3GPP TSG CN Plenary Meeting #16 5^{th} - 7^{th} June 2002 Marco Island, USA.

Source: TSG CN WG4

Title: CR on Rel-5 Technical Enhancements and Improvements

Agenda item: 7.11

Document for: APPROVAL

Introduction:

This document contains 21 CRs on Rel-4 and earlier Work Item "TEI", that have been agreed by TSG CN WG4, and are forwarded to TSG CN Plenary meeting #16 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.082	013		N4-020398	R99	"Long FTN Supported" to be transferred from VLR to HLR with Restore Data	F	3.6.0
23.082	014		N4-020399	Rel-4	"Long FTN Supported" to be transferred from VLR to HLR with Restore Data	Α	4.2.0
29.002	458		N4-020639	R99	Clarification on Resume Call Handling	F	3.12.0
29.002	459		N4-020640	Rel-4	Clarification on Resume Call Handling	Α	4.7.0
29.002	460		N4-020641	Rel-5	Clarification on Resume Call Handling	Α	5.1.0
23.079	017		N4-020658	R99	Removal of unnecessary references to O-CSI	F	3.6.0
23.079	018		N4-020659	Rel-4	Removal of unnecessary references to O-CSI	Α	4.0.0
23.079	019		N4-020660	Rel-5	Removal of unnecessary references to O-CSI	Α	5.0.0
23.008	049		N4-020669	R99	Alignment of 23.008	F	3.6.0
23.008	050		N4-020671	Rel-4	Alignment of 23.008	Α	4.1.0
23.008	053		N4-020741	Rel-5	Alignment of 23.008	Α	5.0.0
23.007	006		N4-020670	R99	Removal of an optional IMSI paging after SGSN restart	F	3.4.0
23.007	007		N4-020672	Rel-4	Removal of an optional IMSI paging after SGSN restart	Α	4.0.0
03.03	A055		N4-020709	R97	Restructuring the IMEI to combine the TAC and FAC	F	6.6.0
03.03	A056		N4-020710	R98	Restructuring the IMEI to combine the TAC and FAC	Α	7.6.0
23.003	042		N4-020711	R99	Restructuring the IMEI to combine the TAC and FAC	Α	3.9.0
23.003	043		N4-020712	Rel-4	Restructuring the IMEI to combine the TAC and FAC	Α	4.3.0
23.003	044		N4-020713	Rel-5	Restructuring the IMEI to combine the TAC and FAC	Α	5.2.0
29.002	438	2	N4-020744	R99	Clarification on SendAuthenticationInfo	F	3.12.0
29.002	439	2	N4-020745	Rel-4	Clarification on SendAuthenticationInfo	Α	4.7.0
29.002	440	2	N4-020746	Rel-5	Clarification on SendAuthenticationInfo	Α	5.1.0

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

			CH	ANG	E RE	QU	ES	T				CR-For	m-v5.1
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For <u>HELP</u> on u	sing t	his form	, see bot	tom of th	is page	or lo	ok at	the	pop-up te	ext ove	er the #	symbol	S.
Proposed change a	affect	's: ₩	(U)SIM	M	E/UE X	R	adio	Acc	cess Netw	ork	Core	Netwo	rk X
Title: #	Res	tructurir	ng the IM	El to cor	nbine th	е ТА	C an	d F	AC				
Source: #	CN4	4											
Work item code: ₩	TEI								Date:	光 13	3 May 20	002	
Category: ₩	Use of the state o	one of the F (correct A (correct B (additing C (functing D (editor led explain)	correction e following ction) sponds to on of feat onal modificial modificial mations of GPP TR 2°	categorion categorion cation cation cation	ion in an f feature)				2	of the (GS (Re (Re (Re (Re	97 following SM Phase elease 19 elease 19 elease 19 elease 4) elease 5)	e 2) 96) 97) 98)	3.:
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Summary of chang	Je: ₩	Assem) with ar	n 8-digit	TAC	(Тур	e Al	roval Code Ilocation (nority			FAC (Fir	nal
Consequences if not approved:	¥	between hexade	en 3GPP: ecimal dig	2 and 30 gits) in th	SPP on the IMEI	he us s cor	se of nditio	dec nal	structure cimal digit on the CF d onwards	s (as c	pposed	to	ent
Clauses affected:	ж	6											
Other specs affected:	*	Tes	er core sp t specifica M Specific	ations	ons	*							
Other comments:	\mathfrak{H}												

6 International Mobile Station Equipment Identity and Software Version Number

6.1 General

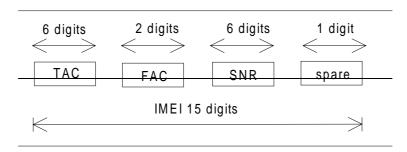
Below the structure and allocation principles of the International Mobile station Equipment Identity and Software Version Number (IMEISV) and the International Mobile station Equipment Identity (IMEI) are defined.

The Mobile Station Equipment is uniquely defined by the IMEI or the IMEISV.

6.2 Composition of IMEI and IMEISV

6.2.1 Composition of IMEI

The International Mobile station Equipment Identity (IMEI) is composed as shown in figure 10.



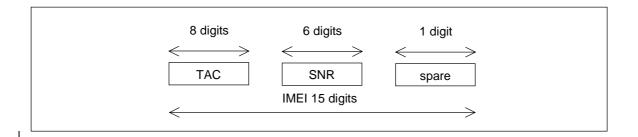


Figure 10: Structure of IMEI

The IMEI is composed of the following elements (each element shall consist of decimal digits only):

- Type Allocation Approval Code (TAC). Its length is 68 digits;
- Final Assembly Code (FAC) identifies the place of manufacture/final assembly. Its length is 2 digits;
- Serial Number (SNR) is an individual serial number uniquely identifying each equipment within each TAC-and FAC. Its length is 6 digits.
- Spare digit: this digit shall be zero, when transmitted by the MS.

The security requirements of the IMEI are defined in TS GSM 02.16.

6.2.2 Composition of IMEISV

The International Mobile station Equipment Identity and Software Version Number (IMEISV) is composed as shown in figure 11.

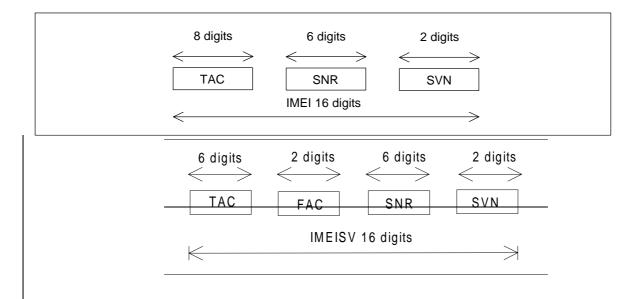


Figure 11: Structure of IMEISV

The IMEISV is composed of the following elements (each element shall consist of decimal digits only):

- Type Allocation Approval Code (TAC). Its length is 68 digits;
- Final Assembly Code (FAC) identifies the place of manufacture/final assembly. Its length is 2 digits;
- Serial Number (SNR) is an individual serial number uniquely identifying each equipment within each TAC-and FAC. Its length is 6 digits.
- Software Version Number (SVN) identifies the software version number of the mobile equipment. Its length is 2 digits.

Regarding updates of the IMEISV: The security requirements of TS GSM 02.16 apply only to the TAC, FAC and SNR, but not to the SVN part of the IMEISV.

6.3 Allocation principles

The Type Allocation Approval Code (TAC) is issued by a central body.

The place of final assembly (FAC) is encoded by the manufacturer.

Manufacturers shall allocate individual serial numbers (SNR) in a sequential order.

For a given ME, the combination of TAC, FAC and SNR used in the IMEI shall duplicate the combination of TAC, FAC and SNR used in the IMEISV.

The Software Version Number is allocated by the manufacturer after authorization by the type approval authority. SVN value 99 is reserved for future use.

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

		CR-Form-v5.1
	CHANGE RE	
	03.03 CR A056 #re	ev - # Current version: 7.6.0 #
For <u>HELP</u> on using	g this form, see bottom of this page	e or look at the pop-up text over the ₩ symbols.
Proposed change affe	ects: # (U)SIM ME/UE	X Radio Access Network Core Network X
Title: # R	estructuring the IMEI to combine t	the TAC and FAC
Source: # C	CN4	
Work item code:	El	Date: 第 13 May 2002
De	The one of the following categories: F (correction) A (corresponds to a correction in an B (addition of feature), C (functional modification of feature) D (editorial modification) Stailed explanations of the above category found in 3GPP TR 21.900.	R97 (Release 1997) e) R98 (Release 1998) R99 (Release 1999)
Reason for change: 8	directive. Under the R&TTE directive approval tests being succe Test another mechanism for all An extension to the decimal IM remove the need for 3GPP2 to which use only 3GPP RAT; this between 3GPP and 3GPP2.	d following the implementation of the R&TTE rective the TAC code allocation was tied to the ressfully completed; without a Type Approval llocating TAC codes is needed. MEI numbering capacity is urgently needed to introduce hexadecimal numbering for terminals is would be a serious blow to harmonization reatible with the existing IMEI structure.
Summary of change: 8	Replace the separate 6-digit Tale Assembly Code) with an 8-digit Remove reference to the Type	, ,,
Consequences if and approved:	between 3GPP2 and 3GPP on	GPP2 over the structure of IMEIs. The agreement of the use of decimal digits (as opposed to I is conditional on the CRs to GSM 03.03 and Release 97 and onwards.
Clauses affected:	光 6	
Other specs affected:	Other core specifications Test specifications O&M Specifications	*
Other comments:	X	

6 International Mobile Station Equipment Identity and Software Version Number

6.1 General

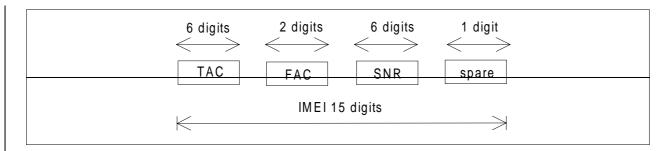
Below the structure and allocation principles of the International Mobile station Equipment Identity and Software Version Number (IMEISV) and the International Mobile station Equipment Identity (IMEI) are defined.

The IMEI or the IMEISV uniquely defines the Mobile Station Equipment.

6.2 Composition of IMEI and IMEISV

6.2.1 Composition of IMEI

The International Mobile station Equipment Identity (IMEI) is composed as shown in figure 10.



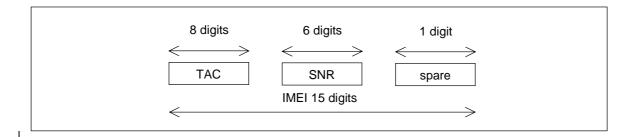


Figure 10: Structure of IMEI

The IMEI is composed of the following elements (each element shall consist of decimal digits only):

- Type Allocation Approval Code (TAC). Its length is of 68 digits;
- Final Assembly Code (FAC) identifies the place of manufacture/final assembly. Its length is of 2 digits;
- Serial Number (SNR) is an individual serial number uniquely identifying each equipment within each TAC-and FAC. Its length is of-6 digits.
- Spare digit: this digit shall be zero, when transmitted by the MS.

The security requirements of the IMEI are defined in TS GSM 02.16.

6.2.2 Composition of IMEISV

The International Mobile station Equipment Identity and Software Version Number (IMEISV) is composed as shown in figure 11.

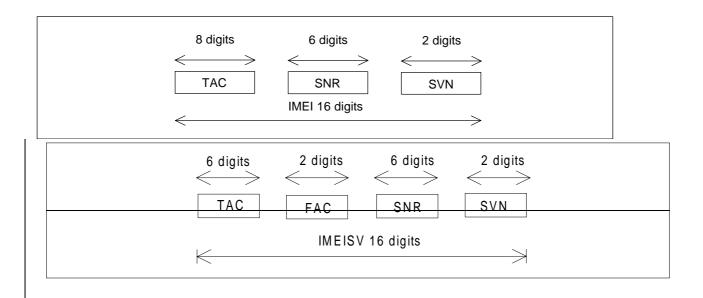


Figure 11: Structure of IMEISV

The IMEISV is composed of the following elements (each element shall consist of decimal digits only):

- Type Allocation Approval Code (TAC). Its length is of 68 digits;
- Final Assembly Code (FAC) identifies the place of manufacture/final assembly. Its length is of 2 digits;
- Serial Number (SNR) is an individual serial number uniquely identifying each equipment within each TAC-and FAC. Its length is of-6 digits.
- Software Version Number (SVN) identifies the software version number of the mobile equipment. Its length is of 2 digits.

Regarding updates of the IMEISV: The security requirements of TS GSM 02.16 apply only to the TAC, FAC and SNR, but not to the SVN part of the IMEISV.

6.3 Allocation principles

A central body issues the Type Allocation Approval-Code (TAC).

The manufacturer encodes the place of final assembly (FAC).

Manufacturers shall allocate individual serial numbers (SNR) in a sequential order.

For a given ME, the combination of TAC, FAC and SNR used in the IMEI shall duplicate the combination of TAC, FAC and SNR used in the IMEISV.

The manufacturer allocates the Software Version Number-after authorisation by the type approval authority. SVN value 99 is reserved for future use.

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

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	CHAN	IGE REQU	IEST		CR-Form-v5.1
¥ 2	23.003 CR 042	жrev	<mark>_</mark>	rrent version:	3.9.0 [#]
For <u>HELP</u> on usin	ng this form, see bottom o	of this page or lo	ok at the po	op-up text over	the ¥ symbols.
Proposed change affe	ects: # (U)SIM	ME/UE X R	adio Acces	ss Network	Core Network X
Title: ₩ F	Restructuring the IMEI to	combine the TA	C and FAC	,	
Source: # C	CN4				
Work item code:	ΓEI			Date: 第 13	May 2002
De	se one of the following cate F (correction) A (corresponds to a cor B (addition of feature), C (functional modification etailed explanations of the a e found in 3GPP TR 21.900	rection in an earlie on of feature) o) above categories o	t er release)	R96 (Rele R97 (Rele R98 (Rele R99 (Rele REL-4 (Rele	
Reason for change:	The TAC code was odirective. Under the type approval tests to Test another mechan An extension to the remove the need for which use only 3GP between 3GPP and The proposed change.	R&TTE directive peing successful nism for allocatin decimal IMEI nuit 3GPP2 to introce P RAT; this would 3GPP2.	the TAC colly complete ng TAC cod mbering cal duce hexade d be a serio	ode allocation ved; without a Ty les is needed. pacity is urgent ecimal numberi ous blow to har	was tied to the pe Approval ly needed to ng for terminals monization
Summary of change:	Replace the separat Assembly Code) wit Remove reference to	h an 8-digit TAC	(Type Alloc	cation Code).	-digit FAC (Final
Consequences if not approved:	# Discord between 3G between 3GPP2 and hexadecimal digits) i 23.003 being applied	d 3GPP on the us in the IMEI is cor	se of decim	al digits (as op the CRs to GS	posed to
Clauses affected:	光 6				
Other specs affected:	Cther core specification O&M Specification	s			
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6 International Mobile Station Equipment Identity and Software Version Number

6.1 General

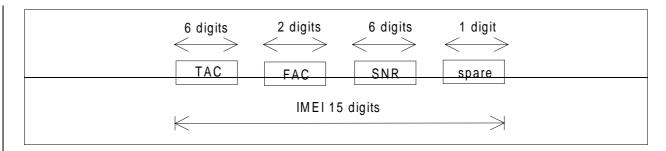
Below the structure and allocation principles of the International Mobile station Equipment Identity and Software Version Number (IMEISV) and the International Mobile station Equipment Identity (IMEI) are defined.

The Mobile Station Equipment is uniquely defined by the IMEI or the IMEISV.

6.2 Composition of IMEI and IMEISV

6.2.1 Composition of IMEI

The International Mobile station Equipment Identity (IMEI) is composed as shown in figure 10.



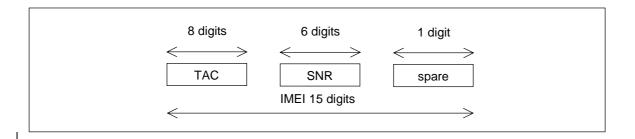


Figure 10: Structure of IMEI

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- Type Allocation Approval Code (TAC). Its length is 68 digits;
- Final Assembly Code (FAC) identifies the place of manufacture/final assembly. Its length is 2 digits;
- Serial Number (SNR) is an individual serial number uniquely identifying each equipment within each TAC—and FAC. Its length is 6 digits.
- Spare digit: this digit shall be zero, when transmitted by the MS.

The IMEI (14 digits) is complemented by a check digit. The check digit is not part of the digits transmitted at IMEI check occasions, as described below. The Check Digit shall avoid manual transmission errors, e.g. when customers register stolen MEs at the operators customer care desk. The Check Digit is defined according to the Luhn formula, as defined in annex B.

NOTE: The Check Digit is not applied to the Software Version Number.

The security requirements of the IMEI are defined in TS GSM 02.16.

6.2.2 Composition of IMEISV

The International Mobile station Equipment Identity and Software Version Number (IMEISV) is composed as shown in figure 11.

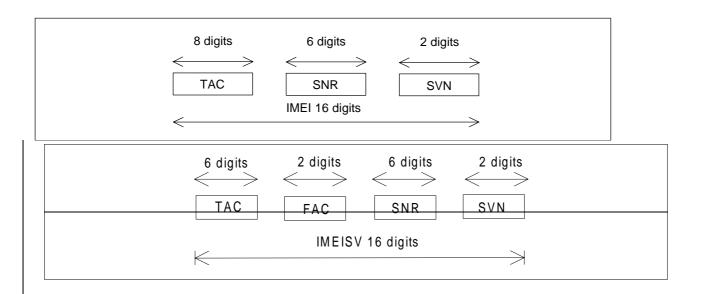


Figure 11: Structure of IMEISV

The IMEISV is composed of the following elements (each element shall consist of decimal digits only):

- Type Allocation Approval Code (TAC). Its length is 68 digits;
- Final Assembly Code (FAC) identifies the place of manufacture/final assembly. Its length is 2 digits;
- Serial Number (SNR) is an individual serial number uniquely identifying each equipment within each TAC-and FAC. Its length is 6 digits.
- Software Version Number (SVN) identifies the software version number of the mobile equipment. Its length is 2 digits.

Regarding updates of the IMEISV: The security requirements of 3GPP TS GSM-22.016 apply only to the TAC, FAC and SNR, but not to the SVN part of the IMEISV.

6.3 Allocation principles

The Type Approval Allocation Code (TAC) is issued by a central body.

The place of final assembly (FAC) is encoded by the manufacturer.

Manufacturers shall allocate individual serial numbers (SNR) in a sequential order.

For a given ME, the combination of TAC, FAC and SNR used in the IMEI shall duplicate the combination of TAC, FAC and SNR used in the IMEISV.

The manufacturer allocates the Software Version Number-after authorisation by the type approval authority. SVN value 99 is reserved for future use.

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

	CHANGE REQUEST	CR-Form-v5.1
¥ 2	3.003 CR 043 # rev - # Current version: 4.3.	0 *
For <u>HELP</u> on using	g this form, see bottom of this page or look at the pop-up text over the #	symbols.
Proposed change affe	ects: ### (U)SIM ME/UE X Radio Access Network Core	Network X
Title:	Restructuring the IMEI to combine the TAC and FAC	
Source: # C	CN4	
Work item code:	TEI Date: 第 13 May 20	002
De	Release: \$\mathbb{R}\$ REL-4 See 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) P (editorial modification) P (editorial modification) Release 199 Release 5)	e 2) 96) 97) 98)
Reason for change:	The TAC code was considered following the implementation of the Redirective. Under the R&TTE directive the TAC code allocation was tie type approval tests being successfully completed; without a Type Approval test another mechanism for allocating TAC codes is needed. An extension to the decimal IMEI numbering capacity is urgently need remove the need for 3GPP2 to introduce hexadecimal numbering for which use only 3GPP RAT; this would be a serious blow to harmonize between 3GPP and 3GPP2. The proposed change is compatible with the existing IMEI structure.	d to the proval ded to terminals
Summary of change:	Replace the separate 6-digit TAC (Type Approval Code) and 2-digit F Assembly Code) with an 8-digit TAC (Type Allocation Code). Remove reference to the Type Approval Authority	FAC (Final
Consequences if not approved:	Discord between 3GPP and 3GPP2 over the structure of IMEIs. The abetween 3GPP2 and 3GPP on the use of decimal digits (as opposed hexadecimal digits) in the IMEI is conditional on the CRs to GSM 03.023.003 being applied to GSM Release 97 and onwards.	to
Clauses affected:		
Other specs affected:	# Other core specifications # Test specifications O&M Specifications	
Other comments:	ж	

6 International Mobile Station Equipment Identity and Software Version Number

6.1 General

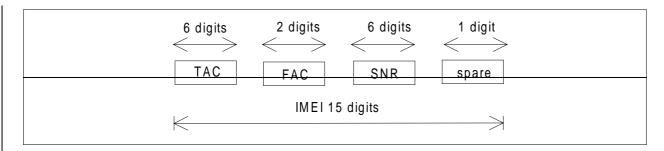
Below the structure and allocation principles of the International Mobile station Equipment Identity and Software Version Number (IMEISV) and the International Mobile station Equipment Identity (IMEI) are defined.

The Mobile Station Equipment is uniquely defined by the IMEI or the IMEISV.

6.2 Composition of IMEI and IMEISV

6.2.1 Composition of IMEI

The International Mobile station Equipment Identity (IMEI) is composed as shown in figure 10.



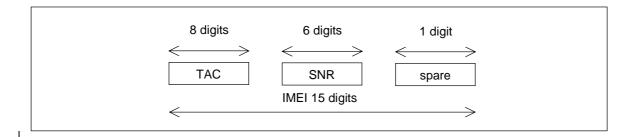


Figure 10: Structure of IMEI

The IMEI is composed of the following elements (each element shall consist of decimal digits only):

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- Serial Number (SNR) is an individual serial number uniquely identifying each equipment within each TAC-and FAC. Its length is 6 digits.
- Spare digit: this digit shall be zero, when transmitted by the MS.

The IMEI (14 digits) is complemented by a check digit. The check digit is not part of the digits transmitted at IMEI check occasions, as described below. The Check Digit shall avoid manual transmission errors, e.g. when customers register stolen MEs at the operators customer care desk. The Check Digit is defined according to the Luhn formula, as defined in annex B.

NOTE: The Check Digit is not applied to the Software Version Number.

The security requirements of the IMEI are defined in TS GSM 02.16.

6.2.2 Composition of IMEISV

The International Mobile station Equipment Identity and Software Version Number (IMEISV) is composed as shown in figure 11.

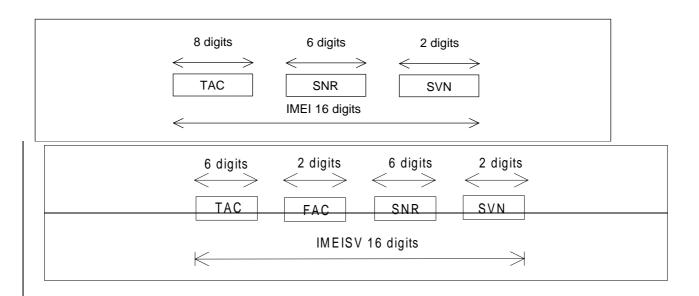


Figure 11: Structure of IMEISV

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- Software Version Number (SVN) identifies the software version number of the mobile equipment. Its length is 2 digits.

Regarding updates of the IMEISV: The security requirements of 3GPP TS GSM-22.016 apply only to the TAC, FAC and SNR, but not to the SVN part of the IMEISV.

6.3 Allocation principles

The Type Approval Allocation Code (TAC) is issued by a central body.

The place of final assembly (FAC) is encoded by the manufacturer.

Manufacturers shall allocate individual serial numbers (SNR) in a sequential order.

For a given ME, the combination of TAC, FAC and SNR used in the IMEI shall duplicate the combination of TAC, FAC and SNR used in the IMEISV.

The manufacturer allocates the Software Version Number-after authorisation by the type approval authority. SVN value 99 is reserved for future use.

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

	CHA	NGE REQUE	CR-Form-v5.1
ж 2 :	3.003 CR	044	# Current version: 5.2.0
For HELP on using	g this form, see botton	n of this page or look	at the pop-up text over the 第 symbols.
Proposed change affe	ects: 第 (U)SIM	ME/UE <mark>X</mark> Rad	io Access Network Core Network X
Title: 第 R	Restructuring the IMEI	to combine the TAC a	and FAC
Source: # C	CN4		
Work item code: ₩ T	El		Date: # 13 May 2002
De	se <u>one</u> of the following ca F (correction)	correction in an earlier re), ation of feature) on) e above categories can	R97 (Release 1997) R98 (Release 1998) R99 (Release 1999)
Reason for change:	directive. Under the type approval tests. Test another mechan extension to the remove the need for which use only 3G between 3GPP and	e R&TTE directive the specific being successfully on anism for allocating the decimal IMEI numbers 3GPP2 to introduction and the second	g the implementation of the R&TTE e TAC code allocation was tied to the completed; without a Type Approval TAC codes is needed. ering capacity is urgently needed to be hexadecimal numbering for terminals be a serious blow to harmonization th the existing IMEI structure.
Summary of change:	Assembly Code) w		e Approval Code) and 2-digit FAC (Final ype Allocation Code).
Consequences if not approved:	between 3GPP2 a hexadecimal digits	nd 3GPP on the use	of the structure of IMEIs. The agreement of decimal digits (as opposed to tional on the CRs to GSM 03.03 and 97 and onwards.
Clauses affected:	₩ 6		
Other specs affected:	# Other core spec Test specification O&M Specification	ons	
Other comments:	₩		

6 International Mobile Station Equipment Identity and Software Version Number

6.1 General

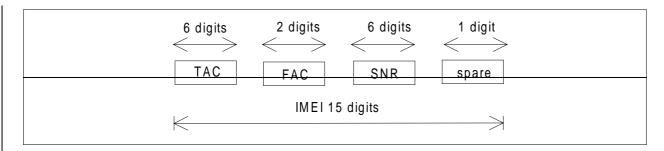
Below the structure and allocation principles of the International Mobile station Equipment Identity and Software Version Number (IMEISV) and the International Mobile station Equipment Identity (IMEI) are defined.

The Mobile Station Equipment is uniquely defined by the IMEI or the IMEISV.

6.2 Composition of IMEI and IMEISV

6.2.1 Composition of IMEI

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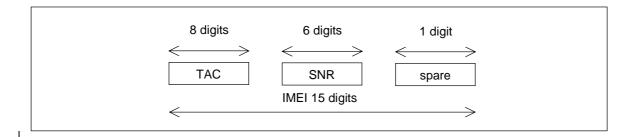


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- Spare digit: this digit shall be zero, when transmitted by the MS.

The IMEI (14 digits) is complemented by a check digit. The check digit is not part of the digits transmitted at IMEI check occasions, as described below. The Check Digit shall avoid manual transmission errors, e.g. when customers register stolen MEs at the operators customer care desk. The Check Digit is defined according to the Luhn formula, as defined in annex B.

NOTE: The Check Digit is not applied to the Software Version Number.

The security requirements of the IMEI are defined in TS GSM 02.16.

6.2.2 Composition of IMEISV

The International Mobile station Equipment Identity and Software Version Number (IMEISV) is composed as shown in figure 11.

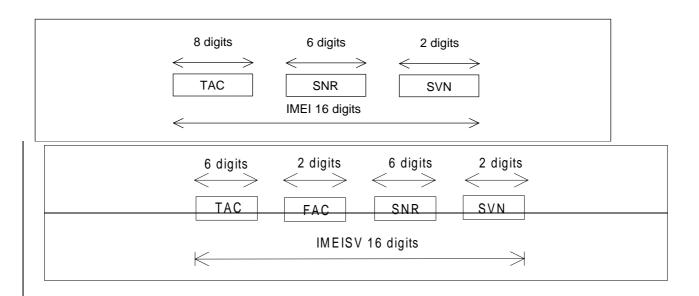


Figure 11: Structure of IMEISV

The IMEISV is composed of the following elements (each element shall consist of decimal digits only):

- Type <u>Allocation Approval Code</u> (TAC). Its length is 68 digits;
- Final Assembly Code (FAC) identifies the place of manufacture/final assembly. Its length is 2 digits;
- Serial Number (SNR) is an individual serial number uniquely identifying each equipment within each TAC-and FAC. Its length is 6 digits.
- Software Version Number (SVN) identifies the software version number of the mobile equipment. Its length is 2 digits.

Regarding updates of the IMEISV: The security requirements of 3GPP TS GSM-22.016 apply only to the TAC, FAC and SNR, but not to the SVN part of the IMEISV.

6.3 Allocation principles

The Type Approval Allocation Code (TAC) is issued by a central body.

The place of final assembly (FAC) is encoded by the manufacturer.

Manufacturers shall allocate individual serial numbers (SNR) in a sequential order.

For a given ME, the combination of TAC, FAC and SNR used in the IMEI shall duplicate the combination of TAC, FAC and SNR used in the IMEISV.

The manufacturer allocates the Software Version Number-after authorisation by the type approval authority. SVN value 99 is reserved for future use.

3GPP TSG- CN4 #14 Budapest, Hungary, 13th - 17th May 2002

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How to create CRs using this form:

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- 1) Fill out the above form. The symbols above marked \$\mathbb{H}\$ contain pop-up help information about the field that they are closest to.
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1 Scope

The data stored in location registers are automatically updated in normal operation; the main information stored in a location register defines the location of each mobile station and the subscriber data required to handle traffic for each mobile subscriber. The loss or corruption of these data will seriously degrade the service offered to mobile subscribers; it is therefore necessary to define procedures to limit the effects of failure of a location register, and to restore the location register data automatically. The present document defines the necessary procedures.

The basic principle is that restoration should be based on radio contact to avoid faulty data being spread in the system.

Subscriber data for supplementary services must also be correctly restored, although the impact on service of corruption of supplementary service data is less severe.

Procedures for supporting these functions are defined in GSM 09.02 and 09.603GPP TS -29.002 and 3GPP TS 29.060.

The MAP operation "IMSI Attach" is used only in MAP version 1; in MAP version 2 the same function is performed by the MAP operation "Update Location Area". References in this specification to IMSI attach apply only to MAP version 1 network entities.

If the restoration of subscriber data in the VLR is triggered by Location Updating or IMSI Attach, the VLR retrieves subscriber data from the HLR by sending an "Update Location" request, which triggers one or more "Insert Subscriber Data" operations from the HLR. The "Update Location" request may also be used to send the LMSI to the HLR.

If the restoration of subscriber data in the VLR is triggered by a "Provide Roaming Number" request, the behaviour of the VLR depends on whether it is implemented according to MAP version 1 or MAP version 2. For MAP version 2, the VLR retrieves subscriber data from the HLR by sending a "Restore Data" request, which triggers one or more "Insert Subscriber Data" operations from the HLR. The "Restore Data" request is also used to send the LMSI to the HLR. For MAP version 1, the VLR retrieves subscriber data from the HLR by sending a "Send Parameters" request with parameter type "Subscriber Data", which cannot be used to send the LMSI to the HLR.

The VLR number and MSC number in the subscriber data in the HLR are updated by the "Update Location" procedure.

The GGSN (Gateway GPRS Support Node) is the point of PDN interconnection with the GSM PLMN supporting GPRS. The GGSN contains routing information for GPRS users with a PDP context active. The necessary procedures needed to restore GGSN data information after a restart are described in this document.

The SGSN (Serving GPRS Support Node) is the node that is serving the MS. The SGSN stores information regarding e.g. mobility management, routing and security. The necessary procedures needed to restore this SGSN information after a restart are described in this document.

A Type A LMU (Location Measurement Unit) is a network node, accessed over the GSM air interface, that is functionally similar to an MS. All requirements associated with a non-GPRS MS in this specification apply also to a Type A LMU except where specified otherwise.

NEXT MODIFICATION

4.2.2 Mobile Terminated Short Message

a) Send Routing Information for MT SMS (SMS-GMSC->HLR):

The HLR returns the MSC number as for normal operation.

- b) Send Information for MT SMS (MSC->VLR) MAP version 2:
 - If the VLR has no IMSI record, or if the record is marked "Subscriber Data Not Confirmed by HLR" the VLR returns an "Unidentified Subscriber" error. This causes the MSC to report a short message delivery failure, with cause "Unidentified Subscriber", to the SMS gateway MSC. The Gateway MSC sends a "Report SM Delivery Status" request, with a cause of "Absent Subscriber", to the HLR. This causes the HLR to set the "Mobile Station Not Reachable Flag" for the MS, as described in Technical Specifications GSM 03.40 and GSM 09.023GPP TS -23.040 and 3GPP TS -29.002.
 - If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Not Confirmed by Radio Contact", the VLR handles the request in the normal way, except that the "Search for MS" procedure is used instead of the "Page MS" procedure.
 - If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Confirmed by Radio Contact", the VLR handles the request in the normal way; for this MS, VLR restoration is complete.
 - The state of the indicator "Location Information Confirmed in HLR" does not affect the "Send Information for MT SMS" procedure.
- c) Send Information for I/C Call Setup (MSC->VLR) MAP version 1:
 - If the VLR has no IMSI record, or if the record is marked "Subscriber Data Not Confirmed by HLR" the VLR returns a "System Failure" error. This causes the MSC to report a short message delivery failure, with cause "System Failure", to the SMS gateway MSC.
 - If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Not Confirmed by Radio Contact", the VLR handles the request in the normal way, except that the "Search for MS" procedure is used instead of the "Page MS" procedure.
 - If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Confirmed by Radio Contact", the VLR handles the request in the normal way; for this MS, VLR restoration is complete.
 - The state of the indicator "Location Information Confirmed in HLR" does not affect the "Send Information for MT SMS" procedure.
- d) Process Access Request in Response to Search (MSC->VLR):
 - If the MS responds to paging, the MSC sends a positive response to the search request and a "Process Access Request" to the VLR. After successful authentication, if required, the VLR sets the indicator "Confirmed by Radio Contact" to "Confirmed", sets the location area information for the MS, and handles the request in the normal way.
 - The VLR checks the indicator "Location Information Confirmed in HLR". If it indicates "Not Confirmed" the VLR starts an "Update Location" procedure to the HLR. When this procedure is successfully completed, the VLR sets the indicator "Location Information Confirmed in HLR" to "Confirmed".

NEXT MODIFICATION

6 Periodic location updating

The time taken to confirm the location of an MS after location register failure is governed by the frequency with which the MS establishes radio contact with the network. The location information for an MS which remains silent for a long time will remain doubtful for a long time.

A method of reducing this time is to require the MS to establish radio contact with the network at intervals, purely to confirm its location, if the MS does not move to a new location area (which would lead to a normal location registration) or respond to paging for a mobile terminated call or request a mobile originated call or call-independent supplementary service activity.

The interval between successive periodic location updatings is controlled by a timer in the MS; this timer is reset to its initial value at the end of each successfully established radio contact between the MS and the network.

The use of the periodic location update timer is described in GSM 03.223GPP TS 243.022.

7 Periodic routeing area updating

All GPRS-attached MSs, except MSs in class-B mode of operation engaged in CS communication, shall perform periodic RA updates. For MSs that are both IMSI-attached and GPRS-attached, the periodic updates depend on whether the Gs interface is installed or not:

- If the Gs interface is installed, periodic RA updates shall be performed, and periodic LA updates shall not be performed. If the SGSN has the indicator "VLR-reliable" set to 'false' the SGSN shall perform a location area update procedure towards the VLR
- If the Gs interface is not installed, both periodic RA updates and periodic LA updates shall be performed independently. RA updates are performed via the Gb interface, and LA updates are performed via the A interface.

The periodic routeing area update is described in GSM 03.603GPP TS -23.060.

NEXT MODIFICATION

10 Restoration of data in the GGSN

10.1 Restart of the GGSN

After a GGSN restart, all the PDP contexts stored in the GGSN and affected by the restart become invalid and may be deleted. GGSN storage of data is volatile except as specified in this subclause. The GGSN maintains in volatile memory an SGSN Restart counter for each SGSN with which the GGSN is in contact, and in non-volatile memory a GGSN Restart counter. The GGSN Restart counter shall be incremented and all the SGSN Restart counters cleared immediately after the GGSN has restarted. The SGSN performs a polling function (echo request and echo response) towards the GGSN's with which the SGSN is in contact. The GGSN Restart counter shall be included in the echo response. If the value received in the SGSN differs from the one stored for that GGSN, the SGSN will consider that the GGSN has restarted (see GSM O9.603GPP TS -29.060). The SGSN Restart counters shall be updated in the GGSN to the value received in the first echo message coming from each SGSN after the GGSN has restarted.

When the SGSN detects a restart in a GGSN with which it has one or more PDP contexts activated, it shall deactivate all these PDP contexts and request the MS to reactivate them. Also, the new value of the GGSN Restart counter received in the echo response from the GGSN restarted shall be updated in the SGSN.

10.2 Restoration Procedures

10.2.1 Mobile terminated transmission

When the GGSN receives a mobile terminated PDU for which no valid PDP context exists the GGSN discards the received PDU and may also return an appropriate Error message depending on the protocol used. No further actions are performed by the GGSN. Alternatively, if the GGSN has static PDP information about the PDP address, the GGSN may try to deliver the PDU by initiating the Network-Requested PDP Context Activation procedure (see GSM 03.603GPP TS -23.060).

10.2.2 Mobile originated transmission

When the GGSN receives a tunnel PDU for which no PDP context exists it discards the tunnel PDU and sends an Error indication message to the originating SGSN. The SGSN deactivates the PDP context and sends an Error indication to the MS. The MS may then re-activate the PDP context.

11 Restoration of data in the SGSN

11.1 Restart of the SGSN

After an SGSN restart, the SGSN deletes all MM and PDP contexts affected by the restart. SGSN storage of data is volatile except as specified in this subclause. The SGSN maintains in volatile memory a GGSN Restart counter for each GGSN with which the SGSN is in contact, and in non-volatile memory an SGSN Restart counter.

The SGSN Restart counter shall be incremented and all the GGSN Restart counters cleared immediately after the SGSN has restarted.

The GGSN performs a polling function (echo request and echo response) towards the SGSNs with which the GGSN is in contact. The SGSN Restart counter shall be included in the echo response. If the value received in the GGSN differs from the one stored for that SGSN, the GGSN will consider that the SGSN has restarted (see GSM 09.603GPP TS -29.060). The GGSN Restart counters shall be updated in the SGSN to the value received in the first echo message coming from each GGSN after the SGSN has restarted.

When the GGSN detects a restart in an SGSN with which it has any PDP context activated, it shall delete all these PDP contexts. Also, the new value of the SGSN Restart counter received in the echo response from the SGSN restarted shall be updated in the GGSN.

11.2 Restoration Procedures

11.2.1 Mobile terminated user data transmission

When the SGSN receives a tunnel PDU for which no PDP context exists it discards the tunnel PDU and sends an Error indication message to the originating GGSN. The SGSN may search for the MS by paging with the IMSI in the SGSN area if there is no MM context for the MS. An MS that is paged with the IMSI performs a GPRS attach procedure.

11.2.2 Mobile terminated services requested by the MSC/VLR

When the SGSN receives a request for CS paging from an MSC/VLR for an IMSI unknown by the SGSN, if the "SGSN-Reset" indicator is set to "true", the SGSN sends the paging request with the location information provided by the VLR. If no such location information is provided, the SGSN should page for the MS in all the routeing areas corresponding to that SGSN.

If the "SGSN-Reset" indicator is set to "false" and the IMSI is unknown or the MS is marked as GPRS or non-GPRS detached by the SGSN, the paging request is rejected. If the "SGSN-Reset" indicator is set to "false" and the IMSI is known and the MS is marked as GPRS and is non-GPRS attached by the SGSN, the paging request shall be sent to the MS.

11.2.3 Mobile terminated SMS over GPRS

a) Send Routing Information for MT SMS (SMS-GMSC -> HLR):

The HLR returns the SGSN number as for normal operation.

b) Send Information for MT SMS:

-When the SGSN receives a mobile terminated SMS for an unknown MM context for the MS, or if the SGSN indicator "Subscriber Data Confirmed by HLR" is marked "Not Confirmed" it rejects the SMS request and returns a failure report with cause value "Unidentified Subscriber" to the SMS gateway MSC indicating unsuccessful delivery of the SMS. The Gateway MSC sends a "Report SM Delivery Status" request, with a cause of "Absent Subscriber", to the HLR. This causes the HLR to set the "Mobile Station Not Reachable for GPRS Flag" for the MS, as described in the Technical Specifications GSM 03.40 and GSM 09.023GPP TS -23.040 and 3GPP TS -29.002.

-If the SGSN has the indicator "Subscriber Data Confirmed by HLR" set to "Confirmed", the SGSN handles the SMS request in the normal way.

The state of the indicator "Location Information Confirmed in HLR" does not affect the Mobile Terminated SMS procedure.

11.2.4 Mobile originated Routeing Area Updating or Attach

If the MS is unknown in the SGSN (i.e. the SGSN has no MM context for the MS) the SGSN creates an MM context for the MS and sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Not Confirmed". If authentication is required, the SGSN retrieves authentication data. The SGSN then performs an "Update GPRS Location" to the HLR. If this is successful, the SGSN sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed".

If the SGSN has an MM context for the MS, and the indicators "Location Information Confirmed in HLR" or "Subscriber Data Confirmed by HLR" is set to "Not Confirmed" the SGSN performs an "Update GPRS Location" to the HLR. If this is successful, the SGSN sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed".

If the SGSN has an MM context for the MS with the indicator "Subscriber Data Confirmed by HLR" marked "Confirmed" the originated transmission is handled in the normal way.

The SGSN retrieves subscriber data from the HLR by sending an "Update GPRS Location" request, which triggers one or more "Insert Subscriber Data" operations from the HLR.

11.2.5 Mobile originated LLC frame

If an SGSN receives an LLC frame for which no MM context exists in the SGSN, and if the LLC frame does not contain an Attach Request or a Routeing Area Update Request signalling message, then the LLC frame shall be discarded. The MS may determine that the network is not repsonding responding and attempt to re-attach or eventually a periodic Routing Area Update message is sent by the MS which initiates the attach procedures.

11.3 Use of TLLI

After the SGSN has restarted but before the next authenticated radio contact the P-TMSI and TLLI known by the MS are invalid, as the P-TMSI was allocated before the SGSN restarted. The SGSN may request the MS to identify itself with the IMSI in order to make a relationship between the IMSI and the received old TLLI. The SGSN shall allocate a new P-TMSI for that MS.

If an MS identifies itself by a TLLI in an MS originating transmission, the SGSN proceeds as follows:

- a) The SGSN checks the routing area identity (RAI) of the previous routing area sent by the MS. If this previous RAI belongs to a different SGSN, the request is handled in the normal way.
- b) If the previous RAI belongs to the current SGSN, the status of the TLLI is checked.
 - If the P-TMSI derived from the TLLI was allocated after the SGSN restarted, and corresponds to a valid IMSI record, then the request is handled in the normal way.
 - If the P-TMSI derived from the TLLI was allocated before the SGSN restarted, or does not correspond to a valid IMSI record, then the SGSN requests the IMSI from the MS. If the MS returns an IMSI the SGSN proceeds in the normal way. If the MS does not return an IMSI the network aborts the originating transmission request or location registration procedure.

11.4 VLR associations

All associations with VLRs affected by the restart of an SGSN are marked as unreliable and may be deleted. Based on configuration data, "Reset" messages are sent on the Gs-interface to the VLRs served by the SGSN. The VLRs mark all associations with the SGSN as unreliable by setting the restoration indicator "Confirmed by radio contact" to "Not Confirmed" for the MSs served by that SGSN. The associations will be re-initiated one by one by the SGSN at the next Routing Area update, or combined RA/LA update from each MS.

12 Restoration of Data in an SMLC (GSM only)

12.1 Restart of an SMLC

When an SMLC restarts after a failure, it performs the following actions for those of its associated LMUs whose records have been affected by the fault:

- Reload all administered LMU data from non-volatile back-up;
- Reinitialize other temporary data for each LMU to indicate no ongoing measurement or diagnostic activities;
- Perform data restoration for each affected Type A and Type B LMU as described below.

12.2 Data Restoration for a Specific LMU

An SMLC may restore data for a specific LMU when the data in the SMLC or LMU is considered unreliable (e.g. if there is no communication between the SMLC and LMU for a long time or if messages received by the SMLC are inconsistent with the LMU state kept by the SMLC). To restore data for a specific LMU, the SMLC shall open a signalling connection to the LMU if this is Type A, as described in GSM 03.713GPP TS -23.071. For both a Type A LMU and a Type B LMU, the SMLC shall then send an- LLP Reset message to the LMU. On receiving an LLP Reset, an LMU shall cancel any LCS measurement and O&M tasks previously ordered by the SMLC and shall return an LLP Reset acknowledgement to the SMLC.

13 Restoration of Data in an LMU (GSM only)

When an LMU restarts following a failure, it shall reinitialize all data concerning LCS measurement and O&M tasks to indicate that no tasks ordered by an SMLC are active. A Type A LMU shall then perform an "IMSI Attach". A Type A LMU shall then open a signaling connection to its controlling SMLC as described in GSM 03.713GPP TS -23.071. Both a Type A LMU and a Type B LMU shall send an LLP Status Update message to their controlling SMLC containing an indication that the LMU has restarted following a failure. The SMLC shall update its data regarding the state of the LMU and shall return an LLP Update Status acknowledgement to the LMU.

3GPP TSG- CN4 #14 Budapest, Hungary, 13th - 17th May 2002

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The basic principle is that restoration should be based on radio contact to avoid faulty data being spread in the system.

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If the restoration of subscriber data in the VLR is triggered by a "Provide Roaming Number" request, the behaviour of the VLR depends on whether it is implemented according to MAP version 1 or MAP version 2. For MAP version 2, the VLR retrieves subscriber data from the HLR by sending a "Restore Data" request, which triggers one or more "Insert Subscriber Data" operations from the HLR. The "Restore Data" request is also used to send the LMSI to the HLR. For MAP version 1, the VLR retrieves subscriber data from the HLR by sending a "Send Parameters" request with parameter type "Subscriber Data", which cannot be used to send the LMSI to the HLR.

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NEXT MODIFICATION

4.2.2 Mobile Terminated Short Message

a) Send Routing Information for MT SMS (SMS-GMSC->HLR):

The HLR returns the MSC number as for normal operation.

- b) Send Information for MT SMS (MSC->VLR) MAP version 2:
 - If the VLR has no IMSI record, or if the record is marked "Subscriber Data Not Confirmed by HLR" the VLR returns an "Unidentified Subscriber" error. This causes the MSC to report a short message delivery failure, with cause "Unidentified Subscriber", to the SMS gateway MSC. The Gateway MSC sends a "Report SM Delivery Status" request, with a cause of "Absent Subscriber", to the HLR. This causes the HLR to set the "Mobile Station Not Reachable Flag" for the MS, as described in Technical Specifications GSM 03.40 and GSM 09.023GPP TS -23.040 and 3GPP TS -29.002.
 - If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Not Confirmed by Radio Contact", the VLR handles the request in the normal way, except that the "Search for MS" procedure is used instead of the "Page MS" procedure.
 - If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Confirmed by Radio Contact", the VLR handles the request in the normal way; for this MS, VLR restoration is complete.
 - The state of the indicator "Location Information Confirmed in HLR" does not affect the "Send Information for MT SMS" procedure.
- c) Send Information for I/C Call Setup (MSC->VLR) MAP version 1:
 - If the VLR has no IMSI record, or if the record is marked "Subscriber Data Not Confirmed by HLR" the VLR returns a "System Failure" error. This causes the MSC to report a short message delivery failure, with cause "System Failure", to the SMS gateway MSC.
 - If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Not Confirmed by Radio Contact", the VLR handles the request in the normal way, except that the "Search for MS" procedure is used instead of the "Page MS" procedure.
 - If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Confirmed by Radio Contact", the VLR handles the request in the normal way; for this MS, VLR restoration is complete.
 - The state of the indicator "Location Information Confirmed in HLR" does not affect the "Send Information for MT SMS" procedure.
- d) Process Access Request in Response to Search (MSC->VLR):
 - If the MS responds to paging, the MSC sends a positive response to the search request and a "Process Access Request" to the VLR. After successful authentication, if required, the VLR sets the indicator "Confirmed by Radio Contact" to "Confirmed", sets the location area information for the MS, and handles the request in the normal way.
 - The VLR checks the indicator "Location Information Confirmed in HLR". If it indicates
 "Not Confirmed" the VLR starts an "Update Location" procedure to the HLR. When this
 procedure is successfully completed, the VLR sets the indicator "Location Information
 Confirmed in HLR" to "Confirmed".

NEXT MODIFICATION

6 Periodic location updating

The time taken to confirm the location of an MS after location register failure is governed by the frequency with which the MS establishes radio contact with the network. The location information for an MS which remains silent for a long time will remain doubtful for a long time.

A method of reducing this time is to require the MS to establish radio contact with the network at intervals, purely to confirm its location, if the MS does not move to a new location area (which would lead to a normal location registration) or respond to paging for a mobile terminated call or request a mobile originated call or call-independent supplementary service activity.

The interval between successive periodic location updatings is controlled by a timer in the MS; this timer is reset to its initial value at the end of each successfully established radio contact between the MS and the network.

The use of the periodic location update timer is described in GSM 03.223GPP TS 243.022.

7 Periodic routeing area updating

All GPRS-attached MSs, except MSs in class-B mode of operation engaged in CS communication, shall perform periodic RA updates. For MSs that are both IMSI-attached and GPRS-attached, the periodic updates depend on whether the Gs interface is installed or not:

- If the Gs interface is installed, periodic RA updates shall be performed, and periodic LA updates shall not be performed. If the SGSN has the indicator "VLR-reliable" set to 'false' the SGSN shall perform a location area update procedure towards the VLR
- If the Gs interface is not installed, both periodic RA updates and periodic LA updates shall be performed independently. RA updates are performed via the Gb interface, and LA updates are performed via the A interface.

The periodic routeing area update is described in GSM 03.603GPP- TS 23.060.

NEXT MODIFICATION

10 Restoration of data in the GGSN

10.1 Restart of the GGSN

After a GGSN restart, all the PDP contexts stored in the GGSN and affected by the restart become invalid and may be deleted. GGSN storage of data is volatile except as specified in this subclause. The GGSN maintains in volatile memory an SGSN Restart counter for each SGSN with which the GGSN is in contact, and in non-volatile memory a GGSN Restart counter. The GGSN Restart counter shall be incremented and all the SGSN Restart counters cleared immediately after the GGSN has restarted. The SGSN performs a polling function (echo request and echo response) towards the GGSN's with which the SGSN is in contact. The GGSN Restart counter shall be included in the echo response. If the value received in the SGSN differs from the one stored for that GGSN, the SGSN will consider that the GGSN has restarted (see GSM O9.603GPP-TS 29.060). The SGSN Restart counters shall be updated in the GGSN to the value received in the first echo message coming from each SGSN after the GGSN has restarted.

When the SGSN detects a restart in a GGSN with which it has one or more PDP contexts activated, it shall deactivate all these PDP contexts and request the MS to reactivate them. Also, the new value of the GGSN Restart counter received in the echo response from the GGSN restarted shall be updated in the SGSN.

10.2 Restoration Procedures

10.2.1 Mobile terminated transmission

When the GGSN receives a mobile terminated PDU for which no valid PDP context exists the GGSN discards the received PDU and may also return an appropriate Error message depending on the protocol used. No further actions are performed by the GGSN. Alternatively, if the GGSN has static PDP information about the PDP address, the GGSN may try to deliver the PDU by initiating the Network-Requested PDP Context Activation procedure (see GSM 03.603GPP- TS 23.060).

10.2.2 Mobile originated transmission

When the GGSN receives a tunnel PDU for which no PDP context exists it discards the tunnel PDU and sends an Error indication message to the originating SGSN. The SGSN deactivates the PDP context and sends an Error indication to the MS. The MS may then re-activate the PDP context.

11 Restoration of data in the SGSN

11.1 Restart of the SGSN

After an SGSN restart, the SGSN deletes all MM and PDP contexts affected by the restart. SGSN storage of data is volatile except as specified in this subclause. The SGSN maintains in volatile memory a GGSN Restart counter for each GGSN with which the SGSN is in contact, and in non-volatile memory an SGSN Restart counter.

The SGSN Restart counter shall be incremented and all the GGSN Restart counters cleared immediately after the SGSN has restarted.

The GGSN performs a polling function (echo request and echo response) towards the SGSNs with which the GGSN is in contact. The SGSN Restart counter shall be included in the echo response. If the value received in the GGSN differs from the one stored for that SGSN, the GGSN will consider that the SGSN has restarted (see GSM 09.603GPP-TS 29.060). The GGSN Restart counters shall be updated in the SGSN to the value received in the first echo message coming from each GGSN after the SGSN has restarted.

When the GGSN detects a restart in an SGSN with which it has any PDP context activated, it shall delete all these PDP contexts. Also, the new value of the SGSN Restart counter received in the echo response from the SGSN restarted shall be updated in the GGSN.

11.2 Restoration Procedures

11.2.1 Mobile terminated user data transmission

When the SGSN receives a tunnel PDU for which no PDP context exists it discards the tunnel PDU and sends an Error indication message to the originating GGSN. The SGSN may search for the MS by paging with the IMSI in the SGSN area if there is no MM context for the MS. An MS that is paged with the IMSI performs a GPRS attach procedure.

11.2.2 Mobile terminated services requested by the MSC/VLR

When the SGSN receives a request for CS paging from an MSC/VLR for an IMSI unknown by the SGSN, if the "SGSN-Reset" indicator is set to "true", the SGSN sends the paging request with the location information provided by the VLR. If no such location information is provided, the SGSN should page for the MS in all the routeing areas corresponding to that SGSN.

If the "SGSN-Reset" indicator is set to "false" and the IMSI is unknown or the MS is marked as GPRS or non-GPRS detached by the SGSN, the paging request is rejected. If the "SGSN-Reset" indicator is set to "false" and the IMSI is known and the MS is marked as GPRS and is non-GPRS attached by the SGSN, the paging request shall be sent to the MS.

11.2.3 Mobile terminated SMS over GPRS

a) Send Routing Information for MT SMS (SMS-GMSC -> HLR):

The HLR returns the SGSN number as for normal operation.

b) Send Information for MT SMS:

-When the SGSN receives a mobile terminated SMS for an unknown MM context for the MS, or if the SGSN indicator "Subscriber Data Confirmed by HLR" is marked "Not Confirmed" it rejects the SMS request and returns a failure report with cause value "Unidentified Subscriber" to the SMS gateway MSC indicating unsuccessful delivery of the SMS. The Gateway MSC sends a "Report SM Delivery Status" request, with a cause of "Absent Subscriber", to the HLR. This causes the HLR to set the "Mobile Station Not Reachable for GPRS Flag" for the MS, as described in the Technical Specifications GSM 03.40 and GSM 09.023GPP- TS 23.040 and 3GPP- TS 29.002.

-If the SGSN has the indicator "Subscriber Data Confirmed by HLR" set to "Confirmed", the SGSN handles the SMS request in the normal way.

The state of the indicator "Location Information Confirmed in HLR" does not affect the Mobile Terminated SMS procedure.

11.2.4 Mobile originated Routeing Area Updating or Attach

If the MS is unknown in the SGSN (i.e. the SGSN has no MM context for the MS) the SGSN creates an MM context for the MS and sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Not Confirmed". If authentication is required, the SGSN retrieves authentication data. The SGSN then performs an "Update GPRS Location" to the HLR. If this is successful, the SGSN sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed".

If the SGSN has an MM context for the MS, and the indicators "Location Information Confirmed in HLR" or "Subscriber Data Confirmed by HLR" is set to "Not Confirmed" the SGSN performs an "Update GPRS Location" to the HLR. If this is successful, the SGSN sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed".

If the SGSN has an MM context for the MS with the indicator "Subscriber Data Confirmed by HLR" marked "Confirmed" the originated transmission is handled in the normal way.

The SGSN retrieves subscriber data from the HLR by sending an "Update GPRS Location" request, which triggers one or more "Insert Subscriber Data" operations from the HLR.

11.2.5 Mobile originated LLC frame

If an SGSN receives an LLC frame for which no MM context exists in the SGSN, and if the LLC frame does not contain an Attach Request or a Routeing Area Update Request signalling message, then the LLC frame shall be discarded. The MS may determine that the network is not repsonding responding and attempt to re-attach or eventually a periodic Routing Area Update message is sent by the MS which initiates the attach procedures.

11.3 Use of TLLI

After the SGSN has restarted but before the next authenticated radio contact the P-TMSI and TLLI known by the MS are invalid, as the P-TMSI was allocated before the SGSN restarted. The SGSN may request the MS to identify itself with the IMSI in order to make a relationship between the IMSI and the received old TLLI. The SGSN shall allocate a new P-TMSI for that MS.

If an MS identifies itself by a TLLI in an MS originating transmission, the SGSN proceeds as follows:

- a) The SGSN checks the routing area identity (RAI) of the previous routing area sent by the MS. If this previous RAI belongs to a different SGSN, the request is handled in the normal way.
- b) If the previous RAI belongs to the current SGSN, the status of the TLLI is checked.
 - If the P-TMSI derived from the TLLI was allocated after the SGSN restarted, and corresponds to a valid IMSI record, then the request is handled in the normal way.
 - If the P-TMSI derived from the TLLI was allocated before the SGSN restarted, or does not correspond to a valid IMSI record, then the SGSN requests the IMSI from the MS. If the MS returns an IMSI the SGSN proceeds in the normal way. If the MS does not return an IMSI the network aborts the originating transmission request or location registration procedure.

11.4 VLR associations

All associations with VLRs affected by the restart of an SGSN are marked as unreliable and may be deleted. Based on configuration data, "Reset" messages are sent on the Gs-interface to the VLRs served by the SGSN. The VLRs mark all associations with the SGSN as unreliable by setting the restoration indicator "Confirmed by radio contact" to "Not Confirmed" for the MSs served by that SGSN. The associations will be re-initiated one by one by the SGSN at the next Routing Area update, or combined RA/LA update from each MS.

12 Restoration of Data in an SMLC (GSM only)

12.1 Restart of an SMLC

When an SMLC restarts after a failure, it performs the following actions for those of its associated LMUs whose records have been affected by the fault:

- Reload all administered LMU data from non-volatile back-up;
- Reinitialize other temporary data for each LMU to indicate no ongoing measurement or diagnostic activities;
- Perform data restoration for each affected Type A and Type B LMU as described below.

12.2 Data Restoration for a Specific LMU

An SMLC may restore data for a specific LMU when the data in the SMLC or LMU is considered unreliable (e.g. if there is no communication between the SMLC and LMU for a long time or if messages received by the SMLC are inconsistent with the LMU state kept by the SMLC). To restore data for a specific LMU, the SMLC shall open a signalling connection to the LMU if this is Type A, as described in GSM 03.713GPP-TS 23.071. For both a Type A LMU and a Type B LMU, the SMLC shall then send an-LLP Reset message to the LMU. On receiving an LLP Reset, an LMU shall cancel any LCS measurement and O&M tasks previously ordered by the SMLC and shall return an LLP Reset acknowledgement to the SMLC.

13 Restoration of Data in an LMU (GSM only)

When an LMU restarts following a failure, it shall reinitialize all data concerning LCS measurement and O&M tasks to indicate that no tasks ordered by an SMLC are active. A Type A LMU shall then perform an "IMSI Attach". A Type A LMU shall then open a signaling connection to its controlling SMLC as described in GSM 03.713GPP TS -23.071. Both a Type A LMU and a Type B LMU shall send an LLP Status Update message to their controlling SMLC containing an indication that the LMU has restarted following a failure. The SMLC shall update its data regarding the state of the LMU and shall return an LLP Update Status acknowledgement to the LMU.

3GPP TSG- CN4 #14 Budapest, Hungary, 13th - 17th May 2002

	CHA	NGE REC	UEST			CR-Form-v3
[₩] TS 23	3.008 CR 0	49	*	Current versi	on: 3.6.0	¥
For <u>HELP</u> on using	this form, see botto	m of this page o	r look at the	e pop-up text	over the # syn	nbols.
Proposed change affec		ME/UE	Radio Aco	cess Network	Core Ne	twork X
Title: 第 Ali	ignment of 23.008					
Source: # Ch	N4					
Work item code:	El .			Date: ₩	6 th May 2002	
Category:	Critical correction			Release: ₩	R99	
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Summary of change: ₩	TS 23.008 is aligr Anonymous Acce				es to X.25, TID	and
Consequences if ₩ not approved:	Wrong and incons	sistent specificat	ion			
Clauses affected:	2.13.1; 2.13.2; 2.1	3.21; Table 2				
Other specs # Affected: Other comments: #	Other core spe Test specificati O&M Specifica	ecifications &	g			

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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.

2.13.1 PDP Type

PDP Type is defined in 3GPP TS 23.060. It indicates which type of protocol is used by the MS for a certain service, e.g. IP-and X.25.

PDP Type is permanent subscriber data and conditionally stored in HLR, SGSN and GGSN.

2.13.2 PDP Address

PDP Address is defined in 3GPP TS 23.060. It holds the address of the MS for a certain service, e.g. an X.121IP address. If dynamic addressing is allowed, PDP Address is empty in the HLR, and, before the PDP context is activated, empty in the SGSN.

PDP Address is permanent subscriber data and conditionally stored in HLR, SGSN and GGSN.

NEXT MODIFICATION

2.13.21 Tunnel Endpoint IDentifier (TIDTEID)

Tunnel <u>Endpoint</u> Identifier is defined in 3GPP TS 29.060. <u>It is used for Anonymous Access</u>. <u>TID-TEID</u> is temporary subscriber data conditionally stored in SGSN and GGSN.

NEXT MODIFICATION

Table 2: Overview of data used for GPRS Network Access Mode

PARAMETER	Subclause	HLR	VLR	SGSN	GGSN	TYPE
IMSI	2.1.1.1	М	М	M	М	Р
Network Access Mode	2.1.1.2	M	-	C note1	-	Р
International MS ISDN number	2.1.2	M	M	M	<u>-M</u>	Т
multinumbering MSISDNs	2.1.3	С	-	-	-	Т
Basic MSISDN indicator	2.1.3.1	С	-	-	-	Τ.
MSISDN-Alert indicator	2.1.3.2	С	-	-	-	T
P-TMSI	2.1.5	-	-	С	-	T
TLLI	2.1.6	-	-	С	-	T
Random TLLI	2.1.7	-	-	С	-	T
IMEI	2.1.9	-	-	С	-	T
RAND/SRES and Kc	2.3.1		-	С	-	T
RAND, XRES, CK, IK, AUTN	2.3.2	M	-	С	-	T
Ciphering Key Sequence Number	2.3.3	-	-	M	-	T
Key Set Identifier (KSI)	2.3.4	-	-	M	-	T
Selected Ciphering Algorithm	2.3.5	-	-	M	-	T
Current Kc	2.3.6	-	-	M	-	T
P-TMSI Signature	2.3.7	-	-	С	-	T
Routing Area Identity	2.4.3	-	-	M	-	T
VLR Number	2.4.5	М	-	C note2	-	<u>T</u>
SGSN Number	2.4.8.1	М	C note2	-	-	T
GGSN Number	2.4.8.2	M	-	-	-	Р
RSZI Lists	2.4.11.1	С	-	-	-	P
Zone Code List	2.4.11.2	-	-	С	-	Р
LA not allowed flag	2.4.13	-	-	M	-	T
SGSN area restricted flag	2.4.14	M	-	-	-	T
Roaming Restriction in the SGSN	2.4.15.2	M	-	M	-	T
Cell Global ID or Service Area ID	2.4.16	-	-	C	-	T
LSA Identity	2.4.17.1	С	С	С	-	P
LSA Priority	2.4.17.2	С	С	С	-	P
LSA Preferential Access Indicator	2.4.17.2A	С	C C C	С		P
LSA Active Mode Support Indicator	2.\$.17.2B	С	C	С		Р
LSA Only Access Indicator	2.4.17.3	С	C	С	-	Р
LSA Active Mode Indicator	2.4.17.4	С	С	С	-	Р
VPLMN Identifier	2.4.17.5	С	-	-	-	P
Provision of teleservice	2.5.2	С	-	С	-	P
Transfer of SM option	2.5.4	M	-	-	-	P
MNRG	2.7.2	M	-	M	M	T T
MM State	2.7.3	-	-	M	-	T
Subscriber Data Confirmed by HLR Indicator	2.7.4.2	-	-	M	-	T T
Location Info Confirmed by HLR Indicator	2.7.4.3	-	-	М	-	T T
MS purged for GPRS flag	2.7.6	M	-	-	-	+
MNRR Subscriber Status	2.7.7	C C	-	C	-	ı P
Subscriber Status Barring of outgoing calls	2.8.1	C	-	C	-	
Barring of outgoing calls Barring of roaming	2.8.2.1 2.8.2.3	C	-	С	-	P P
ODB PLMN-specific data		C	-	C	-	P
Notification to CSE flag for ODB	2.8.3 2.8.4	C	-	C	-	T
gsmSCF address list for ODB		C	-	-	-	ı P
Trace Activated in SGSN	2.8.5 2.11.7	C	-	C	-	P P
PDP Type	2.11.7	C	_	C	M	P
PDP Address	2.13.1	C	_	C	M	P
NSAPI	2.13.2	-	-	C	C	T
PDP State	2.13.4	-	-	C	-	†
New SGSN Address	2.13.5	_	_	C	-	τ̈́
Access Point Name	2.13.6	Ċ	-	C	C	P/T
GGSN Address in Use	2.13.7	-	-	C	-	T
VPLMN Address Allowed	2.13.8	C	_	Č	_	P
Dynamic Address	2.13.9	-	_	-	C	Т
SGSN Address	2.13.10	_	_	_	M	† Ť
GGSN-list	2.13.11	M	_	_	-	† T
		.,,,				•

(continued)

Table 2 (concluded): Overview of data used for GPRS Network Access Mode

PARAMETER	Subclause	HLR	VLR	SGSN	GGSN	TYPE
Quality of Service Subscribed	2.13.12	С	-	С	-	Р
Quality of Service Requested	2.13.13	-	-	С	-	T
Quality of Service Negotiated	2.13.14	-	-	С	М	T
SND	2.13.15	-	-	С	С	T
SNU	2.13.16	-	-	С	С	T
DRX Parameters	2.13.17	-	-	M	-	T
Compression	2.13.18	-	-	С	-	T
NGAF	2.13.19	-	-	C note2	-	T
Classmark	2.13.20	-	-	M	-	Т
TID TE D	2.13.21	-	-	С	С	T
Radio Priority	2.13.22	-	-	С	-	T
Radio Priority SMS	2.13.23	-	-	С	-	T
PDP Context Identifier	2.13.24	С	-	С	-	T
PDP Context Charging Characteristics	2.13.25	С	-	С	С	Р
Short Message Service CAMEL Subscription Information (SMS-CSI)	2.14.4.1/1.8	С	-	С	-	Р
GPRS CAMEL Subscription Information (GPRS-CSI)	2 14 4 2/1 0	С		С		С
SMS-CSI SGSN Negotiated CAMEL Capability	2.14.2.1	C		-	_	T
Handling	2.17.2.1	C	_	_	-	'
GPRS-CSI Negotiated CAMEL Capability Handling	2.14.2.1	С	_	_	_	т
SGSN Supported CAMEL Phases	2.14.2.3	Č	_	_	_	÷
GsmSCF address for CSI	2.14.2.4	C	_	_	_	Р
Age Indicator	2.16.1	C	_	C	_	T
Subscribed Charging Characteristics	2.19.1	Č	-	Č	C	P

3GPP TSG- CN4 #14 Budapest, Hungary, 13th - 17th May 2002

	CHANGE F	REQUEST
# TS	23.008 CR 040 **	# Current version: 4.1.0
For <u>HELP</u> on us	ng this form, see bottom of this pa	page or look at the pop-up text over the # symbols.
Proposed change a	fects: 第 (U)SIM ME/UI	JE Radio Access Network Core Network X
Title: ∺	Alignment of 23.008	
Source: #	CN4	
Work item code: ₩	TEI	Date: 第 6 th May 2002
Category: #	A	Release: # REL-4
1	Use one of the following categories: F (essential correction) A (corresponds to a correction in B (Addition of feature), C (Functional modification of feature) (Editorial modification) Detailed explanations of the above cate found in 3GPP TR 21.900.	R97 (Release 1997) ature) R98 (Release 1998) R99 (Release 1999)
Reason for change:	X.25 were removed at SA#0 Section 2.13.21 TID reflects version 1. In GTP version 1 to Beside this section 2.13.21 to Anonymous Access were ret Table 2 reads that the MSIS was added to the Create PD	s still release 98. The TID is no longer used in GTP the TEID is used instead of TID. contains Anonymous Access. The support of emoved at SA#07. SDN is not stored in GGSN. At CN#04 the MSISDN DP Context Request message.
Summary of change	: # TS 23.008 is aligned to the c Anonymous Access are rem	other specifications. References to X.25, TID and noved. Table 2 is corrected.
Consequences if not approved:	₩ Wrong and inconsistent spec	ecification
Clauses affected:	# 2.13.1; 2.13.2; 2.13.21; Table	e 2
Other specs Affected:	Other core specifications Test specifications O&M Specifications	S #
Other comments:	×	

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2.1.1 Data defining the subscription profile

2.1.1.1 International Mobile Subscriber Identity (IMSI)

International Mobile Subscriber Identity (IMSI) is defined in 3GPP TS 23.003. IMSI is permanent subscriber data. IMSI is stored in HLR, VLR, SGSN, GGSN and SMLC. For Anonymous Access, IMSI is not used in SGSN nor in GGSN. The IMSI serves as the root of the subscriber data pseudo-tree.

NEXT MODIFICATION

2.1.1 Data defining the subscription profile

2.1.1.1 International Mobile Subscriber Identity (IMSI)

International Mobile Subscriber Identity (IMSI) is defined in 3GPP TS 23.003. IMSI is permanent subscriber data. IMSI is stored in HLR, VLR, SGSN, GGSN and SMLC. For Anonymous Access, IMSI is not used in SGSN nor in GGSN. The IMSI serves as the root of the subscriber data pseudo-tree.

NEXT MODIFICATION

2.13.1 PDP Type

PDP Type is defined in 3GPP TS 23.060. It indicates which type of protocol is used by the MS for a certain service, e.g. IP-and X.25.

PDP Type is permanent subscriber data and conditionally stored in HLR, SGSN and GGSN.

2.13.2 PDP Address

PDP Address is defined in 3GPP TS 23.060. It holds the address of the MS for a certain service, e.g. an X.121IP address. If dynamic addressing is allowed, PDP Address is empty in the HLR, and, before the PDP context is activated, empty in the SGSN.

PDP Address is permanent subscriber data and conditionally stored in HLR, SGSN and GGSN.

NEXT MODIFICATION

2.13.21 Tunnel Endpoint IDentifier (TIDTEID)

Tunnel <u>Endpoint</u> Identifier is defined in <u>3GPP TS 29.060GSM 09.60</u>. <u>It is used for Anonymous Access</u>. <u>TID TEID</u> is temporary subscriber data conditionally stored in SGSN and GGSN.

NEXT MODIFICATION

Table 2: Overview of data used for GPRS Network Access Mode

PARAMETER	Subclause	HLR	VLR	SGSN	GGSN	TYPE
IMSI	2.1.1.1	М	М	М	М	Р
Network Access Mode	2.1.1.2	M	-	C note1	-	Р
International MS ISDN number	2.1.2	M	M	M	<u>-M</u>	T
multinumbering MSISDNs	2.1.3	С	-	-	-	Т
Basic MSISDN indicator	2.1.3.1	С	-	-	-	Τ.
MSISDN-Alert indicator	2.1.3.2	С	-	-	-	T
P-TMSI	2.1.5	-	-	С	-	T
TLLI	2.1.6	-	-	С	-	T
Random TLLI	2.1.7	-	-	С	-	T
IMEI	2.1.9	-	-	С	-	T
RAND/SRES and Kc	2.3.1		-	С	-	T
RAND, XRES, CK, IK, AUTN	2.3.2	M	-	С	-	T
Ciphering Key Sequence Number	2.3.3	-	-	M	-	T
Key Set Identifier (KSI)	2.3.4	-	-	M	-	T
Selected Ciphering Algorithm	2.3.5	-	-	M	-	T
Current Kc	2.3.6	-	-	M	-	T
P-TMSI Signature	2.3.7	-	-	С	-	T
Routing Area Identity	2.4.3	-	-	M	-	T
VLR Number	2.4.5	M	-	C note2	-	T
SGSN Number	2.4.8.1	M	C note2	-	-	Т
GGSN Number	2.4.8.2	M	-	-	-	Р
RSZI Lists	2.4.11.1	С	-	-	-	Р
Zone Code List	2.4.11.2	-	-	С	-	Р
LA not allowed flag	2.4.13	-	-	M	-	T
SGSN area restricted flag	2.4.14	М	-	-	-	T
Roaming Restriction in the SGSN	2.4.15.2	М	-	M	-	T
Cell Global ID or Service Area ID	2.4.16	-	-	С	-	T
LSA Identity	2.4.17.1	С	С	С	-	Р
LSA Priority	2.4.17.2	С	С	С	-	Р
LSA Preferential Access Indicator	2.4.17.2A	С	С	С		Р
LSA Active Mode Support Indicator	2.\$.17.2B	С	С	С		Р
LSA Only Access Indicator	2.4.17.3	С	С	С	-	Р
LSA Active Mode Indicator	2.4.17.4	С	С	С	-	Р
VPLMN Identifier	2.4.17.5	С	-	-	-	Р
Provision of teleservice	2.5.2	С	-	С	-	Р
Transfer of SM option	2.5.4	M	-	-	-	Р
MNRG	2.7.2	M	-	M	М	Т
MM State	2.7.3	-	-	M	-	Т
Subscriber Data Confirmed by HLR Indicator	2.7.4.2	-	-	M	-	T
Location Info Confirmed by HLR Indicator	2.7.4.3	-	-	М	-	T
MS purged for GPRS flag	2.7.6	M	-	-	-	T
MNRR	2.7.7	C	-	-	-	Ţ
Subscriber Status	2.8.1	С	-	С	-	P
Barring of outgoing calls	2.8.2.1	С	-	_	-	P
Barring of roaming	2.8.2.3	С	-	С	-	P
Barring of Packet Oriented Services	2.8.2.8	С	-	С	-	P
ODB PLMN-specific data	2.8.3	C	-	С	-	P T
Notification to CSE flag for ODB	2.8.4	С	-	-	-	T
gsmSCF address list for ODB	2.8.5	С	-	-	-	P
Trace Activated in SGSN	2.11.7	С	-	С	-	P
PDP Type	2.13.1	С	-	С	M	P
PDP Address	2.13.2	С	-	С	M	P T
NSAPI DDB State	2.13.3	-	-	С	С	T T
PDP State	2.13.4	-	-	С	-	
New SGSN Address	2.13.5	C	-	C C	C	T D/T
Access Point Name	2.13.6 2.13.7	C	-	C		P/T T
GGSN Address in Use		C	-	C	-	T P
VPLMN Address Allowed	2.13.8	C	-	C	C	
Dynamic Address	2.13.9	-	-	-	M	T T
SGSN Address	2.13.10	-	-	-	IVI -	T
GGSN-list Quality of Service Subscribed	2.13.11	M C	-	C	-	I P
Quality of Service Subscribed Quality of Service Requested	2.13.12 2.13.13	_	-	C	-	P T
Quality of Service Requested Quality of Service Negotiated	2.13.13	<u>-</u>	-	C	M	T
Quality of Service Negotiated	4.10.1 4	-	-	C	IVI	

PARAMETER	Subclause	HLR	VLR	SGSN	GGSN	TYPE
SND	2.13.15	-	-	С	С	Т
SNU	2.13.16	-	-	С	С	T
DRX Parameters	2.13.17	-	-	M	-	T
Compression	2.13.18	-	-	С	-	T
NGAF	2.13.19	-	-	C note2	-	T
Classmark	2.13.20	-	-	M	-	T
-TIDTEID	2.13.21	-	-	С	С	T
Radio Priority	2.13.22	-	-	С	-	T
Radio Priority SMS	2.13.23	-	-	С	-	T
PDP Context Identifier	2.13.24	С	-	С	-	T
PDP Context Charging Characteristics	2.13.25	С	-	С	С	Р
Short Message Service CAMEL Subscription	2.14.4.1/1.8	С	-	С	-	Р
Information (SMS-CSI)						
GPRS CAMEL Subscription Information (GPRS-CSI)		С	-	С	-	С
SMS-CSI SGSN Negotiated CAMEL Capability	2.14.2.1	С	-	-	-	T
Handling						
GPRS-CSI Negotiated CAMEL Capability Handling	2.14.2.1	С	-	-	-	T
SGSN Supported CAMEL Phases	2.14.2.3	С	-	-	-	T
GsmSCF address for CSI	2.14.2.4	С	-	-	-	Р
Age Indicator	2.16.1	С	-	С	-	T
Subscribed Charging Characteristics	2.19.1	С	-	С	С	Р
Privacy Exception List	2.16.1.1	С	-	С	-	Р
GMLC Numbers	2.16.1.2	С	-	С	-	Р
MO-LR List	2.16.1.3	С	-	С	-	Р

3GPP TSG- CN4 #14 Budapest, Hungary, 13th - 17th May 2002

	CHANGE REQUEST
* TS	23.008 CR 053 # rev # Current version: 5.0.0 #
For <u>HELP</u> on u	ring this form, see bottom of this page or look at the pop-up text over the X symbols.
Proposed change	
Title: #	Alignment of 23.008
Source: #	CN4
Work item code: 第	TEI Date: 第 15 th May 2002
Category: Ж	A Release: REL-5
	Use one of the following categories: F (essential 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)
Reason for change	Section 2.13.1 and section 2.13.2 containing references to X.25. The support of X.25 were removed at SA#07. Section 2.13.21 TID reflects still release 98. The TID is no longer used in GTP version 1. In GTP version 1 the TEID is used instead of TID. Beside this section 2.13.21 contains Anonymous Access. The support of Anonymous Access were removed at SA#07. Table 2 reads that the MSISDN is not stored in GGSN. At CN#04 the MSISDN was added to the Create PDP Context Request message.
Summary of chang	TS 23.008 is aligned to the other specifications. References to X.25, TID and Anonymous Access are removed. Table 2 is corrected.
Consequences if not approved:	₩ Wrong and inconsistent specification
Clauses affected:	# 2.13.1; 2.13.2; 2.13.21; Table 2
Other specs Affected:	# Other core specifications # Test specifications O&M Specifications
Other comments:	$m{lpha}$

How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked \$\mathbb{X}\$ 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 $\underline{\text{ftp://www.3gpp.org/specs/}}$ For the latest version, look for the directory name with the latest date e.g. 2000-09 contains the specifications resulting from the September 2000 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.

2.1.1 Data defining the subscription profile

2.1.1.1 International Mobile Subscriber Identity (IMSI)

International Mobile Subscriber Identity (IMSI) is defined in 3GPP TS 23.003. IMSI is permanent subscriber data. IMSI is stored in HLR, VLR, SGSN, GGSN and SMLC. For Anonymous Access, IMSI is not used in SGSN nor in GGSN. The IMSI serves as the root of the subscriber data pseudo-tree.

NEXT MODIFICATION

2.13.1 PDP Type

PDP Type is defined in 3GPP TS 23.060. It indicates which type of protocol is used by the MS for a certain service, e.g. IP-and-X.25.

PDP Type is permanent subscriber data and conditionally stored in HLR, SGSN and GGSN.

2.13.2 PDP Address

PDP Address is defined in 3GPP TS 23.060. It holds the address of the MS for a certain service, e.g. an X.121IP address. If dynamic addressing is allowed, PDP Address is empty in the HLR, and, before the PDP context is activated, empty in the SGSN.

PDP Address is permanent subscriber data and conditionally stored in HLR, SGSN and GGSN.

NEXT MODIFICATION

2.13.21 Tunnel Endpoint IDentifier (TIDTEID)

Tunnel <u>Endpoint</u> Identifier is defined in <u>3GPP TS 29.060GSM 09.60</u>. <u>It is used for Anonymous Access. TID-TEID</u> is temporary subscriber data conditionally stored in SGSN and GGSN.

NEXT MODIFICATION

Table 2: Overview of data used for GPRS Network Access Mode

IMSI	PARAMETER	Subclause	HLR	VLR	SGSN	GGSN	TYPE
International MSI SDN number 2.1.2 M M M M T T	IMSI	2.1.1.1	M	М	М	М	Р
multinumbering MSISDNS 2.1.3 C - - T T Sassie MSISDN indicator 2.1.3.2 C - - T T MSISDN-Alert indicator 2.1.5.2 C - - C - T T MSISDN-Alert indicator 2.1.5.5 - C - T T T L C - T T T MSISDN-Alert indicator 2.1.5.1 - C - T T RAND Response 2.2.1.1 - C - T T IMARIAN Response 2.2.1.1 - C - T T IMARIAN Response 2.2.1.2 - L - T T C C - T T C C - T T C C - T T C C - T T C C - T T C C T T C C T <td>Network Access Mode</td> <td>2.1.1.2</td> <td>M</td> <td>-</td> <td>C note1</td> <td>-</td> <td></td>	Network Access Mode	2.1.1.2	M	-	C note1	-	
Basic MSISDN indicator 2.1.3.1 C - - T MSISDN-Alert indicator 2.1.3.2 C - - T TLLI 2.1.6 - - C - T Random TLLI 2.1.6 - - C - T IMEI 2.1.9 - - C - T RAND/SRES and Kc 2.3.1 - - C - T RAND/SRES, CK, IK, AUTN 2.3.2 M - C - T Key Set Identifier (KSI) 2.3.4 - - M - T Current Kc 2.3.6 - - M - T Current Kc 2.3.6 - - M - T Current Kc 2.3.6 - - M - T SGSI Number 2.4.5 M C note2 - T GGSN Number 2.4.8.2	International MS ISDN number	2.1.2	M	M	М	<u>-M</u>	T
Basic MSISDN indicator 2.1.3.1 C - - T MSISDN-Alert indicator 2.1.3.2 C - - T TLLI 2.1.6 - C - T RAND SRES and KC 2.1.9 - C - T RAND SRES, CK, IK, AUTN 2.3.2 M - C - T KAND, XRES, CK, IK, AUTN 2.3.2 M - C - T Ciphering Key Sequence Number 2.3.3 - - M - T Key Set Identifier (KSI) 2.3.4 - - M - T Current Kc 2.3.6 - - M - T Very Stational Interpretaries 2.3.7 - C C T VLR Number 2.4.5 M C note2 - T VLR Number 2.4.5 M C note2 - T SGSN Number 2.4.8.2 M </td <td>multinumbering MSISDNs</td> <td>2.1.3</td> <td>С</td> <td>-</td> <td>-</td> <td>-</td> <td></td>	multinumbering MSISDNs	2.1.3	С	-	-	-	
P-TMS		2.1.3.1	С	-	-	-	Τ.
TLLI	MSISDN-Alert indicator	2.1.3.2	С	-		-	
Random TLLI	P-TMSI	2.1.5	-	-	С	-	
IMEI	TLLI	2.1.6	-	-	С	-	
RAND/SRES And Ko RAND/SRES CK, IK, AUTN 2.3.2 M - C - T Ciphering Key Sequence Number 2.3.3 - M - M - T Selected Ciphering Algorithm 2.3.5 - M - M - T Selected Ciphering Algorithm 2.3.5 - M - M - T Selected Ciphering Algorithm 2.3.5 - M - M - T Corrent Ke 2.3.6 - M - M - T Selected Ciphering Algorithm 2.3.7 - C C T ROuting Area Identity 2.4.3 - M - T Courtent Ke 2.3.6 - M - M - T Courtent Ke 2.3.6 - M - M - T Selected Ciphering Algorithm 2.4.5 M - C note2 - T SUSN Number 2.4.5 M - C note2 - T SGSN Number 2.4.5 M - C note2 - T SGSN Number 2.4.8.2 M - C note2 - T SGSN Number 2.4.8.2 M - C - P P RSZI Lists 2.4.11.1 C - C - P P RSZI Lists 2.4.11.2 - C C - P P LA not allowed flag 2.4.13 - M - T SGSN area restricted flag 2.4.14 M - T SGSN area restricted flag 2.4.14 M - T SGSN area restricted flag 2.4.15 M - M - T SGSN area restricted flag 2.4.16 - C C C P LSA Priority 2.4.17.1 C C C C P LSA Priority 2.4.17.2 C C C P LSA Priority 2.4.17.2 C C C P LSA Active Mode Support Indicator 2.4.17.2 C C C C P LSA Active Mode Support Indicator 2.4.17.2 C C C C P LSA Active Mode Support Indicator 2.4.17.3 C C C C P LSA Active Mode Indicator 2.4.17.4 C C C C P LSA Active Mode Indicator 2.4.17.5 C C C C P LSA Active Mode Indicator 2.4.17.6 C C C C P LSA Active Mode Indicator 2.4.17.7 C C C C P LSA Active Mode Indicator 2.4.17.2 C C C C P LSA Active Mode Indicator 2.4.17.3 C C C C P LSA Active Mode Indicator 2.4.17.4 C C C C C P LSA Active Mode Indicator 2.4.17.2 C C C C P P LSA Active Mode Indicator 2.4.17.3 C C C C P P LSA Active Mode Indicator 2.4.17.4 C C C C C P P LSA Active Mode Indicator 2.4.17.5 C C C C P P LSA Active Mode Indicator 2.4.17.6 C C C C P P LSA Active Mode Indicator 2.4.17.6 C C C C P P LSA Active Mode Indicator 2.4.17.6 C C C C P P LSA Active Mode Indicator 2.4.17.6 C C C C P P LSA Active Mode Indicator 2.4.17.7 C C C C C P P P P P P P P P P P P P P P	Random TLLI	2.1.7	-	-	С	-	
RAND, XRES, CK, IK, AUTN Ciphering Key Sequence Number 2.3.3 - M	IMEI	2.1.9	-	-	С	-	
Ciphering Key Sequence Number 2.3.3 - - M - T Key Set Identifier (KSI) 2.3.4 - - M - T Selected Ciphering Algorithm 2.3.5 - - M - T Current Ko 2.3.6 - - M - T VLR Number 2.4.5 M - C note2 - T VLR Number 2.4.8.1 M C note2 - - P SGSN Number 2.4.8.2 M - - - P SGSN Number 2.4.8.2 M - - - P SCSL Istis 2.4.11.1 C - - - P SCSN area restricted flag 2.4.11.2 - - C - P Can Global ID or Service Area ID 2.4.14 M - - T T Call Global ID or Service Area ID 2.4.17.2 C <		2.3.1		-	С	-	
Key Set Identifier (KSI) 2.3.4 - - M - T Selected Ciphering Algorithm 2.3.5 - - M - T Current Kc 2.3.6 - - M - T P-TMSI Signature 2.3.7 - - C - T ROuting Area Identity 2.4.5 M - C note2 - T VLR Number 2.4.5 M - C note2 - T GGSN Number 2.4.8.2 M - - - P GGSN Number 2.4.8.2 M - - - P Zone Code List 2.4.11.2 - - C - P Zone Code List 2.4.11.2 - - C - - T Zone Code List 2.4.11.2 - - C - - T Zone Code List 2.4.11.2 - - <td>RAND, XRES, CK, IK, AUTN</td> <td>2.3.2</td> <td>M</td> <td>-</td> <td>С</td> <td>-</td> <td></td>	RAND, XRES, CK, IK, AUTN	2.3.2	M	-	С	-	
Selected Ciphering Algorithm	Ciphering Key Sequence Number	2.3.3	-	-	М	-	
Current Kc	Key Set Identifier (KSI)	2.3.4	-	-	М	-	
P.TMS Signature	Selected Ciphering Algorithm	2.3.5	-	-	М	-	
Routing Area Identity	Current Kc	2.3.6	-	-		-	
VLR Number		2.3.7	-	-	С	-	
SGSN Number 24.8.1 M C note2 - T GGSN Number 24.8.2 M - - P RSZI Lists 24.11.1 C - - P Zone Code List 24.11.2 - - C - P La not allowed flag 24.13 - - M - T SGSN area restricted flag 24.14 M - - T Roaming Restriction in the SGSN 24.16 - - C - T Cell Global ID or Service Area ID 24.16 - - C C - T LSA derive Mode Support Indicator 24.17.2 C C C - P LSA Only Access Indicator 24.17.2 C C C P P LSA Active Mode Indicator 24.17.3 C C C P P LSA Only Access Indicator 24.17.5 C C C	Routing Area Identity	2.4.3	-	-	М	-	
GGSN Number	VLR Number	2.4.5	M	-	C note2	-	
RSZI Lists	SGSN Number	2.4.8.1	М	C note2	-	-	
Zone Code List	GGSN Number			-	-	-	
LA not allowed flag SGSN area restricted flag 2.4.13 SGSN area restricted flag 2.4.14 M - Roaming Restriction in the SGSN 2.4.15.2 M - M - T Cell Global ID or Service Area ID 2.4.16 - C C C C - T LSA Priority 2.4.17.1 C C C C C C - P LSA Priority 2.4.17.2 C C C C C C P LSA Preferential Access Indicator 2.4.17.2B C C C C C C P LSA Active Mode Support Indicator 2.4.17.2B C C C C C C P LSA Active Mode Indicator 2.4.17.3 C C C C C P LSA Active Mode Indicator 2.4.17.4 C C C C P VPLMN Identifier 2.4.17.5 C C C C P VPLMN Identifier 2.4.17.5 C C C P VPLMN Identifier 2.4.17.5 C C C P Transfer of SM option X X X X X X X X X X X X X	RSZI Lists	2.4.11.1	С	-	-	-	
SGSN area restricted flag 24.14 M - - T Roaming Restriction in the SGSN 24.15.2 M - M - T Cell Global ID or Service Area ID 24.17.6 - - C - T LSA Incriptive 24.17.2 C C C C - P LSA Priority 24.17.2 C C C C - P LSA Preferential Access Indicator 24.17.2B C C C C - P LSA Active Mode Support Indicator 24.17.3 C C C - P LSA Active Mode Indicator 24.17.5 C C C - P UPLMN Identifier 24.17.5 C C C - P VPUMN Identifier 25.2 C C - - P VPOHIN Identifier 25.2 C C - - P VPLMIN	Zone Code List	2.4.11.2	-	-	С	-	
Roaming Restriction in the SGSN	LA not allowed flag	2.4.13	-	-	М	-	T
Cell Global ID or Service Area ID	SGSN area restricted flag	2.4.14	M	-	-	-	
LSA Identity 2.4.17.1 C C C - P LSA Priority 2.4.17.2 C C C - P LSA Preferential Access Indicator 2.4.17.2B C C C P LSA Active Mode Support Indicator 2.4.17.3 C C C C P LSA Active Mode Indicator 2.4.17.4 C C C - P LSA Active Mode Indicator 2.4.17.5 C C C - P LSA Active Mode Indicator 2.4.17.5 C C C - P LSA Active Mode Indicator 2.4.17.5 C C C - P VPLMN Identifier 2.4.17.5 C C C - P Transfer of SM Option 2.5.2 C C C - P Transfer of SM Option 2.5.4 M - - T MNRG 2.7.2 M M <	Roaming Restriction in the SGSN	2.4.15.2	M	-	М	-	
LSA Priority 2.4.17.2 C C C - P LSA Preferential Access Indicator 2.4.17.2A C C C P LSA Only Access Indicator 2.4.17.3 C C C - P LSA Active Mode Indicator 2.4.17.3 C C C - P LSA Active Mode Indicator 2.4.17.4 C C C - P LSA Active Mode Indicator 2.4.17.5 C - - - P VPLMN Identifier 2.4.17.5 C - - - P VPLMN Identifier 2.5.2 C C C - P Transfer of SM option 2.5.4 M - - P MNRG 2.7.2 M - M M T Subscriber Data Confirmed by HLR Indicator 2.7.4.2 - - M - T Location Info Confirmed by HLR Indicator 2.7.4.3 - <td>Cell Global ID or Service Area ID</td> <td>2.4.16</td> <td>-</td> <td>-</td> <td>С</td> <td>-</td> <td></td>	Cell Global ID or Service Area ID	2.4.16	-	-	С	-	
LSA Preferential Access Indicator 2.4.17.2B C C C P LSA Active Mode Support Indicator 2.4.17.3 C C C - P LSA Active Mode Indicator 2.4.17.4 C C C - P USA Active Mode Indicator 2.4.17.4 C C C - P USA Active Mode Indicator 2.4.17.5 C - - - P VPLMN Identifier 2.5.2 C - C C - P VPLMN Identifier 2.5.4 M - - - P WPLMN Identifier 2.5.4 M - - P MNRG 2.7.2 M - M M T MNRG 2.7.2 M - M T T Subscriber Data Confirmed by HLR Indicator 2.7.4.2 - M - T T Location Info Confirmed by HLR Indicator 2.7.4.2 <	LSA Identity	2.4.17.1	С	С	С	-	
LSA Active Mode Support Indicator 2.4.17.2B C C C P LSA Only Access Indicator 2.4.17.3 C C C - P LSA Active Mode Indicator 2.4.17.5 C C C - P VPLMN Identifier 2.4.17.5 C - - - P Provision of teleservice 2.5.2 C - C - P Transfer of SM option 2.5.4 M - - - P MNRG 2.7.2 M - M M T MMS tate 2.7.3 - M - T T MS purged for GPRS flag 2.7.4.2 - M - T T MS purged for GPRS flag 2.7.6 M - - T T MSP purged for GPRS flag 2.7.7 C - - - T MS purged for GPRS flag 2.8.1 C -	LSA Priority	2.4.17.2		С	С	-	
LSA Active Mode Indicator LSA Active Mode Indicator 2.4.17.4	LSA Preferential Access Indicator	2.4.17.2A		С	С		
LSA Active Mode Indicator 2.4.17.4 C C C - P VPLMN Identifier 2.4.17.5 C - - - P Provision of teleservice 2.5.2 C - C - P Transfer of SM option 2.5.4 M - - - P MNRG 2.7.2 M - M M T MMS tate 2.7.3 - M - T Location Info Confirmed by HLR Indicator 2.7.4.2 - - M - T MS purged for GPRS flag 2.7.6 M - - T T MS purged for GPRS flag 2.7.7 C - - T T MNRR 2.7.7 C - - - T Subscriber Status 2.8.1 C - C - P Barring of outgoing calls 2.8.2.1 C - C - P Barring of outgoing calls 2.8.2.3 C - C<	LSA Active Mode Support Indicator	2.4.17.2B		С	С		
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PARAMETER	Subclause	HLR	VLR	SGSN	GGSN	TYPE
SND	2.13.15	-	-	С	С	T
SNU	2.13.16	-	-	С	С	Т
DRX Parameters	2.13.17	-	-	M	-	T
Compression	2.13.18	-	-	С	-	T
NGAF	2.13.19	-	-	C note2	-	T
Classmark	2.13.20	-	-	M	-	T
TIDTE D	2.13.21	-	-	С	С	T
Radio Priority	2.13.22	-	-	С	-	T
Radio Priority SMS	2.13.23	-	-	С	-	T
PDP Context Identifier	2.13.24	С	-	C	-	T
PDP Context Charging Characteristics	2.13.25	С	-	С	С	Р
GPRS CAMEL Subscription Information (GPRS-CSI)	2.14.1.10/2.1 4.4.4	С	-	С	-	С
MO Short Message Service CAMEL Subscription Information(MO-SMS-CSI)	2.14.1.8/2.14. 4.1	С	-	С	-	С
MT Short Message Service CAMEL Subscription Information(MT-SMS-CSI)	2.14.1.9/2.14. 4.2.	С	-	С	-	С
MO-SMS-CSI SGSN Negotiated CAMEL Capability Handling	2.14.2.1	С	-	-	-	Р
MT-SMS-CSI SGSN Negotiated CAMEL Capability Handling	2.14.2.1	С	-	-	-	Р
Mobility Management for GPRS event notification (MG-CSI)	2.14.1.12/2.14. 4.4	С	-	С	-	С
MG-CSI Negotiated CAMEL Capability Handling	2.14.2.1	С	-	-	-	Р
GPRS-CSI Negotiated CAMEL Capability Handling	2.14.2.1	С	-	-	-	Т
SGSN Supported CAMEL Phases	2.14.2.3	C	-	-	-	Т
GsmSCF address for CSI	2.14.2.4	С	-	-	-	Р
Age Indicator	2.16.1	С	-	С	-	Т
Subscribed Charging Characteristics	2.19.1	C C	-	С	С	Р
Privacy Exception List	2.16.1.1	С	-	С	-	Р
GMLC Numbers	2.16.1.2	C	-	Ċ	-	Р
MO-LR List	2.16.1.3	С	-	С	-	Р

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

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ж	23.079	CR	017	≋ rev	#	Current vers	3.6.0	¥
For <u>HELP</u> on u	sing this fo	rm, see b	ottom of th	is page or	look at th	e pop-up text	over the % sy	mbols.
Proposed change	affects:	(U)SII	M MI	E/UE	Radio A	ccess Networl	k Core N	etwork X
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Source: #	CN4							
Work item code: ₩	TEI					Date: ૠ	29/4/2002	
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not approved:	inco	nsistent s	pecification	ns.				
Clauses affected:	第 9.7. ′	1, 10.1.4,	10.4.1,					
Other specs affected:	T	est specif	specifications ifications ifications	ons #				
Other comments:	ж							

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 \(\mathbb{H} \) 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 ****

9.7.1 Procedure Handle_ORLCF_VMSC

The procedure UUS_ICH_Handle_LCF is specific to UUS; it is specified in 3GPP TS 23.087 [Error! Reference source not found.].

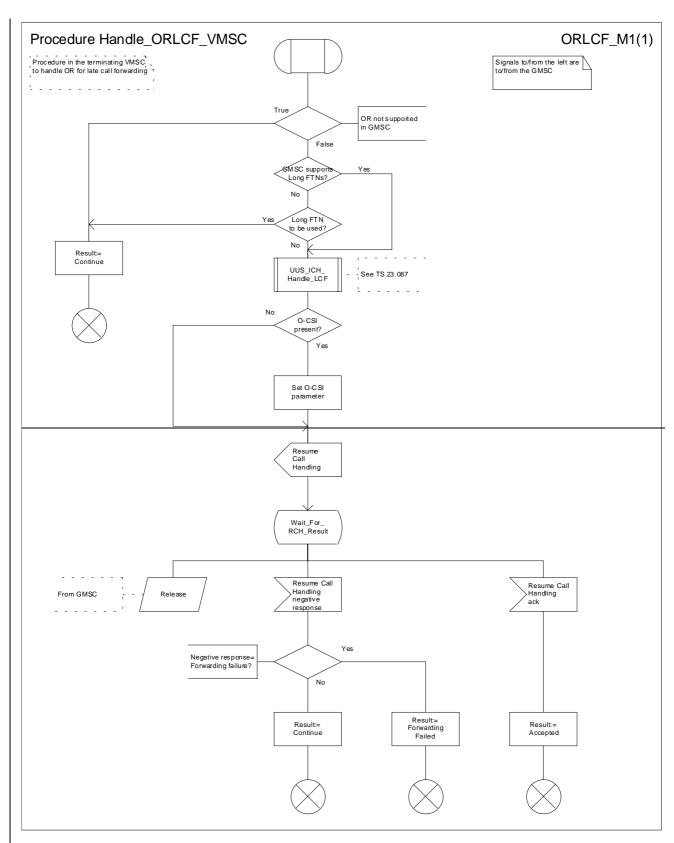


Figure 12: Procedure Handle_ORLCF_VMSC

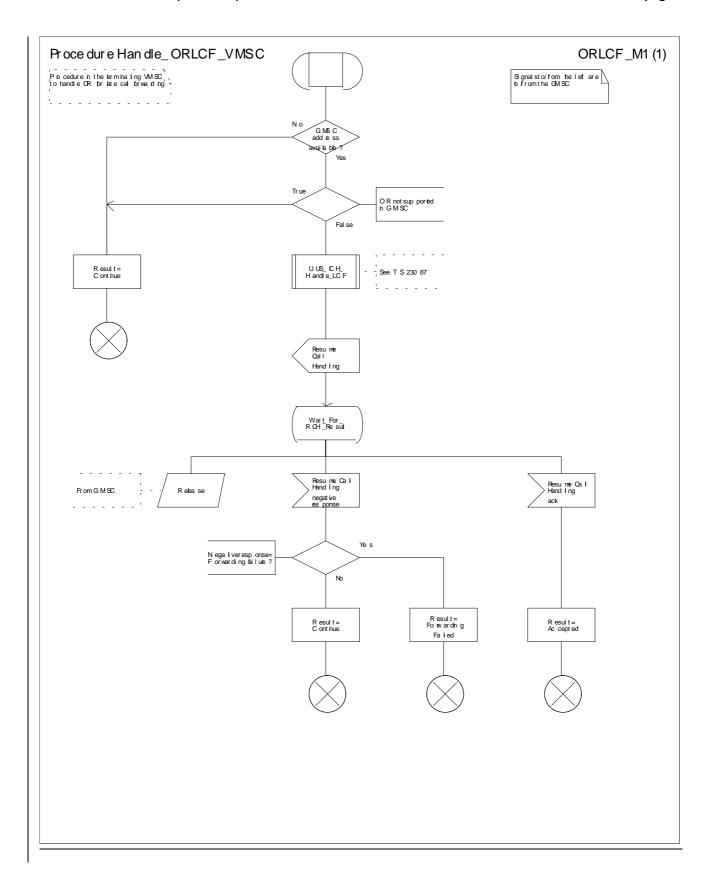


Figure 12: Procedure Handle_ORLCF_VMSC

**** NEXT MODIFIED SECTION ****

10.1.4 Send Info For Incoming Call ack

This message is specified in 3GPP TS 23.018 [Error! Reference source not found.]. The following additional information elements are required:

Information element name	Required	Description
OR indicator	С	Indicates whether the call has been routed directly from a GMSC not in the same PLMN as the HLR. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
GMSC address	С	E.164 address of the GMSC. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
Call reference number	С	Call reference number used by the GMSC for this call. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
Originating CSI	G	Originating CAMEL subscription information. Shall be present if the B subscriber has subscribed to originating CAMEL service and VMSCB supports CAMEL; otherwise shall be absent.
OR not supported in GMSC	С	Indicates that the GMSC does not support Optimal Routeing. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.

**** NEXT MODIFIED SECTION ****

10.4.1 Resume Call Handling

The following information elements are required:

Information element name	Required	Description
Call reference number	М	Call reference number used by the GMSC for this call.
Forwarding reason	М	Indicates the reason for forwarding (on call deflection, on busy, on no subscriber reply, or on mobile subscriber not reachable).
Basic service group	М	Basic service group which applies for this call.
IMSI	М	IMSI of the B subscriber.
Forwarded-to number	M	E.164 number of the C subscriber.
Notification to calling party	М	Indication of whether the calling party is to be notified that the call has been forwarded.
Forwarded-to subaddress	С	Subaddress of the C subscriber (see 3GPP TS 23.003 [Error! Reference source not found.]). Shall be present if a forwarded-to subaddress is stored in the VLR in association with the forwarded-to number; otherwise shall be absent.
Redirecting presentation	С	Indication of whether the MSISDN of the B subscriber shall be presented to the C subscriber. Shall be present if VMSCB supports the handling of the redirecting number, otherwise shall be absent.
MSISDN	С	E.164 number which identifies the B subscriber. It will be used to create the redirecting number presented to the C subscriber. Shall be present if VMSCB supports the handling of the redirecting number, otherwise shall be absent.
CUG interlock	С	For the definition of this IE, see 3GPP TS 23.085 [Error! Reference source not found.]. Shall be present if the VLR has determined that the forwarded call is to be treated as a CUG call in accordance with the rules in 3GPP TS 23.085 [Error! Reference source not found.], otherwise shall be absent.
CUG outgoing access	С	For the definition of this IE, see 3GPP TS 23.085 [Error! Reference source not found.]. Shall be present if the VLR has determined that the forwarded call is to be treated as a CUG call with outgoing access in accordance with the rules in 3GPP TS 23.085 [Error! Reference source not found.], otherwise shall be absent.
Originating CSI	G	Originating CAMEL subscription information excluding triggering criteria. Shall be present if the B subscriber has subscribed to originating CAMEL service, VMSCB supports CAMEL and the triggering criteria are satisfied for the forwarding leg; otherwise shall be absent.

**** LAST MODIFIED SECTION ****

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

CHANGE REQUEST								CR-Form-v5.1
*	23.079	CR	018	жrev	x	Current vers	4.0.0	¥
For <u>HELP</u> on u	sing this fo	rm, see b	ottom of this	s page or	look at th	e pop-up text	over the # syr	nbols.
Proposed change affects: \$\mathbb{K}\$ (U)SIM ME/UE Radio Access Network Core Network								etwork X
Title: #	Remova	of unnec	essary refe	rences to	O-CSI			
Source: #	CN4							
Work item code: ₩	TEI					Date: ♯	29/4/2002	
Category: # A 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. REL-4 REL-4 Use one of the following releases: Use one of the following releases: R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)							eases:	
Reason for change: The description of Resume Call Handling and Send Info For Incoming Call ack should not refer to the O-CSI parameter since this is CAMEL specific parameter and as such already described in 23.078. Indeed for example D-CSI is also present in RCH but it's not described in 23.079.								
Summary of chang	re:	nove refer	ences to O	CSI in me	essage de	escriptions		
Consequences if not approved:			complete deposition		of function	onality leading	to possible	
Clauses affected:	第 9.7.	1, 10.1.4,	10.4.1,					
Other specs affected:	T	other core lest specifor Spec		ns ∺				
Other comments:	ж							

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 \(\mathbb{H} \) 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 ****

9.7.1 Procedure Handle_ORLCF_VMSC

The procedure UUS_ICH_Handle_LCF is specific to UUS; it is specified in 3GPP TS 23.087 [Error! Reference source not found.].

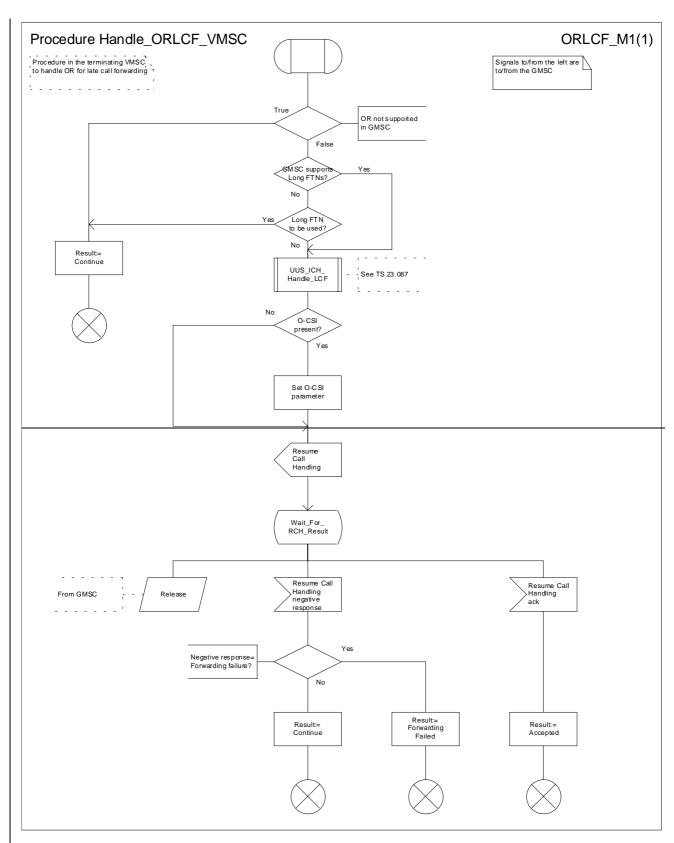


Figure 12: Procedure Handle_ORLCF_VMSC

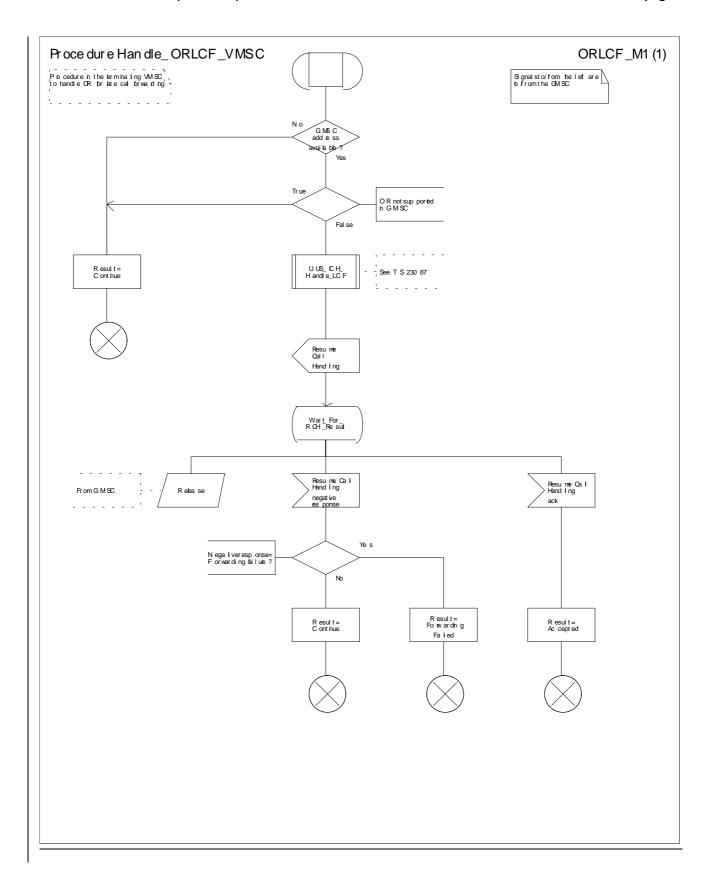


Figure 12: Procedure Handle_ORLCF_VMSC

**** NEXT MODIFIED SECTION ****

10.1.4 Send Info For Incoming Call ack

This message is specified in 3GPP TS 23.018 [Error! Reference source not found.]. The following additional information elements are required:

Information element name	Required	Description
OR indicator	С	Indicates whether the call has been routed directly from a GMSC not in the same PLMN as the HLR. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
GMSC address	С	E.164 address of the GMSC. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
Call reference number	С	Call reference number used by the GMSC for this call. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
Originating CSI	C	Originating CAMEL subscription information. Shall be present if the B subscriber has subscribed to originating CAMEL service and VMSCB supports CAMEL; otherwise shall be absent.
OR not supported in GMSC	С	Indicates that the GMSC does not support Optimal Routeing. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.

**** NEXT MODIFIED SECTION ****

10.4.1 Resume Call Handling

The following information elements are required:

Information element name Required		Description				
Call reference number	М	Call reference number used by the GMSC for this call.				
Forwarding reason	М	Indicates the reason for forwarding (on call deflection, on busy, on no subscriber reply, or on mobile subscriber not reachable).				
Basic service group	М	Basic service group which applies for this call.				
IMSI	М	IMSI of the B subscriber.				
Forwarded-to number	М	E.164 number of the C subscriber.				
Notification to calling party	М	Indication of whether the calling party is to be notified that the call has been forwarded.				
Forwarded-to subaddress	С	Subaddress of the C subscriber (see 3GPP TS 23.003 [Error! Reference source not found.]). Shall be present if a forwarded-to subaddress is stored in the VLR in association with the forwarded-to number; otherwise shall be absent.				
Redirecting presentation	С	Indication of whether the MSISDN of the B subscriber shall be presented to the C subscriber. Shall be present if VMSCB supports the handling of the redirecting number, otherwise shall be absent.				
MSISDN	С	E.164 number which identifies the B subscriber. It will be used to create the redirecting number presented to the C subscriber. Shall be present if VMSCB supports the handling of the redirecting number, otherwise shall be absent.				
CUG interlock	С	For the definition of this IE, see 3GPP TS 23.085 [Error! Reference source not found.]. Shall be present if the VLR has determined that the forwarded call is to be treated as a CUG call in accordance with the rules in 3GPP TS 23.085 [Error! Reference source not found.], otherwise shall be absent.				
CUG outgoing access	С	For the definition of this IE, see 3GPP TS 23.085 [Error! Reference source not found.]. Shall be present if the VLR has determined that the forwarded call is to be treated as a CUG call with outgoing access in accordance with the rules in 3GPP TS 23.085 [Error! Reference source not found.], otherwise shall be absent.				
Originating CSI	C	Originating CAMEL subscription information excluding triggering criteria. Shall be present if the B subscriber has subscribed to originating CAMEL service, VMSCB supports CAMEL and the triggering criteria are satisfied for the forwarding leg; otherwise shall be absent.				

**** LAST MODIFIED SECTION ****

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

		CL	LANCE	DEO	LIEC			(CR-Form-v5.1
CHANGE REQUEST									
*	23.079	CR	019	жrev	H	Current ve	ersion:	5.0.0	*
For HELP on t	For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the x symbols.								mbols.
Proposed change affects: # (U)SIM									
Title:	Removal	of unnece	essary refe	ences to	O-CSI				
Source:	CN4								
Work item code: ₩	TEI					Date:	第 29/	/4/2002	
Category: # A Use one of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900. Release: # REL-5 Use one of the following releases: Use one of the following releases: R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) REL-4 (Release 4) REL-5 (Release 5)									
Reason for change: The description of Resume Call Handling and Send Info For Incoming Call ack should not refer to the O-CSI parameter since this is CAMEL specific parameter and as such already described in 23.078. Indeed for example D-CSI is also present in RCH but it's not described in 23.079.									
Summary of chang	ge: Ж Rem	ove refer	ences to O-	CSI in m	essage	descriptions			
Consequences if not approved:			complete d pecification		of func	tionality leadi	ng to p	ossible	
Clauses affected:	第 <mark>9.7.1</mark>	, 10.1.4,	10.4.1,						
Other specs affected:	Te	ther core est specifi &M Speci		ns #	3				
Other comments:	ж								

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 ****

9.7.1 Procedure Handle_ORLCF_VMSC

The procedure UUS_ICH_Handle_LCF is specific to UUS; it is specified in 3GPP TS 23.087 [Error! Reference source not found.].

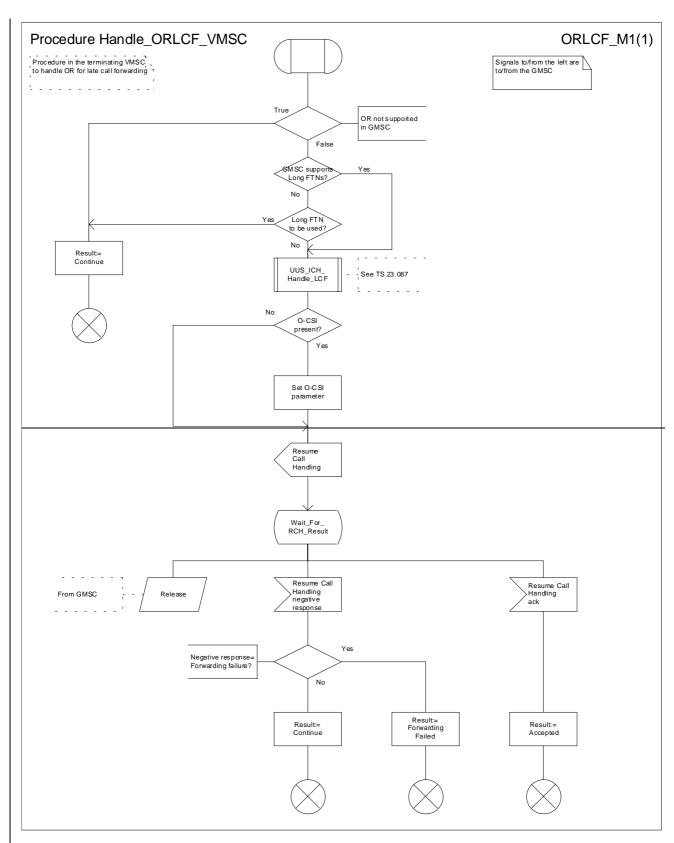


Figure 12: Procedure Handle_ORLCF_VMSC

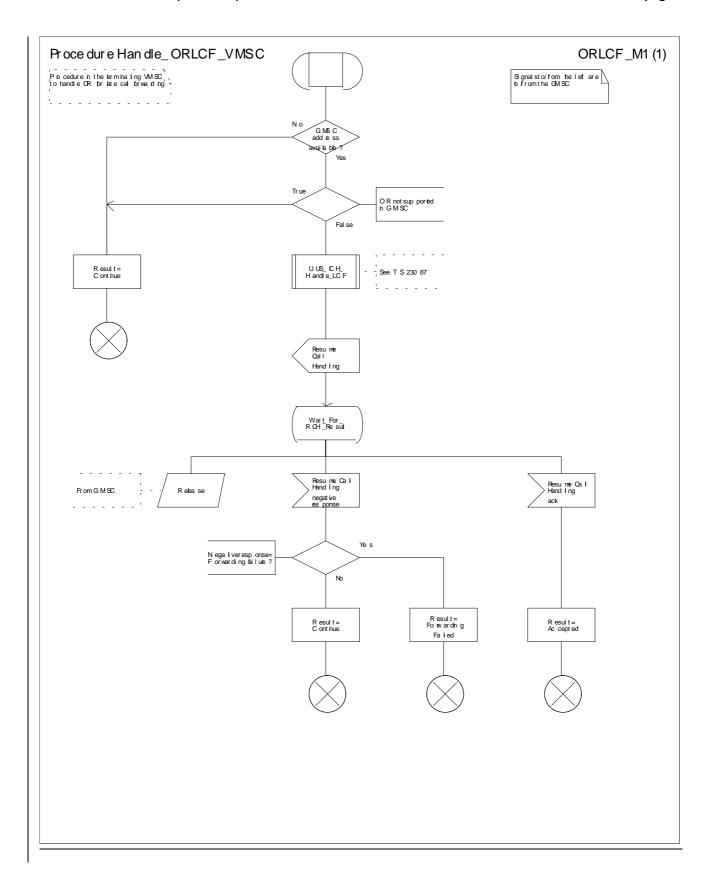


Figure 12: Procedure Handle_ORLCF_VMSC

**** NEXT MODIFIED SECTION ****

10.1.4 Send Info For Incoming Call ack

This message is specified in 3GPP TS 23.018 [Error! Reference source not found.]. The following additional information elements are required:

Information element name	Required	Description
OR indicator	С	Indicates whether the call has been routed directly from a GMSC not in the same PLMN as the HLR. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
GMSC address	С	E.164 address of the GMSC. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
Call reference number	С	Call reference number used by the GMSC for this call. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
Originating CSI	C	Originating CAMEL subscription information. Shall be present if the B subscriber has subscribed to originating CAMEL service and VMSCB supports CAMEL; otherwise shall be absent.
OR not supported in GMSC	С	Indicates that the GMSC does not support Optimal Routeing. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.

**** NEXT MODIFIED SECTION ****

10.4.1 Resume Call Handling

The following information elements are required:

Information element name	Required	Description
Call reference number	М	Call reference number used by the GMSC for this call.
Forwarding reason	М	Indicates the reason for forwarding (on call deflection, on busy, on no subscriber reply, or on mobile subscriber not reachable).
Basic service group	М	Basic service group which applies for this call.
IMSI	М	IMSI of the B subscriber.
Forwarded-to number	М	E.164 number of the C subscriber.
Notification to calling party	М	Indication of whether the calling party is to be notified that the call has been forwarded.
Forwarded-to subaddress	С	Subaddress of the C subscriber (see 3GPP TS 23.003 [Error! Reference source not found.]). Shall be present if a forwarded-to subaddress is stored in the VLR in association with the forwarded-to number; otherwise shall be absent.
Redirecting presentation	С	Indication of whether the MSISDN of the B subscriber shall be presented to the C subscriber. Shall be present if VMSCB supports the handling of the redirecting number, otherwise shall be absent.
MSISDN	С	E.164 number which identifies the B subscriber. It will be used to create the redirecting number presented to the C subscriber. Shall be present if VMSCB supports the handling of the redirecting number, otherwise shall be absent.
CUG interlock	С	For the definition of this IE, see 3GPP TS 23.085 [Error! Reference source not found.]. Shall be present if the VLR has determined that the forwarded call is to be treated as a CUG call in accordance with the rules in 3GPP TS 23.085 [Error! Reference source not found.], otherwise shall be absent.
CUG outgoing access	С	For the definition of this IE, see 3GPP TS 23.085 [Error! Reference source not found.]. Shall be present if the VLR has determined that the forwarded call is to be treated as a CUG call with outgoing access in accordance with the rules in 3GPP TS 23.085 [Error! Reference source not found.], otherwise shall be absent.
Originating CSI	C	Originating CAMEL subscription information excluding triggering criteria. Shall be present if the B subscriber has subscribed to originating CAMEL service, VMSCB supports CAMEL and the triggering criteria are satisfied for the forwarding leg; otherwise shall be absent.

**** LAST MODIFIED SECTION ****

3GPP TSG CN WG4 Meeting #13 Fort Lauderdale, US, 8th April – 12th April 2002

	CHANGE REQUEST							
*	23.082 CR 013							
For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the % symbols.								
Proposed change affects: # (U)SIM								
Title: ₩	"Long FTN Supported" to be transferred from VLR to HLR with Restore Data							
Source: #	CN4							
Work item code: ₩	TEI Date: 20/03/2002							
Reason for change	F (Agreed by Consensus) Jose 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 perfound in 3GPP TR 21.900. The parameter "Long FTN Supported" is transferred from VLR to HLR in the MAP operations Update Location and Restore Data. The description in stage 2 2 3.082 does not mention Restore Data, creating a misalignment between Stage 2 and Stage 3.							
Summary of chang	Ericsson believes that it's appropriate to line up Stage 2 to Stage 3 in order to ensure a complete restoration of user data in the VLR.							
Summary or chang	Restore Data							
Consequences if not approved:	# A long FTN would not be sent in Insert Subscriber Data from HLR to VLR as a consequence of Restore Data, even if the VLR supports Long FTN.							
Clauses affected:	業 2.9.2.4 (new section), 2.10.4							
Other specs affected:	# Other core specifications # Test specifications 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 \$\mathbb{X}\$ 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 NEW ADDED SECTION ****

2.9.2.4 Restore Data

This message corresponds to the MAP RESTORE DATA service specified in 3G TS 29.002.

Restore Data contains the following IE specific to Long Forwarded-to Numbers:

Information element name Required		<u>Description</u>
		Shall be present if the VLR supports Long Forwarded-to Numbers;
		otherwise shall be absent.

**** LAST MODIFIED SECTION ****

2.10.4 MSC/VLR does not support Long Forwarded-to Numbers

The VLR shall indicate whether it supports Long Forwarded-to Numbers in the Update Location <u>and Restore Data</u> messages to the HLR. If the VLR does not support Long Forwarded-to Numbers and a Long Forwarded-to Number is registered for CFB, then:

- If a default forwarded-to number (containing a maximum of 15 digits) is stored in the HLR, the HLR shall send to the VLR an Insert Subscriber Data message containing the default forwarded-to number in the Forwarded-to number parameter.
- Otherwise, the HLR shall send the VLR the following service state information:

(Provisioned, Not Registered, Not Active, Not Induced)

For an MT call, if the following conditions are met then the HLR shall include the Forwarding interrogation required parameter in the first Send Routing Info ack:

- The GMSC supports Optimal Routeing and Long Forwarded-to Numbers, and
- The MSC/VLR does not support Long Forwarded-to Numbers, and
- CFB is active and operative, and
- A long forwarded-to number is registered for CFB.

According to the rules of Optimal Routeing, when the GMSC receives a Resume Call Handling message from the MSC/VLR, it shall send a second Send Routing Info message to the HLR allowing the HLR to insert the correct long forwarded-to number.

**** END OF MODIFICATIONS ****

3GPP TSG CN WG4 Meeting #13 Fort Lauderdale, US, 8th April – 12th April 2002

CHANGE REQUEST								
*	23.082 CR 014	t version: 4.2.0						
For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the # symbols.								
Proposed change affects: (U)SIM								
Title: ж	"Long FTN Supported" to be transferred from VLR to HLF	R with Restore Data						
Source: #	CN4							
Work item code: ₩	TEI	te: # 20/03/2002						
	F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) P (editorial modification) RSDetailed explanations of the above categories can RED found in 3GPP TR 21.900. The parameter "Long FTN Supported" is transferred	One of the following releases: (GSM Phase 2) (GSM Phase 2) (Release 1996) (Release 1997) (Release 1998) (Release 1999) (Release 1999) (Release 4) (Release 5) (Irom VLR to HLR in the						
	MAP operations Update Location and Restore Data. The description in stage 2 23.082 does not mention Restore Data, creating a misalignment between Stage 2 and Stage 3. Ericsson believes that it's appropriate to line up Stage 2 to Stage 3 in order to ensure a complete restoration of user data in the VLR. Summary of change: Text added on the need to transfer "Long FTN Supported" from VLR to HLR with Restore Data							
Consequences if not approved:	# A long FTN would not be sent in Insert Subscriber D consequence of Restore Data, even if the VLR supp							
Clauses affected:	業 2.9.2.4 (new section), 2.10.4							
Other specs affected:	# Other core specifications # Test specifications 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 \$\mathbb{X}\$ 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 NEW ADDED SECTION ****

2.9.2.4 Restore Data

This message corresponds to the MAP RESTORE DATA service specified in 3G TS 29.002.

Restore Data contains the following IE specific to Long Forwarded-to Numbers:

Information element name Required		<u>Description</u>
		Shall be present if the VLR supports Long Forwarded-to Numbers;
		otherwise shall be absent.

**** LAST MODIFIED SECTION ****

2.10.4 MSC/VLR does not support Long Forwarded-to Numbers

The VLR shall indicate whether it supports Long Forwarded-to Numbers in the Update Location <u>and Restore Data</u> messages to the HLR. If the VLR does not support Long Forwarded-to Numbers and a Long Forwarded-to Number is registered for CFB, then:

- If a default forwarded-to number (containing a maximum of 15 digits) is stored in the HLR, the HLR shall send to the VLR an Insert Subscriber Data message containing the default forwarded-to number in the Forwarded-to number parameter.
- Otherwise, the HLR shall send the VLR the following service state information:

(Provisioned, Not Registered, Not Active, Not Induced)

For an MT call, if the following conditions are met then the HLR shall include the Forwarding interrogation required parameter in the first Send Routing Info ack:

- The GMSC supports Optimal Routeing and Long Forwarded-to Numbers, and
- The MSC/VLR does not support Long Forwarded-to Numbers, and
- CFB is active and operative, and
- A long forwarded-to number is registered for CFB.

According to the rules of Optimal Routeing, when the GMSC receives a Resume Call Handling message from the MSC/VLR, it shall send a second Send Routing Info message to the HLR allowing the HLR to insert the correct long forwarded-to number.

**** END OF MODIFICATIONS ****

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

	CHANGE REQUEST
ж 2	9.002 CR 438
For <u>HELP</u> on usin	g this form, see bottom of this page or look at the pop-up text over the ¥ symbols.
Proposed change aff	ects: # (U)SIM ME/UE Radio Access Network Core Network
Title: 第(larification on SendAuthenticationInfo
Source: # (N4
Work item code: ₩ ☐	El Date: # 29/4/2002
U:	(Agreed by consensus) e 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) tailed explanations of the above categories can found in 3GPP TR 21.900. Release: R99 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)
Reason for change:	SendAuthenticationInfo response cannot be carried by TC-RESULT-NL
C	otherwise it's impossible to guarrantee that vectors are received in VLR/SGSN the correct sequence. SendAuthenticationInfoArg is not segmented. It shall not be present in subsequent invoke components during a dialogue. IMSI and Number of Requested Vectors are mandatory in the first service request. If the HLR does not have so many vectors as the maximum number of acceptable vectors indicated by VLR / SGSN, then it does not necessarily need to fetch additional vectors before returning the available ones.
Summary of change:	Text modified in the service description, in the ASN.1 comments of SendAuthenticationInfoArg and in the procedure description (text and SDL)
Consequences if not approved:	Different interpretations can lead to serious interoperability problems.
Clauses affected:	€
	Other core specifications # Test specifications 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.

**** FIRST MODIFIED SECTION ****

8.5.2 MAP_SEND_AUTHENTICATION_INFO service

8.5.2.1 Definition

This service is used between the VLR and the HLR for the VLR to retrieve authentication information from the HLR. The VLR requests up to five authentication vectors.

Also this service is used between the SGSN and the HLR for the SGSN to retrieve authentication information from the HLR. The SGSN requests up to five authentication vectors.

If the user is a UMTS subscriber, the HLR shall return authentication quintuplets. If the user is a GSM subscriber, the HLR shall return authentication triplets.

If the HLR cannot provide the VLR or the SGSN with triplets, an empty response is returned. The VLR or the SGSN may then re-use old authentication triplets, except where this is forbidden under the conditions specified in GSM 03.20 [24].

If the HLR cannot provide the VLR or the SGSN with quintuplets, an empty response is returned. The VLR or the SGSN shall not re-use old authentication quintuplets.

If the VLR or SGSN receives a MAP_SEND_AUTHENTICATION_INFO response containing a User Error parameter as part of the handling of an authentication procedure, the authentication procedure in the VLR or SGSN shall fail.

Security related network functions are further described in GSM 03.20 and 3GPP TS 33.102.

The service is a confirmed service and consists of four service primitives.

8.5.2.2 Service primitives

The service primitives are shown in table 8.5/2.

Table 8.5/2: MAP_SEND_AUTHENTICATION_INFO parameters

Parameter name	Request	Indication	Response	Confirm	
Invoke id	M	M(=)	M(=)	M(=)	
IMSI	С	C(=)			
Number of requested vectors	С	C(=)			
Re-synchronisation Info	С	C(=)			
Segmentation prohibited indicator	С	C (=)			
Immediate response preferred indicator	U	C (=)			
AuthenticationSetList			С	C(=)	
User error			С	C(=)	
Provider error				0	

8.5.2.3 Parameter use

Invoke id

See clause 7.6.1 for the use of this parameter.

IMSI

See clause 7.6.2 for the use of this parameter.

This parameter shall be present in the first (or only) request of the dialogue. If segmentation is used this parameter shall not be present in subsequent segments. If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one.

Number of requested vectors

A number indicating how many authentication vectors the VLR or SGSN is prepared to receive. The HLR shall not return more vectors than indicated by this parameter.

This parameter shall be present in the first (or only) request of the dialogue. If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

Re-synchronisation Info

For definition and use of this parameter see 3GPP TS 33.102.

If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

Segmentation prohibited indicator

This parameter indicates if the VLR or SGSN allows message segmentation of the response at application level.

This parameter may be present only in the first request of the dialogue. If segmentation is used this parameter shall not be present in subsequent segments.

Immediate response preferred indicator

This parameter indicates that one of the requested authentication vectors is requested for immediate use in the VLR or SGSN. It may be used by the HLR together with the number of requested vectors and the number of vectors stored in the HLR to determine the number of vectors to be obtained from the AuC. It shall be ignored if the number of available vectors is greater than the number of requested vectors.

If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

<u>AuthenticationSetList</u>

A set of one to five authentication vectors are transferred from the HLR to the VLR or from the HLR to the SGSN, if the outcome of the service was successful.

User error

One of the following error causes defined in clause 7.6.1 shall be sent by the user in case of unsuccessful outcome of the service, depending on the respective failure reason:

- unknown subscriber;
- unexpected data value;
- system failure;
- data missing.

Provider error

See clause 7.6.1 for the use of this parameter.

**** NEXT MODIFIED SECTION ****

17.6.1 Mobile Service Operations

.

-- authentication management operations

```
SendAuthenticationInfo ::= OPERATION
                                                                             --Timer m
    ARGUMENT
         sendAuthenticationInfoArg
                                          SendAuthenticationInfoArg
         -- optional
          - within a dialogue sendAuthenticationInfoArg shall not be present in
          -- subsequent invoke components. If received in a subsequent invoke component
          -- it shall be discarded.
            if segmentation is used, sendAuthenticationInfoArg shall be present in the first
            segment and shall not be present in subsequent segments. If received in
            subsequent segments it shall be discarded.
    RESULT
         sendAuthenticationInfoRes
                                          SendAuthenticationInfoRes
          -- optional
     ERRORS {
         SystemFailure,
         DataMissing,
         UnexpectedDataValue,
         UnknownSubscriber}
```

.

**** NEXT MODIFIED SECTION ****

25.5.4 Macro Obtain_Authent_Para_VLR

This macro is used by the VLR to request authentication vectors from the HLR. The macro proceeds as follows:

- a connection is opened, and a MAP_SEND_AUTHENTICATION_INFO request sent to the HLR;
- if the HLR indicates that a MAP version 1 or 2 dialogue is to be used, the VLR performs the equivalent MAP version 1 or 2 dialogue. which can return a positive result containing authentication sets, an empty positive result, or an error;
- if the dialogue opening fails, the "Procedure Error" exit is used. Otherwise, the VLR waits for the response from the HLR:
- if a MAP_SEND_AUTHENTICATION_INFO confirmation is received from the HLR, the VLR checks the received data.

One of the following positive responses may be received from a MAP version 1 or MAP version 2 dialogue with the HLR:

- Authentication triplets, in which case the outcome is successful;
- Empty response, in which case the VLR may re-use old triplets, if allowed by the PLMN operator.

If the VLR cannot re-use old triplets (or no such triplets are available) then the "Procedure Error" exit is used.

If the outcome was successful or re-use of old parameters in the VLR is allowed, then the "OK" exit is used.

If an "Unknown Subscriber" error is returned by the MAP version 1 or 2 dialogue, then the "Unknown Subscriber" exit is used.

In a MAP version 3 dialogue a (possibly empty) set of authentication vectors may be received, <u>transferred by means of the TC-RESULT-L service</u>, from the HLR followed by a MAP_CLOSE_Indication or by a

MAP_DELIMITER_Indication. If a MAP_DELIMITER_Indication is received, the VLR may request additional authentication vectors from the HLR by sending a new MAP_SEND_AUTHENTIFICATION_INFO_Request with no parameter part. If a MAP_CLOSE_Indication is received, and authentication vectors have been received during the dialogue, then the "OK" exit is used. If no authentication vectors have been received during the dialogue, the VLR checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

If in a MAP version 3 dialogue an "Unknown Subscriber" error is received, then the "Unknown Subscriber" exit is used. If other errors are received, the VLR checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

- if a MAP-U-ABORT, MAP_P_ABORT, MAP_NOTICE or unexpected MAP_CLOSE service indication is received from the MSC, then open connections are terminated, and the macro takes the "Null" exit;
- if a MAP-U-ABORT, MAP_P_ABORT or unexpected MAP_CLOSE service indication is received from the HLR, then the VLR checks whether old authentication parameters (GSM triplets) can be re-used. If old parameters cannot be re-used the macro takes the "Procedure Error" exit; otherwise it takes the "OK" exit; note that re-use of old UMTS Quintuplets is not allowed;
- if a MAP_NOTICE service indication is received from the HLR, then the dialogue with the HLR is closed. The VLR then checks whether old authentication parameters (GSM triplets) can be re-used. If old parameters cannot be re-used the macro takes the "Procedure Error" exit; otherwise it takes the "OK" exit; note that re-use of old UMTS Quintuplets is not allowed.

The macro is described in figure 25.5/4.

**** NEXT MODIFIED SECTION ****

25.5.5 Process Obtain_Auth_Sets_HLR

Opening of the dialogue is described in the macro Receive_Open_Ind in clause 25.1, with outcomes:

- reversion to version one or two procedure;
- procedure termination; or
- dialogue acceptance, with proceeding as below.

This process is used by the HLR to obtain authentication vectors from the AuC, upon request from the VLR or from the SGSN. The process acts as follows:

- a MAP SEND AUTHENTICATION INFO indication is received by the HLR;
- the HLR checks the service indication for errors. If any, they are reported to the VLR or to the SGSN in the MAP_SEND_AUTHENTICATION_INFO response. If no errors are detected, authentication vectors are fetched from the AuC. Further details are found in GSM 03.20:
- if errors are detected they are reported to the VLR or to the SGSN in the MAP_SEND_AUTHENTICATION_INFO response. Otherwise the authentication vectors are returned by means of the TC-RESULT-L service.
- if segmentation of the response message is required and allowed, a
 MAP_SEND_AUTHENTICATION_INFO_response transferred by means of the TC-RESULT-L service,
 containing at least one authentication vector, followed by a MAP_DELIMITER_request is returned to the VLR
 or SGSN, the remaining authentication vectors are stored and the HLR waits for a new service indication from
 the VLR or SGSN.

The process is described in figure 25.5/5.

**** SDL Sheet modified in Section 25.5.5 ****

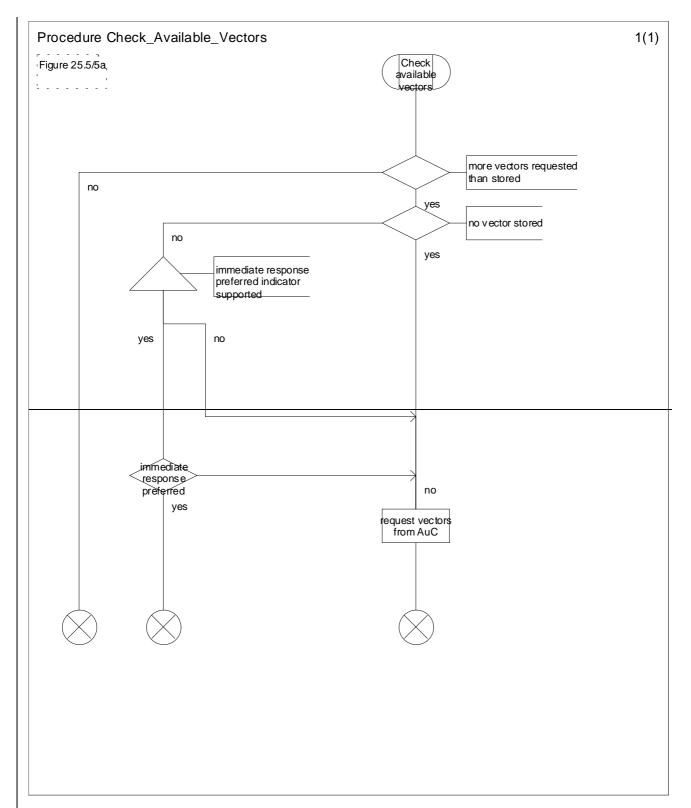


Figure 25.5/6: Procedure Check_Available_Vectors

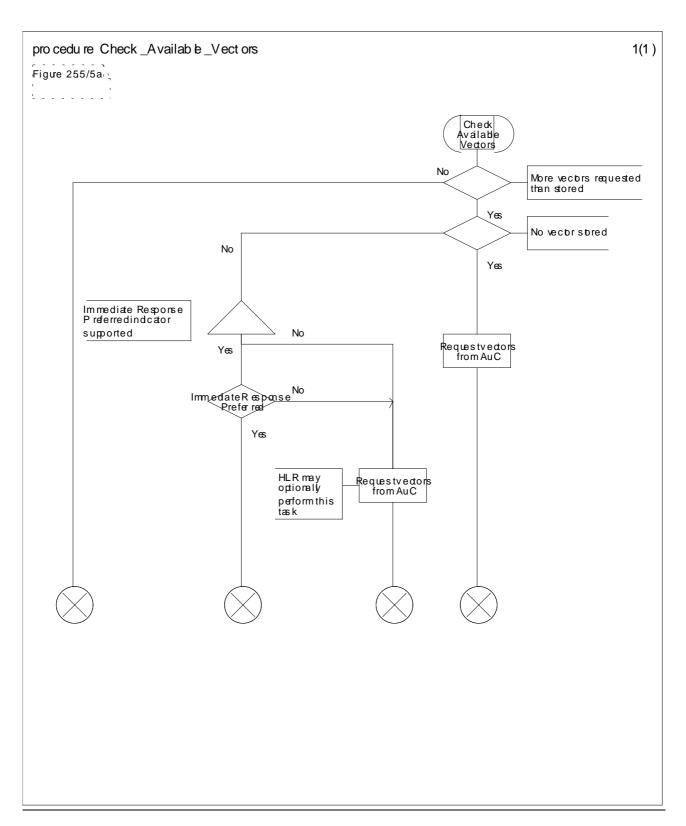


Figure 25.5/6: Procedure Check Available Vectors

**** NEXT MODIFIED SECTION ****

25.5.6 Process Obtain_Authent_Para_SGSN

For authentication procedure description see 3GPP TS 23.060[104] and GSM 04.08.

This Process is used by the SGSN to request authentication vectors from the HLR.

If the SGSN does not know the subscriber's HLR address (e.g. no IMSI translation exists), the Authentication Parameter negative response with error "Unknown HLR" is returned to the requesting process.

Otherwise, the Process proceeds as follows:

- a connection is opened, and a MAP_SEND_AUTHENTICATION_INFO request sent to the HLR;
- if the HLR indicates that a MAP version 1 or 2dialogue is to be used, the SGSN performs the equivalent MAP version 1 or 2dialogue. which can return a positive result containing authentication sets, an empty positive result, or an error;
- if the dialogue opening fails, the Authentication Parameters negative response with appropriate error is sent to the requesting process. Otherwise, the SGSN waits for the response from the HLR;
- if a MAP_SEND_AUTHENTICATION_INFO confirmation is received from the HLR, the SGSN checks the received data.

One of the following positive responses may be received from a MAP version 1 or MAP version 2 dialogue with the HLR:

- Authentication triplets, in which case the outcome is successful;
- Empty response, in which case the SGSN may re-use old triplets, if allowed by the PLMN operator.

If the SGSN cannot re-use old triplets (or no such triplets are available) then the Authentication Parameters negative response with appropriate error is sent to the requesting process.

If the outcome was successful or re-use of old parameters in the SGSN is allowed, then the Authentication Parameters response is sent to the requesting process

If an "Unknown Subscriber" error is included in the MAP_SEND_AUTHENTICATION_INFO confirm or is returned by the MAP version 1 dialogue, then the appropriate error is sent to the requesting process in the Authentication Parameters negative response

In a MAP version 3 dialogue a (possibly empty) set of authentication vectors may be received, transferred by means of the TC-RESULT-L service, from the HLR followed by a MAP_CLOSE_Indication or by a MAP_DELIMITER_Indication. If a MAP_DELIMITER_Indication is received, the SGSN may request additional authentication vectors from the HLR by sending a new MAP_SEND_AUTHENTIFICATION_INFO_Request. If a MAP_CLOSE_Indication is received, and authentication vectors have been received during the dialogue, then the "OK" exit is used. If no authentication vectors have been received during the dialogue, the SGSN checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

If in a MAP version 3 dialogue an "Unknown Subscriber" error is received, then the "Unknown Subscriber" exit is used. If other errors are received, the SGSN checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

- if a MAP-U-ABORT, MAP_P_ABORT or unexpected MAP_CLOSE service indication is received from the HLR, then the SGSN checks whether old authentication parameters can be re-used. If old parameters cannot be re-used the Authentication Parameters negative response with appropriate error is sent to the requesting process.

- if a MAP_NOTICE service indication is received from the HLR, then the dialogue with the HLR is closed. The SGSN then checks whether old authentication parameters can be re-used. If old parameters cannot be re-used the process terminates and the Authentication Parameters negative response with appropriate error is sent to the requesting process; Otherwise the Authentication Parameters response is sent to requesting process.

The process is described in figure 25.5/6.

**** LAST MODIFIED SECTION ****

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

CR-Form-v5.1 CHANGE REQUEST							
*	29.002 CR 439						
For <u>HELP</u> on usin	ng this form, see bottom of this page or look at the pop-up text over the % symbols.						
Proposed change af	fects: 第 (U)SIM ME/UE Radio Access Network Core Network X						
Title: 第	Clarification on SendAuthenticationInfo						
Source: #	Ericsson, Siemens, NTT Comware						
Work item code: ₩	TEI Date: 第 29/4/2002						
D	Release: # REL-4 Ise 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) Release: # REL-4 Use one of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Retailed explanations of the above categories can REL-4 (Release 4) e found in 3GPP TR 21.900.						
Reason for change:	★ SendAuthenticationInfo response cannot be carried by TC-RESULT-NL						
otherwise it's impossible to guarrantee that vectors are received in VLR/SGSN the correct sequence. SendAuthenticationInfoArg is not segmented. It shall not be present in subsequent invoke components during a dialogue. IMSI and Number of Requested Vectors are mandatory in the first service							
	If the HLR does not have so many vectors as the maximum number of acceptable vectors indicated by VLR / SGSN, then it does not necessarily need to fetch additional vectors before returning the available ones.						
Summary of change:	Text modified in the service description, in the ASN.1 comments of SendAuthenticationInfoArg and in the procedure description (text and SDL)						
Consequences if not approved:	₩ Different interpretations can lead to serious interoperability problems.						
Clauses affected:	*						
Other specs affected:	# Other core specifications # Test specifications O&M Specifications						
Other comments:	x						

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 ****

8.5.2 MAP_SEND_AUTHENTICATION_INFO service

8.5.2.1 Definition

This service is used between the VLR and the HLR for the VLR to retrieve authentication information from the HLR. The VLR requests up to five authentication vectors.

Also this service is used between the SGSN and the HLR for the SGSN to retrieve authentication information from the HLR. The SGSN requests up to five authentication vectors.

If the user is a UMTS subscriber, the HLR shall return authentication quintuplets. If the user is a GSM subscriber, the HLR shall return authentication triplets.

If the HLR cannot provide the VLR or the SGSN with triplets, an empty response is returned. The VLR or the SGSN may then re-use old authentication triplets, except where this is forbidden under the conditions specified in 3GPP TS 43.020 [24].

If the HLR cannot provide the VLR or the SGSN with quintuplets, an empty response is returned. The VLR or the SGSN shall not re-use old authentication quintuplets.

If the VLR or SGSN receives a MAP_SEND_AUTHENTICATION_INFO response containing a User Error parameter as part of the handling of an authentication procedure, the authentication procedure in the VLR or SGSN shall fail.

Security related network functions are further described in 3GPP TS 43.020 [24] and 3G TS 33.200.

The service is a confirmed service and consists of four service primitives.

8.5.2.2 Service primitives

The service primitives are shown in table 8.5/2.

Table 8.5/2: MAP_SEND_AUTHENTICATION_INFO parameters

Parameter name	Request	Indication	Response	Confirm
Invoke id	М	M(=)	M(=)	M(=)
IMSI	С	C(=)		
Number of requested vectors	С	C(=)		
Requesting node type	С	C(=)		
Re-synchronisation Info	С	C(=)		
Segmentation prohibited indicator	С	C (=)		
Immediate response preferred indicator	U	C (=)		
AuthenticationSetList			С	C(=)
User error			С	C(=)
Provider error				0

8.5.2.3 Parameter use

Invoke id

See clause 7.6.1 for the use of this parameter.

<u>IMSI</u>

See clause 7.6.2 for the use of this parameter.

This parameter shall be present in the first (or only) request of the dialogue. If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

Number of requested vectors

A number indicating how many authentication vectors the VLR or SGSN is prepared to receive. The HLR shall not return more vectors than indicated by this parameter.

This parameter shall be present in the first (or only) request of the dialogue. If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

Requesting node type

The type of the requesting node (SGSN or VLR).

This parameter shall be present in the first (or only) request of the dialogue. <u>If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.</u>

Re-synchronisation Info

For definition and use of this parameter see 3G TS 33.200.

If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

Segmentation prohibited indicator

This parameter indicates if the VLR or SGSN allows message segmentation of the response at application level.

This parameter may be present only in the first request of the dialogue. If segmentation is used this parameter shall not be present in subsequent segments.

Immediate response preferred indicator

This parameter indicates that one of the requested authentication vectors is requested for immediate use in the VLR or SGSN. It may be used by the HLR together with the number of requested vectors and the number of vectors stored in the HLR to determine the number of vectors to be obtained from the AuC. It shall be ignored if the number of available vectors is greater than the number of requested vectors.

If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

AuthenticationSetList

A set of one to five authentication vectors are transferred from the HLR to the VLR or from the HLR to the SGSN, if the outcome of the service was successful.

User error

One of the following error causes defined in clause 7.6.1 shall be sent by the user in case of unsuccessful outcome of the service, depending on the respective failure reason:

- unknown subscriber;
- unexpected data value;
- system failure;
- data missing.

Provider error

See clause 7.6.1 for the use of this parameter.

**** NEXT MODIFIED SECTION ****

17.6.1 Mobile Service Operations

• • • •

-- authentication management operations

```
SendAuthenticationInfo ::= OPERATION
                                                                             --Timer m
    ARGUMENT
         sendAuthenticationInfoArg
                                         SendAuthenticationInfoArg
         -- optional
         -- within a dialogue sendAuthenticationInfoArg shall not be present in
         -- subsequent invoke components. If received in a subsequent invoke component
         -- it shall be discarded.
            if segmentation is used, sendAuthenticationInfoArg shall be present in the first
            segment and shall not be present in subsequent segments. If received in
            subsequent segments it shall be discarded.
    RESULT
         sendAuthenticationInfoRes
                                         SendAuthenticationInfoRes
         -- optional
    ERRORS {
         SystemFailure,
         DataMissing,
         UnexpectedDataValue,
         UnknownSubscriber}
```

. . . .

**** NEXT MODIFIED SECTION ****

25.5.4 Macro Obtain_Authent_Para_VLR

This macro is used by the VLR to request authentication vectors from the HLR. The macro proceeds as follows:

- a connection is opened, and a MAP_SEND_AUTHENTICATION_INFO request sent to the HLR;
- if the HLR indicates that a MAP version 1 or 2 dialogue is to be used, the VLR performs the equivalent MAP version 1 or 2 dialogue, which can return a positive result containing authentication sets, an empty positive result, or an error;
- if the dialogue opening fails, the "Procedure Error" exit is used. Otherwise, the VLR waits for the response from the HLR;
- if a MAP_SEND_AUTHENTICATION_INFO confirmation is received from the HLR, the VLR checks the received data.

One of the following positive responses may be received from a MAP version 1 or MAP version 2 dialogue with the HLR:

- Authentication triplets, in which case the outcome is successful;
- Empty response, in which case the VLR may re-use old triplets, if allowed by the PLMN operator.

If the VLR cannot re-use old triplets (or no such triplets are available) then the "Procedure Error" exit is used.

If the outcome was successful or re-use of old parameters in the VLR is allowed, then the "OK" exit is used.

If an "Unknown Subscriber" error is returned by the MAP version 1 or 2 dialogue, then the "Unknown Subscriber" exit is used.

In a MAP version 3 dialogue a (possibly empty) set of authentication vectors may be received, <u>transferred by means of the TC-RESULT-L service</u>, from the HLR followed by a MAP_CLOSE_Indication or by a

MAP_DELIMITER_Indication. If a MAP_DELIMITER_Indication is received, the VLR may request additional authentication vectors from the HLR by sending a new MAP_SEND_AUTHENTIFICATION_INFO_Request with no parameter part. If a MAP_CLOSE_Indication is received, and authentication vectors have been received during the dialogue, then the "OK" exit is used. If no authentication vectors have been received during the dialogue, the VLR checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

If in a MAP version 3 dialogue an "Unknown Subscriber" error is received, then the "Unknown Subscriber" exit is used. If other errors are received, the VLR checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

- if a MAP-U-ABORT, MAP_P_ABORT, MAP_NOTICE or unexpected MAP_CLOSE service indication is received from the MSC, then open connections are terminated, and the macro takes the "Null" exit;
- if a MAP-U-ABORT, MAP_P_ABORT or unexpected MAP_CLOSE service indication is received from the
 HLR, then the VLR checks whether old authentication parameters (GSM triplets) can be re-used. If old
 parameters cannot be re-used the macro takes the "Procedure Error" exit; otherwise it takes the "OK" exit; note
 that re-use of old UMTS Quintuplets is not allowed;
- if a MAP_NOTICE service indication is received from the HLR, then the dialogue with the HLR is closed. The VLR then checks whether old authentication parameters (GSM triplets) can be re-used. If old parameters cannot be re-used the macro takes the "Procedure Error" exit; otherwise it takes the "OK" exit; note that re-use of old UMTS Quintuplets is not allowed.

The macro is described in figure 25.5/4.

**** NEXT MODIFIED SECTION ****

25.5.5 Process Obtain_Auth_Sets_HLR

Opening of the dialogue is described in the macro Receive_Open_Ind in clause 25.1, with outcomes:

- reversion to version one or two procedure;
- procedure termination; or
- dialogue acceptance, with proceeding as below.

This process is used by the HLR to obtain authentication vectors from the AuC, upon request from the VLR or from the SGSN. The process acts as follows:

- a MAP_SEND_AUTHENTICATION_INFO indication is received by the HLR;
- the HLR checks the service indication for errors. If any, they are reported to the VLR or to the SGSN in the MAP_SEND_AUTHENTICATION_INFO response. If no errors are detected, authentication vectors are fetched from the AuC. Further details are found in 3GPP TS 43.020 [24];
- if errors are detected they are reported to the VLR or to the SGSN in the MAP_SEND_AUTHENTICATION_INFO response. Otherwise the authentication vectors are returned by means of the TC-RESULT-L service.
- if segmentation of the response message is required and allowed, a
 MAP_SEND_AUTHENTICATION_INFO_response transferred by means of the TC-RESULT-L service,

containing at least one authentication vector, followed by a MAP_DELIMITER_request is returned to the VLR or SGSN, the remaining authentication vectors are stored and the HLR waits for a new service indication from the VLR or SGSN.

The process is described in figure 25.5/5.

**** SDL Sheet modified in Section 25.5.5 ****

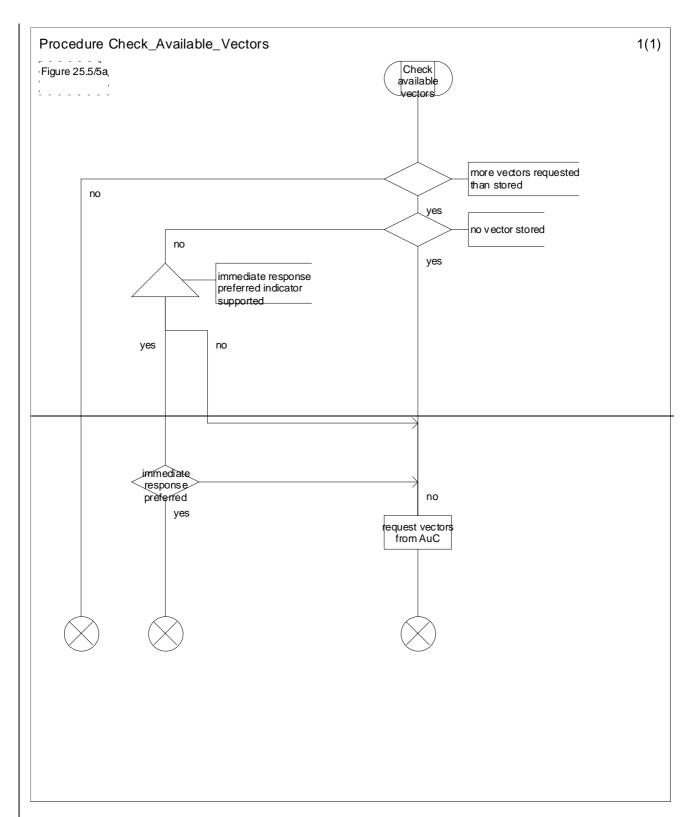


Figure 25.5/6: Procedure Check_Available_Vectors

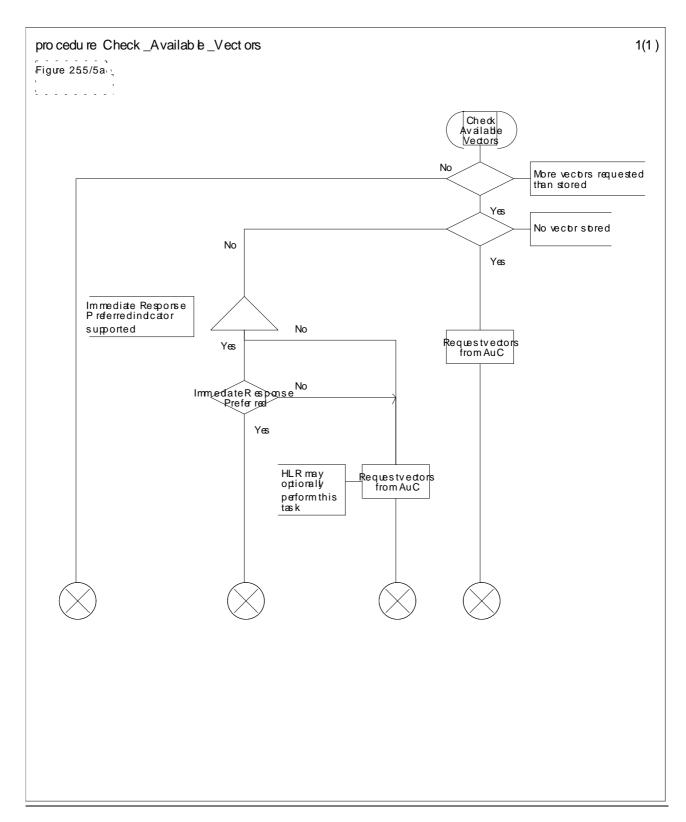


Figure 25.5/6: Procedure Check Available Vectors

**** NEXT MODIFIED SECTION ****

25.5.6 Process Obtain_Authent_Para_SGSN

For authentication procedure description see 3GPP TS 23.060 [104] and 3GPP TS 24.008 [35].

This Process is used by the SGSN to request authentication vectors from the HLR.

If the SGSN does not know the subscriber's HLR address (e.g. no IMSI translation exists), the Authentication Parameter negative response with error "Unknown HLR" is returned to the requesting process.

Otherwise, the Process proceeds as follows:

- a connection is opened, and a MAP SEND AUTHENTICATION INFO request sent to the HLR;
- if the HLR indicates that a MAP version 1 or 2dialogue is to be used, the SGSN performs the equivalent MAP version 1 or 2dialogue. which can return a positive result containing authentication sets, an empty positive result, or an error;
- if the dialogue opening fails, the Authentication Parameters negative response with appropriate error is sent to the requesting process. Otherwise, the SGSN waits for the response from the HLR;
- if a MAP_SEND_AUTHENTICATION_INFO confirmation is received from the HLR, the SGSN checks the received data.

One of the following positive responses may be received from a MAP version 1 or MAP version 2 dialogue with the HLR:

- Authentication triplets, in which case the outcome is successful;
- Empty response, in which case the SGSN may re-use old triplets, if allowed by the PLMN operator.

If the SGSN cannot re-use old triplets (or no such triplets are available) then the Authentication Parameters negative response with appropriate error is sent to the requesting process.

If the outcome was successful or re-use of old parameters in the SGSN is allowed, then the Authentication Parameters response is sent to the requesting process

If an "Unknown Subscriber" error is included in the MAP_SEND_AUTHENTICATION_INFO confirm or is returned by the MAP version 1 dialogue, then the appropriate error is sent to the requesting process in the Authentication Parameters negative response

In a MAP version 3 dialogue a (possibly empty) set of authentication vectors may be received, transferred by means of the TC-RESULT-L service, from the HLR followed by a MAP_CLOSE_Indication or by a

MAP_DELIMITER_Indication. If a MAP_DELIMITER_Indication is received, the SGSN may request additional authentication vectors from the HLR by sending a new MAP_SEND_AUTHENTIFICATION_INFO_Request. If a MAP_CLOSE_Indication is received, and authentication vectors have been received during the dialogue, then the "OK" exit is used. If no authentication vectors have been received during the dialogue, the SGSN checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

If in a MAP version 3 dialogue an "Unknown Subscriber" error is received, then the "Unknown Subscriber" exit is used. If other errors are received, the SGSN checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

- if a MAP-U-ABORT, MAP_P_ABORT or unexpected MAP_CLOSE service indication is received from the HLR, then the SGSN checks whether old authentication parameters can be re-used. If old parameters cannot be re-used the Authentication Parameters negative response with appropriate error is sent to the requesting process.
- if a MAP_NOTICE service indication is received from the HLR, then the dialogue with the HLR is closed. The SGSN then checks whether old authentication parameters can be re-used. If old parameters cannot be re-used the

process terminates and the Authentication Parameters negative response with appropriate error is sent to the requesting process; Otherwise the Authentication Parameters response is sent to requesting process.

The process is described in figure 25.5/6.

**** LAST MODIFIED SECTION ****

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

		CHAN	IGE RE	QUE	ST			(CR-Form-v5.1
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For <u>HELP</u> on using this form, see bottom of this page or look at the pop-up text over the % symbols.									
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Source: #	Ericsson,	Siemens, NTT	Comware						
Work item code: %	TEI					Date: ₩	29/4	1/2002	
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Reason for change:	₩ Send	Authentication	Info response	canno	t be	carried by TC	C-RES	SULT-NL	
Reason for change: SendAuthenticationInfo response cannot be carried by TC-RESULT-NL otherwise it's impossible to guarrantee that vectors are received in VLR/SG the correct sequence. SendAuthenticationInfoArg is not segmented. It shall not be present in subsequent invoke components during a dialogue. IMSI and Number of Requested Vectors are mandatory in the first service request. If the HLR does not have so many vectors as the maximum number of acceptable vectors indicated by VLR / SGSN, then it does not necessarily not of the fetch additional vectors before returning the available ones.				ce					
Summary of change.		modified in the							DL)
Consequences if not approved:	₩ Diffe	rent interpretati	ons can lead	to seri	ous i	nteroperabilit	y prob	olems.	
Clauses affected:									
Other specs affected:	Te	ther core specifest specification Meson Specification	ns	¥					
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 ****

8.5.2 MAP_SEND_AUTHENTICATION_INFO service

8.5.2.1 Definition

This service is used between the VLR and the HLR for the VLR to retrieve authentication information from the HLR. The VLR requests up to five authentication vectors.

Also this service is used between the SGSN and the HLR for the SGSN to retrieve authentication information from the HLR. The SGSN requests up to five authentication vectors.

If the user is a UMTS subscriber, the HLR shall return authentication quintuplets. If the user is a GSM subscriber, the HLR shall return authentication triplets.

If the HLR cannot provide the VLR or the SGSN with triplets, an empty response is returned. The VLR or the SGSN may then re-use old authentication triplets, except where this is forbidden under the conditions specified in 3GPP TS 43.020 [24].

If the HLR cannot provide the VLR or the SGSN with quintuplets, an empty response is returned. The VLR or the SGSN shall not re-use old authentication quintuplets.

If the VLR or SGSN receives a MAP_SEND_AUTHENTICATION_INFO response containing a User Error parameter as part of the handling of an authentication procedure, the authentication procedure in the VLR or SGSN shall fail.

Security related network functions are further described in 3GPP TS 43.020 [24] and 3G TS 33.200.

The service is a confirmed service and consists of four service primitives.

8.5.2.2 Service primitives

The service primitives are shown in table 8.5/2.

Table 8.5/2: MAP_SEND_AUTHENTICATION_INFO parameters

Parameter name	Request	Indication	Response	Confirm
Invoke id	М	M(=)	M(=)	M(=)
IMSI	С	C(=)		
Number of requested vectors	С	C(=)		
Requesting node type	С	C(=)		
Re-synchronisation Info	С	C(=)		
Segmentation prohibited indicator	С	C (=)		
Immediate response preferred indicator	U	C (=)		
AuthenticationSetList			С	C(=)
User error			С	C(=)
Provider error				0

8.5.2.3 Parameter use

Invoke id

See clause 7.6.1 for the use of this parameter.

<u>IMSI</u>

See clause 7.6.2 for the use of this parameter.

This parameter shall be present in the first (or only) request of the dialogue. If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

Number of requested vectors

A number indicating how many authentication vectors the VLR or SGSN is prepared to receive. The HLR shall not return more vectors than indicated by this parameter.

This parameter shall be present in the first (or only) request of the dialogue. If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

Requesting node type

The type of the requesting node (SGSN or VLR).

This parameter shall be present in the first (or only) request of the dialogue. <u>If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.</u>

Re-synchronisation Info

For definition and use of this parameter see 3G TS 33.200.

If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

Segmentation prohibited indicator

This parameter indicates if the VLR or SGSN allows message segmentation of the response at application level.

This parameter may be present only in the first request of the dialogue. If segmentation is used this parameter shall not be present in subsequent segments.

Immediate response preferred indicator

This parameter indicates that one of the requested authentication vectors is requested for immediate use in the VLR or SGSN. It may be used by the HLR together with the number of requested vectors and the number of vectors stored in the HLR to determine the number of vectors to be obtained from the AuC. It shall be ignored if the number of available vectors is greater than the number of requested vectors.

If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one. If segmentation is used this parameter shall not be present in subsequent segments.

AuthenticationSetList

A set of one to five authentication vectors are transferred from the HLR to the VLR or from the HLR to the SGSN, if the outcome of the service was successful.

User error

One of the following error causes defined in clause 7.6.1 shall be sent by the user in case of unsuccessful outcome of the service, depending on the respective failure reason:

- unknown subscriber;
- unexpected data value;
- system failure;
- data missing.

Provider error

See clause 7.6.1 for the use of this parameter.

**** NEXT MODIFIED SECTION ****

17.6.1 Mobile Service Operations

• • • •

-- authentication management operations

```
SendAuthenticationInfo ::= OPERATION
                                                                             --Timer m
    ARGUMENT
         sendAuthenticationInfoArg
                                         SendAuthenticationInfoArg
         -- optional
         -- within a dialogue sendAuthenticationInfoArg shall not be present in
         -- subsequent invoke components. If received in a subsequent invoke component
         -- it shall be discarded.
            if segmentation is used, sendAuthenticationInfoArg shall be present in the first
            segment and shall not be present in subsequent segments. If received in
            subsequent segments it shall be discarded.
    RESULT
         sendAuthenticationInfoRes
                                         SendAuthenticationInfoRes
         -- optional
    ERRORS {
         SystemFailure,
         DataMissing,
         UnexpectedDataValue,
         UnknownSubscriber}
```

. . . .

**** NEXT MODIFIED SECTION ****

25.5.4 Macro Obtain_Authent_Para_VLR

This macro is used by the VLR to request authentication vectors from the HLR. The macro proceeds as follows:

- a connection is opened, and a MAP_SEND_AUTHENTICATION_INFO request sent to the HLR;
- if the HLR indicates that a MAP version 1 or 2 dialogue is to be used, the VLR performs the equivalent MAP version 1 or 2 dialogue, which can return a positive result containing authentication sets, an empty positive result, or an error;
- if the dialogue opening fails, the "Procedure Error" exit is used. Otherwise, the VLR waits for the response from the HLR;
- if a MAP_SEND_AUTHENTICATION_INFO confirmation is received from the HLR, the VLR checks the received data.

One of the following positive responses may be received from a MAP version 1 or MAP version 2 dialogue with the HLR:

- Authentication triplets, in which case the outcome is successful;
- Empty response, in which case the VLR may re-use old triplets, if allowed by the PLMN operator.

If the VLR cannot re-use old triplets (or no such triplets are available) then the "Procedure Error" exit is used.

If the outcome was successful or re-use of old parameters in the VLR is allowed, then the "OK" exit is used.

If an "Unknown Subscriber" error is returned by the MAP version 1 or 2 dialogue, then the "Unknown Subscriber" exit is used.

In a MAP version 3 dialogue a (possibly empty) set of authentication vectors may be received, <u>transferred by means of the TC-RESULT-L service</u>, from the HLR followed by a MAP_CLOSE_Indication or by a

MAP_DELIMITER_Indication. If a MAP_DELIMITER_Indication is received, the VLR may request additional authentication vectors from the HLR by sending a new MAP_SEND_AUTHENTIFICATION_INFO_Request with no parameter part. If a MAP_CLOSE_Indication is received, and authentication vectors have been received during the dialogue, then the "OK" exit is used. If no authentication vectors have been received during the dialogue, the VLR checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

If in a MAP version 3 dialogue an "Unknown Subscriber" error is received, then the "Unknown Subscriber" exit is used. If other errors are received, the VLR checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

- if a MAP-U-ABORT, MAP_P_ABORT, MAP_NOTICE or unexpected MAP_CLOSE service indication is received from the MSC, then open connections are terminated, and the macro takes the "Null" exit;
- if a MAP-U-ABORT, MAP_P_ABORT or unexpected MAP_CLOSE service indication is received from the
 HLR, then the VLR checks whether old authentication parameters (GSM triplets) can be re-used. If old
 parameters cannot be re-used the macro takes the "Procedure Error" exit; otherwise it takes the "OK" exit; note
 that re-use of old UMTS Quintuplets is not allowed;
- if a MAP_NOTICE service indication is received from the HLR, then the dialogue with the HLR is closed. The VLR then checks whether old authentication parameters (GSM triplets) can be re-used. If old parameters cannot be re-used the macro takes the "Procedure Error" exit; otherwise it takes the "OK" exit; note that re-use of old UMTS Quintuplets is not allowed.

The macro is described in figure 25.5/4.

**** NEXT MODIFIED SECTION ****

25.5.5 Process Obtain_Auth_Sets_HLR

Opening of the dialogue is described in the macro Receive_Open_Ind in clause 25.1, with outcomes:

- reversion to version one or two procedure;
- procedure termination; or
- dialogue acceptance, with proceeding as below.

This process is used by the HLR to obtain authentication vectors from the AuC, upon request from the VLR or from the SGSN. The process acts as follows:

- a MAP_SEND_AUTHENTICATION_INFO indication is received by the HLR;
- the HLR checks the service indication for errors. If any, they are reported to the VLR or to the SGSN in the MAP_SEND_AUTHENTICATION_INFO response. If no errors are detected, authentication vectors are fetched from the AuC. Further details are found in 3GPP TS 43.020 [24];
- if errors are detected they are reported to the VLR or to the SGSN in the MAP_SEND_AUTHENTICATION_INFO response. Otherwise the authentication vectors are returned by means of the TC-RESULT-L service.
- if segmentation of the response message is required and allowed, a
 MAP_SEND_AUTHENTICATION_INFO_response transferred by means of the TC-RESULT-L service,

containing at least one authentication vector, followed by a MAP_DELIMITER_request is returned to the VLR or SGSN, the remaining authentication vectors are stored and the HLR waits for a new service indication from the VLR or SGSN.

The process is described in figure 25.5/5.

**** SDL Sheet modified in Section 25.5.5 ****

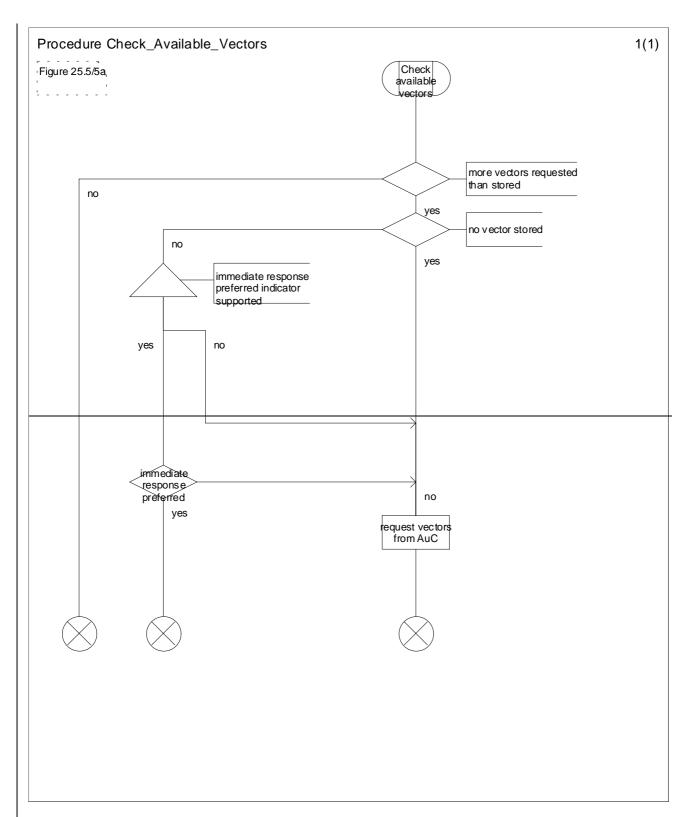


Figure 25.5/6: Procedure Check_Available_Vectors

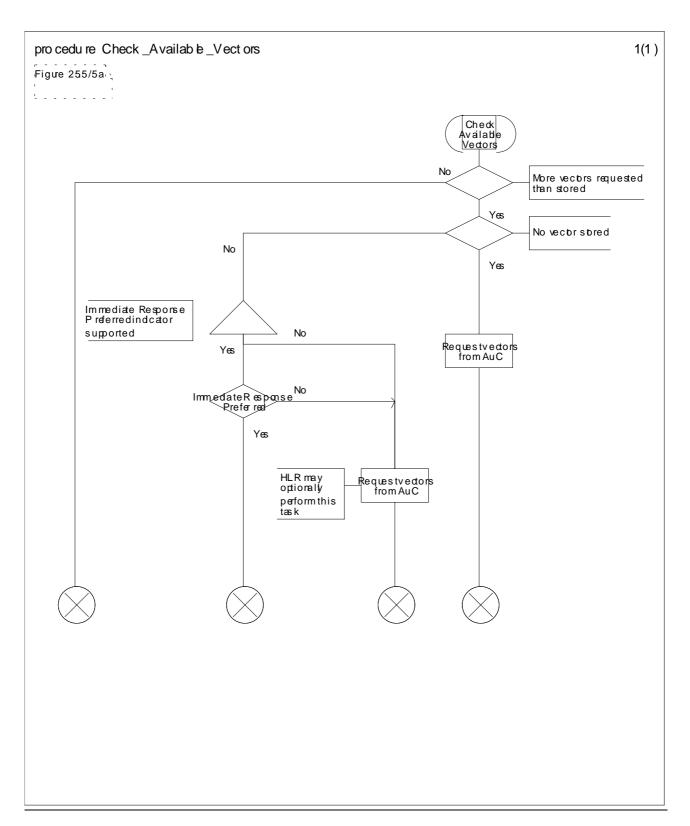


Figure 25.5/6: Procedure Check Available Vectors

**** NEXT MODIFIED SECTION ****

25.5.6 Process Obtain_Authent_Para_SGSN

For authentication procedure description see 3GPP TS 23.060 [104] and 3GPP TS 24.008 [35].

This Process is used by the SGSN to request authentication vectors from the HLR.

If the SGSN does not know the subscriber's HLR address (e.g. no IMSI translation exists), the Authentication Parameter negative response with error "Unknown HLR" is returned to the requesting process.

Otherwise, the Process proceeds as follows:

- a connection is opened, and a MAP SEND AUTHENTICATION INFO request sent to the HLR;
- if the HLR indicates that a MAP version 1 or 2dialogue is to be used, the SGSN performs the equivalent MAP version 1 or 2dialogue. which can return a positive result containing authentication sets, an empty positive result, or an error;
- if the dialogue opening fails, the Authentication Parameters negative response with appropriate error is sent to the requesting process. Otherwise, the SGSN waits for the response from the HLR;
- if a MAP_SEND_AUTHENTICATION_INFO confirmation is received from the HLR, the SGSN checks the received data.

One of the following positive responses may be received from a MAP version 1 or MAP version 2 dialogue with the HLR:

- Authentication triplets, in which case the outcome is successful;
- Empty response, in which case the SGSN may re-use old triplets, if allowed by the PLMN operator.

If the SGSN cannot re-use old triplets (or no such triplets are available) then the Authentication Parameters negative response with appropriate error is sent to the requesting process.

If the outcome was successful or re-use of old parameters in the SGSN is allowed, then the Authentication Parameters response is sent to the requesting process

If an "Unknown Subscriber" error is included in the MAP_SEND_AUTHENTICATION_INFO confirm or is returned by the MAP version 1 dialogue, then the appropriate error is sent to the requesting process in the Authentication Parameters negative response

In a MAP version 3 dialogue a (possibly empty) set of authentication vectors may be received, transferred by means of the TC-RESULT-L service, from the HLR followed by a MAP_CLOSE_Indication or by a

MAP_DELIMITER_Indication. If a MAP_DELIMITER_Indication is received, the SGSN may request additional authentication vectors from the HLR by sending a new MAP_SEND_AUTHENTIFICATION_INFO_Request. If a MAP_CLOSE_Indication is received, and authentication vectors have been received during the dialogue, then the "OK" exit is used. If no authentication vectors have been received during the dialogue, the SGSN checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

If in a MAP version 3 dialogue an "Unknown Subscriber" error is received, then the "Unknown Subscriber" exit is used. If other errors are received, the SGSN checks whether old GSM Triplets are available and can be re-used. If so, the "OK" exit is used, otherwise the "Procedure Error" exit is used. Note that re-use of old UMTS Quintuplets is not allowed.

- if a MAP-U-ABORT, MAP_P_ABORT or unexpected MAP_CLOSE service indication is received from the HLR, then the SGSN checks whether old authentication parameters can be re-used. If old parameters cannot be re-used the Authentication Parameters negative response with appropriate error is sent to the requesting process.
- if a MAP_NOTICE service indication is received from the HLR, then the dialogue with the HLR is closed. The SGSN then checks whether old authentication parameters can be re-used. If old parameters cannot be re-used the

process terminates and the Authentication Parameters negative response with appropriate error is sent to the requesting process; Otherwise the Authentication Parameters response is sent to requesting process.

The process is described in figure 25.5/6.

3GPP TSG CN WG4 Meeting #14 Budapest, Hungary, 13th – 17th May 2002

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- 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 ****

10.3 MAP_RESUME_CALL_HANDLING service

10.3.1 Definition

This service is used between the terminating VMSC and the GMSC. The service is invoked by the terminating VMSC to request the GMSC to resume handling the call and forward it to the specified destination.

This is a confirmed service which uses the Primitives listed in table 10.3/1.

10.3.2 Service primitives

Table 10.3/1: MAP_RESUME_CALL_HANDLING parameters

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Call Reference Number	С	C(=)		
Basic Service Group	С	C(=)		
IMSI	С	C(=)		
Forwarding Data	С	C(=)		
CUG Interlock	С	C(=)		
CUG Outgoing Access	С	C(=)		
O-CSI	С	C(=)		
D-CSI	С	C(=)		
CCBS Target	С	C(=)		
UU Data	С	C(=)		
UUS CF Interaction	С	C(=)		
All Information Sent	С	C(=)		
MSISDN	С	C(=)		
User error			С	C(=)
Provider error				Ö

10.3.3 Parameter use

Information received in subsequent segment of a segmented dialogue shall not overwrite information received in an earlier segment.

See clause 7.6 for a definition of the parameters used, in addition to the following.

Call Reference Number

See 3GPP TS 23.079 [99] for the use of this parameter. This parameter shall be present in a first segment of the dialogue.

Basic Service Group

See 3GPP TS 23.079 [99] for the use of this parameter. This parameter shall be present in a first segment of the dialogue.

IMSI

This is the IMSI of the forwarding Subscriber. This parameter shall be present in a first segment of the dialogue.

Forwarding Data

This parameter includes a number to define the forwarded-to destination, the forwarding reason and the forwarding options Notification to calling party and Redirecting presentation, and can include the forwarded-to subaddress. See 3GPP TS 23.079 [99] for the conditions for the presence of its components. This parameter shall be present in a first segment of the dialogue.

CUG Interlock

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

CUG Outgoing Access

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

O-CSI

See 3GPP TS 23.079 <u>078 [99]</u> for the use of this parameter and the conditions for its presence.

For CAMEL phases 1 & 2, the O-CSI shall contain only one set of O-BCSM TDP data.

D-CSI

The Dialled Services-CSI.

See 3GPP TS 23.078 for the use of this parameter and the conditions for its presence.

CCBS Target

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

UU Data

See 3GPP TS 23.087 for the use of this parameter and the conditions for its presence.

UUS CF Interaction

See 3GPP TS 23.087 for the use of this parameter and the conditions for its presence.

All Information Sent

This parameter is set when the VMSC has sent all information to GMSC.

MSISDN

This parameter is the basic MSISDN of the forwarding subscriber. It shall be present if the VMSC supports determination of the redirecting number.

User error

This parameter is sent by the responder when an error is detected and if present, takes one of the following values:

- Optimal Routeing not allowed;
- Forwarding failed;
- Unexpected Data Value;
- Data Missing.

Provider error

These are defined in clause 7.6.

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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.

**** FIRST MODIFIED SECTION ****

10.3 MAP_RESUME_CALL_HANDLING service

10.3.1 Definition

This service is used between the terminating VMSC and the GMSC. The service is invoked by the terminating VMSC to request the GMSC to resume handling the call and forward it to the specified destination.

This is a confirmed service which uses the Primitives listed in table 10.3/1.

10.3.2 Service primitives

Table 10.3/1: MAP_RESUME_CALL_HANDLING parameters

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Call Reference Number	С	C(=)		
Basic Service Group	С	C(=)		
IMSI	С	C(=)		
Forwarding Data	С	C(=)		
CUG Interlock	С	C(=)		
CUG Outgoing Access	С	C(=)		
O-CSI	С	C(=)		
D-CSI	С	C(=)		
CCBS Target	С	C(=)		
UU Data	С	C(=)		
UUS CF Interaction	С	C(=)		
All Information Sent	С	C(=)		
MSISDN	С	C(=)		
User error			С	C(=)
Provider error				0

10.3.3 Parameter use

Information received in subsequent segment of a segmented dialogue shall not overwrite information received in an earlier segment.

See clause 7.6 for a definition of the parameters used, in addition to the following.

Call Reference Number

See 3GPP TS 23.079 [99] for the use of this parameter. This parameter shall be present in a first segment of the dialogue.

Basic Service Group

See 3GPP TS 23.079 [99] for the use of this parameter. This parameter shall be present in a first segment of the dialogue.

<u>IMSI</u>

This is the IMSI of the forwarding Subscriber. This parameter shall be present in a first segment of the dialogue.

Forwarding Data

This parameter includes a number to define the forwarded-to destination, the forwarding reason and the forwarding options Notification to calling party and Redirecting presentation, and can include the forwarded-to subaddress. See 3GPP TS 23.079 [99] for the conditions for the presence of its components. This parameter shall be present in a first segment of the dialogue.

CUG Interlock

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

CUG Outgoing Access

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

O-CSI

See 3GPP TS 23.0789 [99] for the use of this parameter and the conditions for its presence.

For CAMEL phases 1 & 2, the O-CSI shall contain only one set of O-BCSM TDP data.

D-CSI

The Dialled Services-CSI.

See 3G TS 23.078 for the use of this parameter and the conditions for its presence.

CCBS Target

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

UU Data

See 3GPP TS 23.087 for the use of this parameter and the conditions for its presence.

UUS CF Interaction

See 3GPP TS 23.087 for the use of this parameter and the conditions for its presence.

All Information Sent

This parameter is set when the VMSC has sent all information to GMSC.

MSISDN

This parameter is the basic MSISDN of the forwarding subscriber. It shall be present if the VMSC supports determination of the redirecting number.

User error

This parameter is sent by the responder when an error is detected and if present, takes one of the following values:

- Optimal Routeing not allowed;
- Forwarding failed;
- Unexpected Data Value;
- Data Missing.

Provider error

These are defined in clause 7.6.

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- 1) Fill out the above form. The symbols above marked \$\mathbb{X}\$ 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 ****

10.3 MAP_RESUME_CALL_HANDLING service

10.3.1 Definition

This service is used between the terminating VMSC and the GMSC. The service is invoked by the terminating VMSC to request the GMSC to resume handling the call and forward it to the specified destination.

This is a confirmed service which uses the Primitives listed in table 10.3/1.

10.3.2 Service primitives

Table 10.3/1: MAP_RESUME_CALL_HANDLING parameters

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Call Reference Number	С	C(=)		
Basic Service Group	С	C(=)		
IMSI	С	C(=)		
Forwarding Data	С	C(=)		
CUG Interlock	С	C(=)		
CUG Outgoing Access	С	C(=)		
O-CSI	С	C(=)		
D-CSI	С	C(=)		
CCBS Target	С	C(=)		
UU Data	С	C(=)		
UUS CF Interaction	С	C(=)		
All Information Sent	С	C(=)		
MSISDN	С	C(=)		
User error			С	C(=)
Provider error				0

10.3.3 Parameter use

Information received in subsequent segment of a segmented dialogue shall not overwrite information received in an earlier segment.

See clause 7.6 for a definition of the parameters used, in addition to the following.

Call Reference Number

See 3GPP TS 23.079 [99] for the use of this parameter. This parameter shall be present in a first segment of the dialogue.

Basic Service Group

See 3GPP TS 23.079 [99] for the use of this parameter. This parameter shall be present in a first segment of the dialogue.

<u>IMSI</u>

This is the IMSI of the forwarding Subscriber. This parameter shall be present in a first segment of the dialogue.

Forwarding Data

This parameter includes a number to define the forwarded-to destination, the forwarding reason and the forwarding options Notification to calling party and Redirecting presentation, and can include the forwarded-to subaddress. See 3GPP TS 23.079 [99] for the conditions for the presence of its components. This parameter shall be present in a first segment of the dialogue.

CUG Interlock

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

CUG Outgoing Access

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

O-CSI

See 3GPP TS 23.0789 [99] for the use of this parameter and the conditions for its presence.

For CAMEL phases 1 & 2, the O-CSI shall contain only one set of O-BCSM TDP data.

D-CSI

The Dialled Services-CSI.

See 3GPP TS 23.078 for the use of this parameter and the conditions for its presence.

CCBS Target

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

UU Data

See 3GPP TS 23.087 for the use of this parameter and the conditions for its presence.

UUS CF Interaction

See 3GPP TS 23.087 for the use of this parameter and the conditions for its presence.

All Information Sent

This parameter is set when the VMSC has sent all information to GMSC.

MSISDN

This parameter is the basic MSISDN of the forwarding subscriber. It shall be present if the VMSC supports determination of the redirecting number.

User error

This parameter is sent by the responder when an error is detected and if present, takes one of the following values:

- Optimal Routeing not allowed;
- Forwarding failed;
- Unexpected Data Value;
- Data Missing.

Provider error

These are defined in clause 7.6.