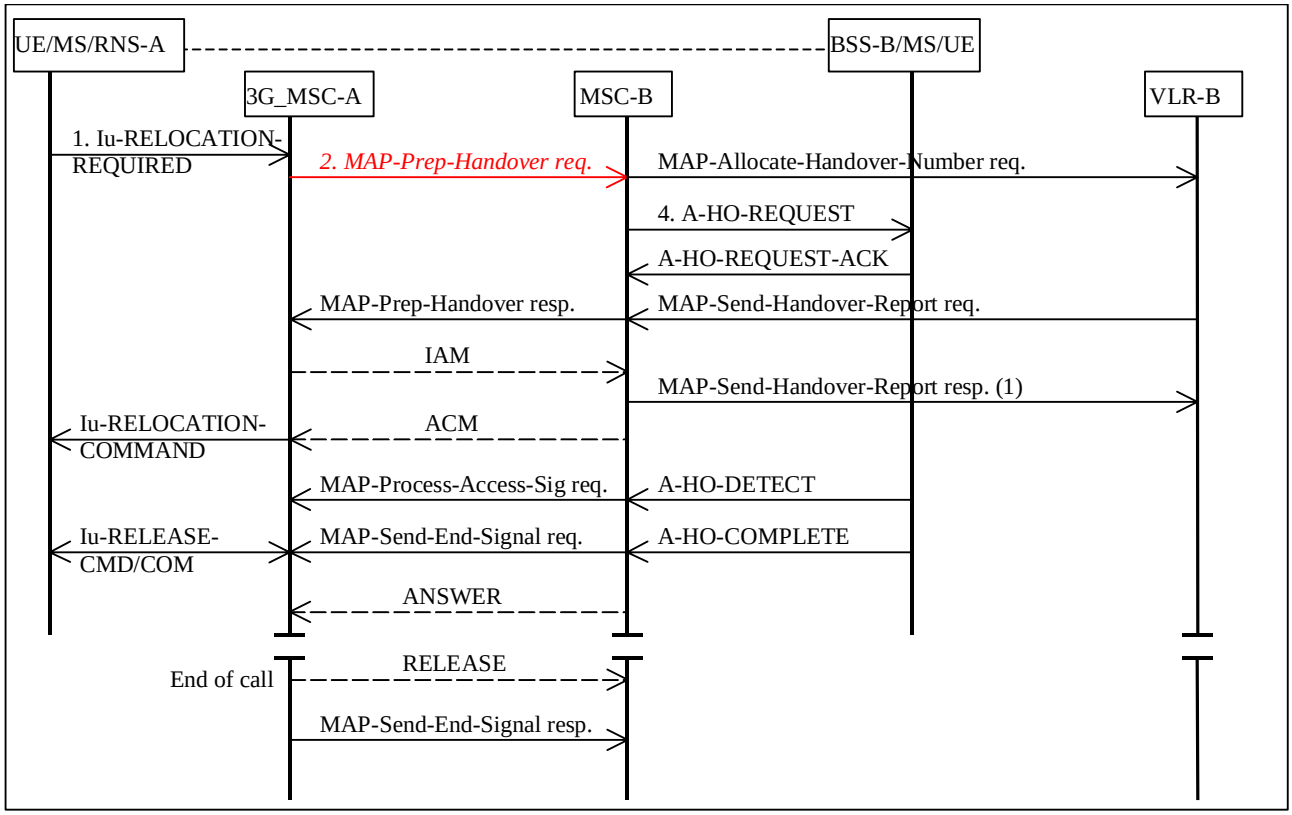

Figure 5.2.11-1 Iu mode to A/Gb mode ~~UMTS to GSM~~ inter-MSC handover

Iu mode to A/Gb mode ~~UMTS to GSM~~ handover is initiated as described in 3GPP TS 23.009 [5].

1 The UESBI-Iu is NOT sent by RNS-A to 3G_MSC-A.

2 3G_MSC-A derives the UESBI-Iu from the IMEISV. The UESBI-Iu shall be sent by 3G_MSC-A to MSC-B in the MAP_Prepare_Handover request message.

If MSC-B did not receive the UESBI-Iu (for example because 3G_MSC-A does not support the PUESBINE Feature) then MSC-B shall ignore this fact.

3 MSC-B shall store the UESBI-Iu in case it is needed for a later ~~BSS to RNC~~A/Gb mode to Iu mode intra MSC-B handover.

[4 If 3G_MSC-A supports the transfer of UESBI-Iu on the A interface, then the UESBI-Iu shall be sent to the BSS in the Handover Request message.]

The rest of the steps are as described in 3GPP TS 23.009 [5].

For Subsequent Inter-MSC handover, MSC-A shall transfer the UESBI-Iu to MSC-B'.

5.2.12 Intra- and inter-MSC SRNS relocation ~~UMTS to UMTS~~

For the intra-3G_MSC SRNS relocation procedure described in 3GPP TS 23.009 [5], the 3G_MSC-B shall send the UESBI-Iu to the target RNS in the Iu Relocation Request message.

The Inter-MSC SRNS relocation procedure is illustrated in Figure 5.2.12-1 (copied from 3GPP TS 23.009) [5].

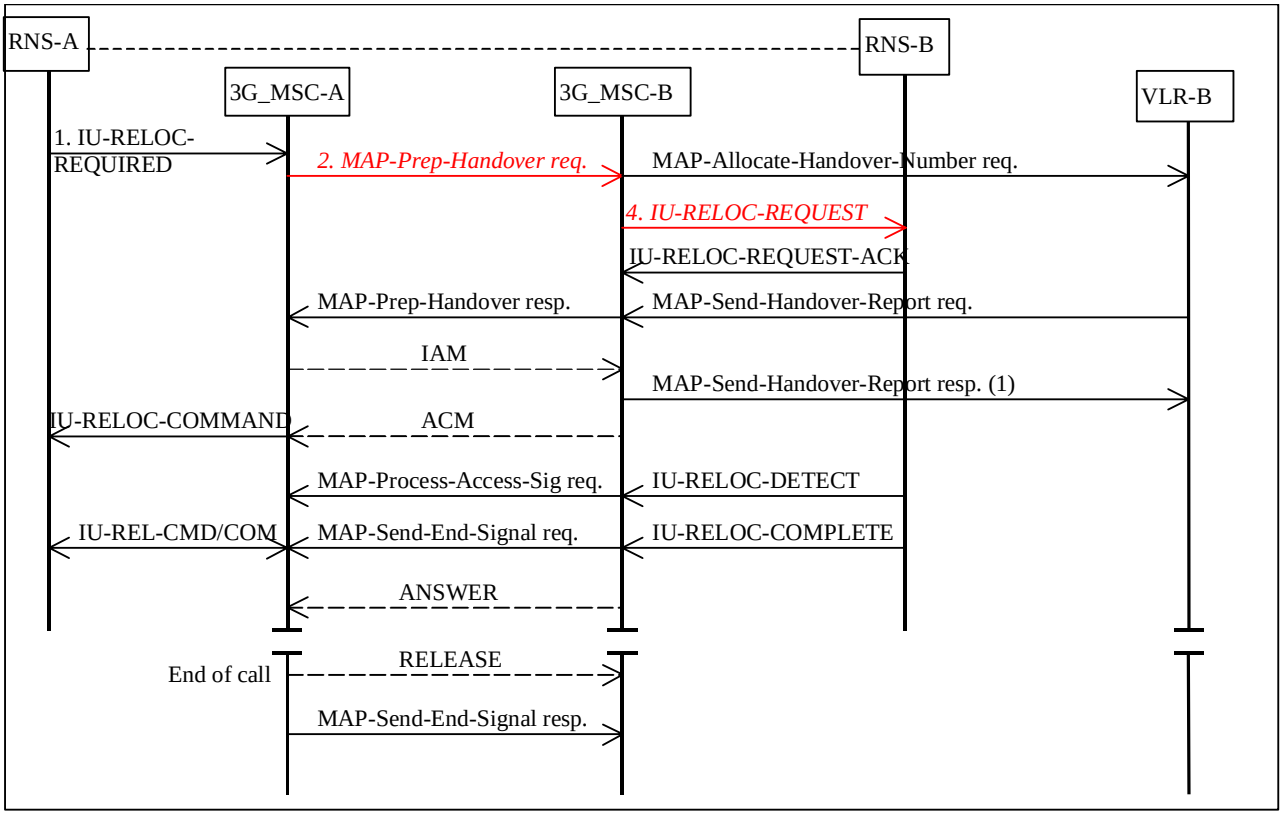

Figure 5.2.12-1. Inter-MSC SRNS relocation

Inter-MSC SRNS relocation is initiated as described in 3GPP TS 23.009 [5].

1 The UESBI-Iu is NOT sent by RNS-A to 3G_MSC-A.

2 3G_MSC-A derives the UESBI-Iu from the IMEISV. The UESBI-Iu shall be sent by 3G_MSC-A to 3G_MSC-B in the MAP_Prepare_Handover request message.

If 3G_MSC-B did not receive the UESBI-Iu (for example because 3G_MSC-A does not support the PUESBINE Feature) then the 3G_MSC-B shall ignore this fact.

3 3G_MSC-B shall store the UESBI-Iu in case it is needed for a later inter RNC [/BSS] intra MSC-B handover.

4 3G_MSC-B shall send the UESBI-Iu to the target RNC in the Iu-RELOCATION-REQUEST message.

If the RNC does not receive the UESBI-Iu in the Iu-RELOCATION REQUEST message (eg because either 3G_MSC-A or 3G_MSC-B does not support the PUESBINE Feature) then the RNC shall not reject the Iu-RELOCATION REQUEST because the UESBI-Iu is missing.

The rest of the steps are as described in 3GPP TS 23.009 [5].

For Subsequent Inter-MSC handover, MSC-A shall transfer the UESBI-Iu to MSC-B'.

5.2.13 Intra- and inter-SGSN SRNS relocation ~~(UMTS to UMTS)~~

For the intra SGSN SRNS relocation procedure, the SGSN shall send the UESBI-Iu to the target RNS in the Iu Relocation Request message. The Inter-SGSN SRNS relocation is illustrated in Figure 5.2.13-1 (copied from 3GPP TS 23.060 [4]).

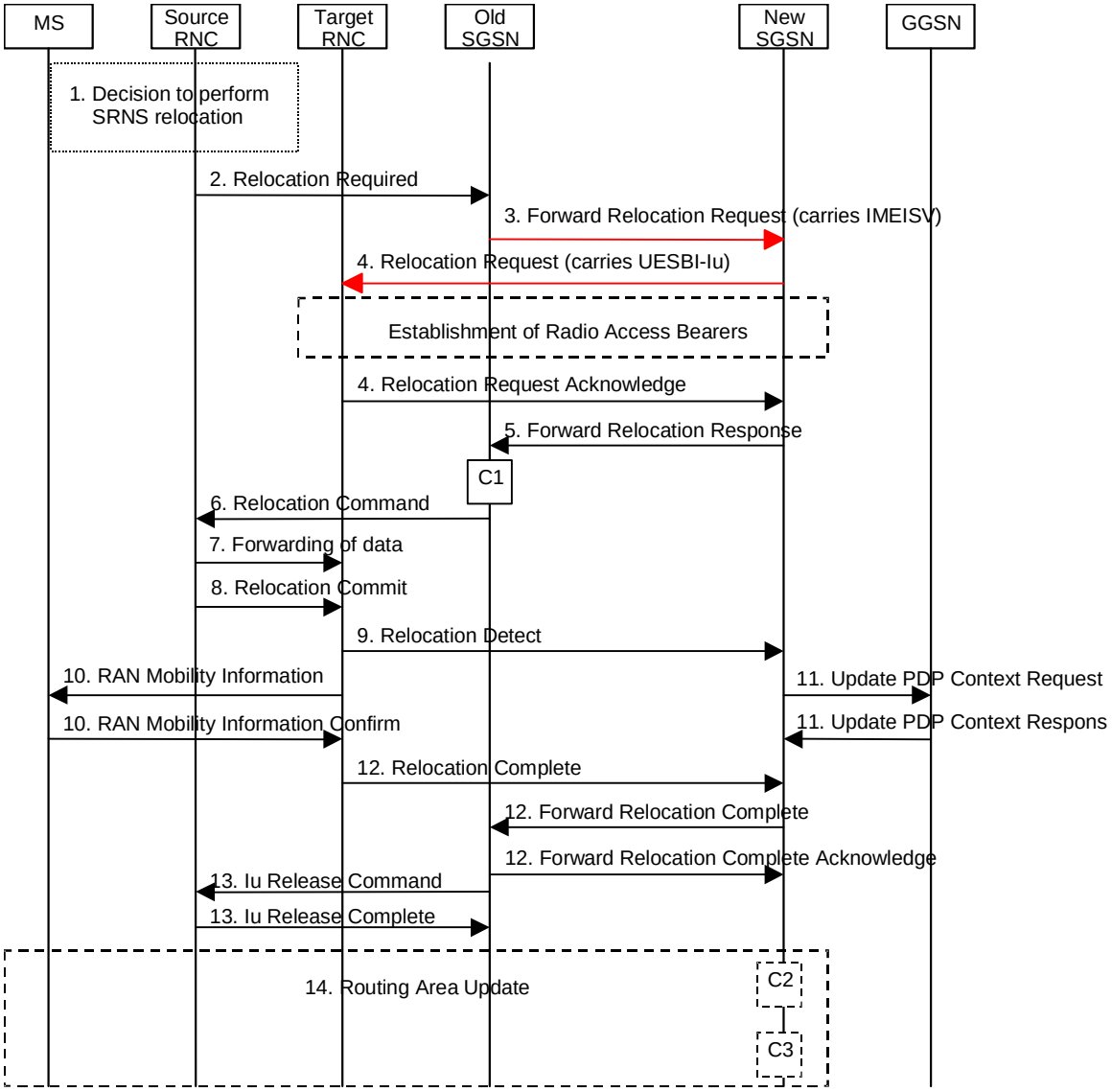

Figure 5.2.13-1. Inter-SGSN SRNS relocation

Inter-SGSN SRNS relocation is initiated as described in 3GPP TS 23.060 [4].

2 The UESBI-Iu is NOT sent by the Source RNC to the old SGSN.

3 In case of inter-SGSN SRNS relocation, the old SGSN initiates the relocation resource allocation procedure by sending a Forward Relocation Request message to the new SGSN. The old SGSN shall include the IMEISV in the Forward Relocation Request message.

If the new SGSN did not receive the IMEISV in the Forward Relocation Request message (for example because the old SGSN does not support the PUESBINE Feature), then the new SGSN shall get IMEISV from the MS during the Routing Area update procedure (step14). In this case the new SGSN shall send the UESBI-Iu to the RNC during step 14.

4 The new SGSN shall use the IMEISV to obtain the UESBI-Iu and then the new SGSN shall send the UESBI-Iu in the Relocation Request message to the target RNC.

If the target RNC did not receive the UESBI-Iu in the Relocation Request message (for example because either the old or the new SGSN does not support the PUESBINE Feature) then the RNC shall not reject the Iu-RELOCATION REQUEST because the UESBI-Iu is missing.

At point 14, Inter-SGSN Routing Area Update is performed as described in clause 5.2.4.

The rest of the steps are as described in 3GPP TS 23.060 [4].

*****NEXT CHANGE*****

A.7 ~~RNC - BSS~~Iu to A-interface issues

If the RNC sends the new Relocation Request Reject cause value then the MSC needs to be able to map this into an appropriate A interface cause value.

Does the RANAP error handling and/or 29.010 provide a default mapping?

Editor's note: check the CN 4 status of this?

A interface error handling procedures should ensure that reception of the new Cause value is treated in a backwards compatible manner by a BSS that does not support the PUESBINE Feature.

****END OF CHANGES****