

**3GPP TSG\_CN#7**  
**ETSI SMG3 Plenary Meeting #7,**  
**Madrid, Spain**  
**13<sup>th</sup> – 15<sup>th</sup> March 2000**

**NP-000138**

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**Agenda item:** 5.2.3  
**Source:** TSG\_N WG2  
**Title:** CRs to 3G Work Item Security (Enhanced User Identity Confidentiality)

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**Introduction:**

This document contains “6” CRs on **Work Item Security (Enhanced User Identity Confidentiality)**, that have been agreed by **TSG\_N WG2**, and are forwarded to **TSG\_N Plenary** meeting #7 for approval.

TDoc	SPEC	CR	REV	CAT	Rel	Old vers	New vers	SUBJECT
N2B000341	23.003	015	3	B	R99	3.3.0		Introduction of Encrypted MSI
N2B000347	23.008	022	1	B	R99	3.2.0		Introduction of Enhanced User Identity Confidentiality
N2B000340	23.012	003	3	B	R99	3.1.0		Introduction of Enhanced User Identity Confidentiality
N2B000421	23.018	036	3	B	R99	3.3.0		Introduction of Enhanced User Identity Confidentiality
N2B000447	29.002	092	4	B	R99	3.3.1		Introduction of Enhanced User Identity Confidentiality
N2B000449	29.060	082	1	B	R99	3.3.0		Introduction of EUIC

<h2 style="margin: 0;">CHANGE REQUEST</h2>		Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.
<b>23.003 CR 015r3</b>	Current Version: <b>3.3.0</b>	
GSM (AA.BB) or 3G (AA.BBB) specification number ↑	↑ CR number as allocated by MCC support team	
For submission to: <b>CN#07</b> <small>list expected approval meeting # here ↑</small>	for approval <input checked="" type="checkbox"/> for information <input type="checkbox"/>	strategic <input type="checkbox"/> non-strategic <input checked="" type="checkbox"/> <small>(for SMG use only)</small>

Form: CR cover sheet, version 2 for 3GPP and SMG    The latest version of this form is available from: <http://ftp.3gpp.org/Information/CR-Form-v2.doc>

**Proposed change affects:** (U)SIM     ME     UTRAN / Radio     Core Network   
(at least one should be marked with an X)

**Source:**    N2    **Date:**    14.02.00

**Subject:**    Introduction of the Encrypted MSI

**Work item:**    Security

<b>Category:</b>	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input checked="" type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>	<b>Release:</b>	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
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(only one category shall be marked with an X)

**Reason for change:**    This CR is necessary to introduce Enhanced User Identity Confidentiality according the WI security.

**Clauses affected:**    2.1, new sections 2.5 and 2.6, 8.2

<b>Other specs</b>	Other 3G core specifications	<input checked="" type="checkbox"/>	→ List of CRs:	23.002-???; 23.008-???, 23.012-003r2, 23.018-036r2, 23.060-???, 24.008-???, 25.331-???, 29.002-???, 31.102-???, 33.103-???, 33.105-???
<b>affected:</b>	Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
	MS test specifications	<input type="checkbox"/>	→ List of CRs:	
	BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
	O&M specifications	<input type="checkbox"/>	→ List of CRs:	

**Other comments:**



<----- double-click here for help and instructions on how to create a CR.

## 2 Identification of mobile subscribers

### 2.1 General

A unique International Mobile Subscriber Identity (IMSI) shall be allocated to each mobile subscriber in the GSM system.

NOTE: This IMSI is the concept referred to by CCITT as "International Mobile Station Identity".

In order to support the subscriber identity confidentiality service the VLRs and SGSNs may allocate Temporary Mobile Subscriber Identities (TMSI) to visiting mobile subscribers. The VLR and SGSNs must be capable of correlating an allocated TMSI with the IMSI of the MS to which it is allocated.

An MS may be allocated two TMSIs, one for services provided through the MSC, and the other for services provided through the SGSN (P-TMSI for short).

In order to support enhanced subscriber identity confidentiality as defined in 3G TS 33.102, the following Identifications may be allocated to an MS:

- The Mobile Station will identify itself with an Encrypted Mobile Subscriber Identity (EMSI) instead of the IMSI. The VLR and the SGSN shall be able to request decryption of an EMSI in the home network of the visiting mobile subscriber.
- The Temporarily Encrypted Mobile Subscriber Identity (TEMSI) is calculated independently by the SIM and the UIDN from the EMSI using a home network operator specific algorithm. The VLR and SGSN must be capable of correlating an allocated TEMSI with the IMSI and TMSI to which it is allocated. It is used if the MS can not be identified by an TMSI or P-TMSI.

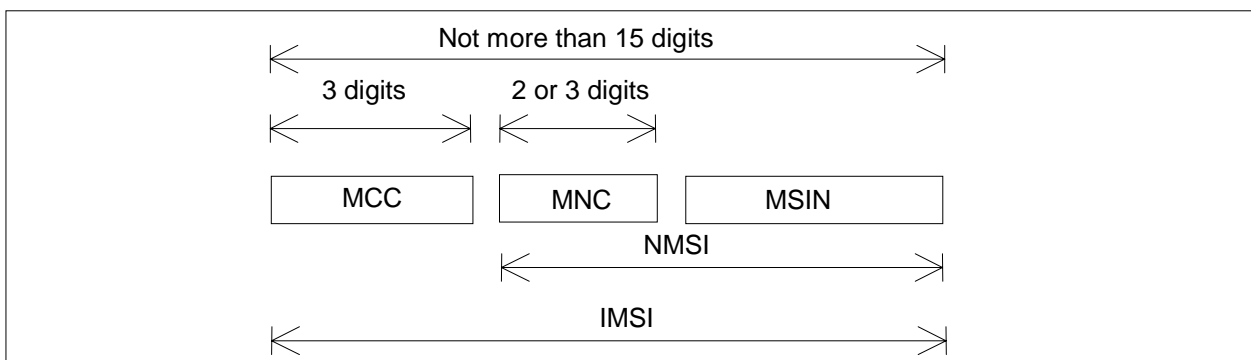
For addressing on resources used for GPRS, a Temporary Logical Link Identity (TLLI) is used. The TLLI to use is built by the MS either on the basis of the P-TMSI (local or foreign TLLI), or directly (random TLLI).

In order to speed up the search for subscriber data in the VLR a supplementary Local Mobile Station Identity (LMSI) is defined.

The LMSI may be allocated by the VLR at location updating and is sent to the HLR together with the IMSI. The HLR makes no use of it but includes it together with the IMSI in all messages sent to the VLR concerning that MS.

### 2.2 Composition of IMSI

IMSI is composed as shown in figure 1.



**Figure 1: Structure of IMSI**

IMSI is composed of three parts:

- i) Mobile Country Code (MCC) consisting of three digits. The MCC identifies uniquely the country of domicile of the mobile subscriber;

## 2.5 Structure of EMSI

The EMSI consists of maximum 12 octets. The structure of the EMSI is home network operator specific.

## 2.6 Structure of TEMSI

The TEMSI consists of 8 octets. It is calculated independently by the SIM and the UIDN from the EMSI using a home network operator specific algorithm.

## 2.75 Structure of LMSI

The LMSI consists of 4 octets and may be allocated by the VLR.

## 2.86 Structure of TLLI

A TLLI is built by the MS or by the SGSN either on the basis of the P-TMSI (local or foreign TLLI), or directly (random or auxiliary TLLI), according to the following rules.

The TLLI consists of 32 bits, numbered from 0 to 31 by order of significance, with bit 0 being the LSB.

A local TLLI is built by a MS which has a valid P-TMSI as follows:

bits 31 down to 30 are set to 1; and

bits 29 down to 0 are set equal to bits 29 to 0 of the P-TMSI.

A foreign TLLI is built by a MS which has a valid P-TMSI as follows:

bit 31 is set to 1 and bit 30 is set to 0; and

bits 29 down to 0 are set equal to bits 29 to 0 of the P-TMSI.

A random TLLI is built by an MS as follows:

## 8 SCCP subsystem numbers

Subsystem numbers are used to identify applications within network entities which use SCCP signalling. In GSM, subsystem numbers may be used between PLMNs, in which case they are taken from the globally standardised range (1 - 31) or the part of the national network range (129 – 150) reserved for GSM use between PLMNs, or within a PLMN, in which case they are taken from the part of the national network range (32 – 128 & 151 - 254) not reserved for GSM use between PLMNs.

### 8.1 Globally standardised subsystem numbers used for GSM

The following globally standardised subsystem numbers have been allocated for use by GSM:

0000 0110	HLR (MAP);
0000 0111	VLR (MAP);
0000 1000	MSC (MAP);
0000 1001	EIR (MAP);
0000 1010	is allocated for evolution (possible Authentication centre).

### 8.2 National network subsystem numbers used for GSM

The following national network subsystem numbers have been allocated for use within GSM networks:

1111 1010	BSC (BSSAP-LE)
1111 1011	MSC (BSSAP-LE)
1111 1100	SMLC (BSSAP-LE)
1111 1101	BSS O&M (A interface);
1111 1110	BSSAP (A interface).

The following national network subsystem numbers have been allocated for use within and between GSM networks:

<u>1000 1101</u>	<u>UIDN(MAP);</u>
1000 1110	RANAP;
1000 1111	RNSAP;
1001 0001	GMLC(MAP);
1001 0010	CAP;
1001 0011	gsmSCF(MAP);
1001 0100	SIWF(MAP);
1001 0101	SGSN(MAP);
1001 0110	GGSN(MAP);

<h2 style="margin: 0;">CHANGE REQUEST</h2>		<small>Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.</small>
<b>23.008 CR 022r1</b>	Current Version: <b>3.2.0</b>	
<small>GSM (AA.BB) or 3G (AA.BBB) specification number ↑</small>	<small>↑ CR number as allocated by MCC support team</small>	
For submission to: <b>CN#07</b> <small>list expected approval meeting # here ↑</small>	for approval <input checked="" type="checkbox"/> for information <input type="checkbox"/>	strategic <input type="checkbox"/> non-strategic <input checked="" type="checkbox"/> <small>(for SMG use only)</small>

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**Proposed change affects:**    (U)SIM     ME     UTRAN / Radio     Core Network   
(at least one should be marked with an X)

**Source:**    N2    **Date:**    14.02.00

**Subject:**    Introduction of the TEMSI

**Work item:**    Security

<b>Category:</b>	F Correction <input type="checkbox"/> A Corresponds to a correction in an earlier release <input type="checkbox"/> B Addition of feature <input checked="" type="checkbox"/> C Functional modification of feature <input type="checkbox"/> D Editorial modification <input type="checkbox"/>	<b>Release:</b>	Phase 2 <input type="checkbox"/> Release 96 <input type="checkbox"/> Release 97 <input type="checkbox"/> Release 98 <input type="checkbox"/> Release 99 <input checked="" type="checkbox"/> Release 00 <input type="checkbox"/>
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(only one category shall be marked with an X)

**Reason for change:**    This CR is necessary to introduce Enhanced User Identity Confidentiality according the WI security.

**Clauses affected:**    new section 2.1.6

<b>Other specs</b>	Other 3G core specifications	<input type="checkbox"/>	→ List of CRs:	23.002-???, 23.003-015, 23.012-003, 23.018-036, 23.060-???, 24.008-???, 25.331-???, 29.002-092, 31.102-???, 33.103-???, 33.105-???
<b>affected:</b>	Other GSM core specifications	<input type="checkbox"/>	→ List of CRs:	
	MS test specifications	<input type="checkbox"/>	→ List of CRs:	
	BSS test specifications	<input type="checkbox"/>	→ List of CRs:	
	O&M specifications	<input type="checkbox"/>	→ List of CRs:	

**Other comments:**



<----- double-click here for help and instructions on how to create a CR.

## 2.1.5 Packet-Temporary Mobile Subscriber Identity (P-TMSI)

Packet-Temporary Mobile Subscriber Identity (P-TMSI) is defined in GSM 03.03. Its usage is described in GSM 03.60. P-TMSI is accompanied by the P-TMSI Signature, see subclause 2.3.7.

The P-TMSI is temporary subscriber data and is conditionally stored in the SGSN.

## 2.1.6 Temporarily Encrypted Mobile Subscriber Identity (TEMSEI)

Temporarily Encrypted Subscriber Identity (TEMSEI) is defined in 3G TS 23.003.

The TEMSEI is temporary subscriber data and is conditionally stored in the VLR and SGSN. For use of TEMSEI see 3G TS 33.102.

## 2.1.76 Temporary Link Layer Identifier (TLLI)

Temporary Link Layer Identifier (TLLI) is defined in GSM 03.03. It is derived from the P-TMSI by the MS and occurs in the variants Local TLLI and Foreign TLLI. The TLLI is temporary subscriber data and is conditionally stored in the SGSN. For use of TLLI see GSM 03.60.

## 2.1.87 Random TLLI

Random TLLI is chosen randomly by the MS. It is defined in GSM 03.03. Random TLLI is short living temporary subscriber data and is conditionally stored in the SGSN. For use of Random TLLI see GSM 03.60.

A Random TLLI may be used if no valid P-TMSI is available.

## 2.1.98 Local Mobile Station Identity (LMSI)

Local Mobile Station Identity (LMSI) is defined in GSM 03.03. The LMSI is temporary subscriber data. The LMSI may be stored in the VLR; if it is received in the HLR it must be stored there.

## 2.1.109 International Mobile Equipment Identity (IMEI)

International Mobile Equipment Identity (IMEI) is defined in GSM 03.03. The IMEI is temporary subscriber data and is conditionally stored in the SGSN.

## 2.2 Data related to Mobile Station types

### 2.2.1 Mobile Station Category

Mobile Station Category has a structure identical to that of "Calling Party's Category" defined in ISUP (CCITT Recommendation Q.763).

The following values of category shall be supported:

- ordinary subscriber.

The category is assigned per IMSI.

Mobile Station Category is permanent subscriber data and is stored in HLR and VLR.

### 2.2.2 LMU Identifier

The LMU identifier is part of the subscriber data for a Type A LMU, when associated with an NSS based SMLC, and serves to distinguish a Type A LMU from a normal MS.

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## 4 Accessing subscriber data

It shall be possible to retrieve or store subscriber data concerning a specific MS from the HLR by use of each of the following references:

- International Mobile Subscriber Identity (IMSI);
- Mobile Station ISDN Number (MSISDN)

It shall be possible to retrieve or store subscriber data concerning a specific MS from the VLR by use of each of the following references:

- International Mobile Subscriber Identity (IMSI);
- Temporary Mobile Subscriber Identity (TMSI).

It shall be possible to retrieve or store subscriber data concerning a specific MS from the SGSN by use of each of the following references:

- International Mobile Subscriber Identity (IMSI);
- Packet Temporary Mobile Subscriber identity (P-TMSI).

It shall be possible to retrieve or store subscriber data concerning a specific MS from the GGSN by use of the following reference:

- International Mobile Subscriber Identity (IMSI).

See clause 3 for explanation of M, C, T and P in table 1 and table 2.



Table 1: Overview of data stored for non-GPRS Network Access Mode

PARAMETER	SUBCLAUSE	HLR	VLR	TYPE	
IMSI	2.1.1.1	M	M	P	Note
Network Access Mode	2.1.1.2	M	-	P	Note
International MS ISDN number	2.1.2	M	M	P	
multinumbering MSISDNs	2.1.3	C	-	P	Note
Basic MSISDN indicator	2.1.3.1	C	-	P	
MSISDN-Alert indicator	2.1.3.2	C	-	P	
TMSI	2.1.4	-	C	T	
<u>TEMSI</u>	<u>2.1.6</u>	-	<u>C</u>	<u>T</u>	
LMSI	2.1.9 <del>8</del>	C	C	T	Note
Mobile Station Category	2.2.1	M	M	P	
LMU Identifier	2.2.2	C	C	P	
RAND, SRES and Kc	2.3.1	-	C	T	
RAND, XRES, CK, IK and AUTN	2.3.2	M	C	T	
Ciphering Key Sequence Number	2.3.3	-	M	T	
MSRN	2.4.1	-	C	T	Note
Location Area Identity	2.4.2	-	M	T	
VLR number	2.4.5	M	-	T	Note
MSC number	2.4.6	M	C	T	
HLR number	2.4.7	-	C	T	
Subscription restriction	2.4.10	C	-	P	
RSZI lists	2.4.11.1	C	-	P	
Zone Code List	2.4.11.2	-	C	P	
MSC area restricted flag	2.4.12	M	-	T	
LA not allowed flag	2.4.13	-	M	T	
ODB-induced barring data	2.4.15.1	C	-	T	
Roaming restriction due to unsupported feature	2.4.15.2	M	M	T	
Cell ID	2.4.16	-	C	T	
LSA Identity	2.4.17.1	C	C	P	
LSA Priority	2.4.17.2	C	C	P	
LSA Only Access Indicator	2.4.17.3	C	C	P	
LSA Active Mode Indicator	2.4.17.4	C	C	P	
VPLMN Identifier	2.4.17.5	C	-	P	
Provision of bearer service	2.5.1	M	M	P	
Provision of teleservice	2.5.2	M	M	P	
BC allocation	2.5.3	C	C	P	
IMSI detached flag	2.7.1	-	C	T	
Confirmed by Radio Contact indicator	2.7.4.1	-	M	T	
Subscriber Data Confirmed by HLR indicator	2.7.4.2	-	M	T	
Location Information Confirmed in HLR indicator	2.7.4.3	-	M	T	
Check SS indicator	2.7.4.4	M	-	T	
MS purged for non-GPRS flag	2.7.5	M	-	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 incoming calls	2.8.2.2	C	-	P	
Barring of roaming	2.8.2.3	C	-	P	
Barring of premium rate calls	2.8.2.4	C	C	P	
Barring of supplementary service management	2.8.2.5	C	C	P	
Barring of registration of call forwarding	2.8.2.6	C	-	P	
Barring of invocation of call transfer	2.8.2.7	C	C	P	
Operator determined barring PLMN-specific data	2.8.3	C	C	P	
Handover Number	2.9.1	-	C	T	
Messages Waiting Data	2.10.1	C	-	T	
Mobile Station Not Reachable Flag	2.10.2	C	M	T	
Memory Capacity Exceeded Flag	2.10.3	C	-	T	

(continued)

Table 1 (concluded): Overview of data stored for non-GPRS Network Access Mode

PARAMETER	SUBCLAUSE	HLR	VLR	TYPE	
Trace Reference	2.11.1	C	C	P	
Trace Type	2.11.2	C	C	P	
Operations Systems Identity	2.11.3	C	C	P	
HLR Trace Type	2.11.4	C	-	P	
MAP Error On Trace	2.11.5	C	-	T	
Trace Activated in VLR	2.11.6	C	C	T	
Foreign Subscriber Registered in VLR	2.11.7	-	C	P	Note
VGCS Group Membership List	2.12.1	C	C	P	
VBS Group Membership List	2.12.2	C	C	P	
Broadcast Call Initiation Allowed List	2.12.2.1	C	C	P	
Originating CAMEL Subscription Information (O-CSI)	2.14.1.1/3.1	C	C	P	
Terminating CAMEL Subscription Information (T-CSI)	2.14.1.2	C	-	P	
VMSC Terminating CAMEL Subscription Information (VT-CSI)	2.14.1.2/3.2	C	C	P	
Location Information/Subscriber state Information	2.14.1.3	C	-	P	
USSD CAMEL subscription information(U-CSI)	2.14.1.4	C	-	P	
SS invocation notification (SS-CSI)	2.14.1.5/3.2	C	C	P	
Translation information flag(TIF-CSI)	2.14.1.6/3.6	C	C	P	
Dialled service CAMEL Subscription Information (D-CSI)	2.14.1.10/3.6	C	C	P	
USSD General CAMEL service information (UG-CSI)	2.14.2	C	-	P	
O-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C		P	
SS-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C		P	
VT-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C		P	
SMS-CSI VLR Negotiated CAMEL Capability Handling	2.14.2.1	C		P	
M-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C		P	
VLR Supported CAMEL Phases	2.14.2.3	C		P	
IST Alert Timer	2.15.1	C	C	P	
Privacy Exception List	2.16.1.1	C	C	P	
GMLC Numbers	2.16.1.2	C	C	P	
MO-LR List	2.16.1.3	C	C	P	
Age Indicator	2.17.1	C	C	T	

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

PARAMETER	Subclause	HLR	VLR	SGSN	GGSN TYPE	
IMSI	2.1.1.1	M	M	M	M	P Note
Network Access Mode	2.1.1.2	M	-	C (a)	-	P Note
International MS ISDN number	2.1.2	M	M	M	-	T
multinumbering MSISDNs	2.1.3	C	-	-	-	T Note
Basic MSISDN indicator	2.1.3.1	C	-	-	-	T
MSISDN-Alert indicator	2.1.3.2	C	-	-	-	T
P-TMSI	2.1.5	-	-	C	-	T Note
<u>TEMSI</u>	<u>2.1.6</u>	-	<u>C</u>	<u>C</u>	-	<u>T</u>
TLLI	2.1.7 <del>6</del>	-	-	C	-	T
Random TLLI	2.1.8 <del>7</del>	-	-	C	-	T Note
IMEI	2.1.10 <del>9</del>	-	-	C	-	T
RAND/SRES and Kc	2.3.1	-	-	C	-	T
RAND, XRES, CK, IK, AUTN	2.3.2	M	-	C	-	T
Ciphering Key Sequence Number	2.3.3	-	-	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	2.4.3	-	-	M	-	T
Cell Global Identification	2.4.4	-	-	C	-	T
VLR Number	2.4.5	M	-	C (Gs)	-	T
SGSN Number	2.4.8.1	M	C (Gs)	-	-	T Note
GGSN Number	2.4.8.2	©	-	-	-	P Note
RSZI Lists	2.4.11.1	C	-	-	-	P
Zone Code List	2.4.11.2	-	-	C	-	P
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 ID	2.4.16	-	-	C	-	T
LSA Identity	2.4.17.1	C	C	C	-	P
LSA Priority	2.4.17.2	C	C	C	-	P
LSA Only Access Indicator	2.4.17.3	C	C	C	-	P
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
MM State	2.7.3	-	-	M	-	T
Subscriber Data Confirmed by HLR Indicator	2.7.4.2	-	-	M	-	T
Location Info Confirmed by HLR Indicator	2.7.4.3	-	-	M	-	T
MS purged for GPRS flag	2.7.6	M	-	-	-	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 roaming	2.8.2.3	C	-	C	-	P
ODB PLMN-specific data	2.8.3	C	-	C	-	P
Trace Activated in SGSN	2.11.7	C	-	C	-	P
PDP Type	2.13.1	C	-	C	M	P
PDP Address	2.13.2	C	-	C	M	P
NSAPI	2.13.3	-	-	C	C	T
PDP State	2.13.4	-	-	C	-	T
New SGSN Address	2.13.5	-	-	C	-	T
Access Point Name	2.13.6	C	-	C	C	P/T Note
GGSN Address in Use	2.13.7	-	-	C	-	T
VPLMN Address Allowed	2.13.8	C	-	C	-	P
Dynamic Address	2.13.9	-	-	-	C	T
SGSN Address	2.13.10	-	-	-	M	T
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	C	-	C	-	P
Quality of Service Requested	2.13.13	-	-	C	-	T
Quality of Service Negotiated	2.13.14	-	-	C	M	T
SND	2.13.15	-	-	C	C	T
SNU	2.13.16	-	-	C	C	T
DRX Parameters	2.13.17	-	-	M	-	T
Compression	2.13.18	-	-	C	-	T
NGAF	2.13.19	-	-	C (Gs)	-	T
Classmark	2.13.20	-	-	M	-	T
TID	2.13.21	-	-	C	C	T
Radio Priority	2.13.22	-	-	C	-	T
Radio Priority SMS	2.13.23	-	-	C	-	T
Short Message Service CAMEL Subscription Information (SMS-CSI)	2.14.4.1/1.8	C	-	C	-	P
GPRS CAMEL Subscription Information (GPRS-CSI)	2.14.4.2/1.9	C	-	C	-	C
SMS-CSI SGSN Negotiated CAMEL Capability Handling	2.14.2.1	C	-	-	-	P
GPRS-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C	-	-	-	P
SGSN Supported CAMEL Phases	2.14.2.3	C	-	-	-	P
Age Indicator	2.16.1	C	-	C	-	T

NOTE: The HLR column indicates only GPRS related use, i.e. if the HLR uses a parameter in non-GPRS Network Access Mode but not in GPRS Network Access Mode, it is not mentioned in this table 2.  
(Gs): The VLR column is applicable if Gs interface is installed. It only indicates GPRS related data to be stored and is only relevant to GPRS subscribers registered in VLR.

a): This parameter is relevant in the SGSN only when the Gs interface is installed.

NOTE: For special condition of storage see in the clauses 2.x.y referred-to.  
See clause 3 for explanation of M,C,T and P in table 2.

# CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

**23.012 CR 003r3**

Current Version: **3.1.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **CN#07**  
list expected approval meeting # here ↑

for approval   
for information

strategic   
non-strategic  (for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: ftp://ftp.3gpp.org/Information/CR-Form-v2.doc

**Proposed change affects:**  
(at least one should be marked with an X)

(U)SIM  ME  UTRAN / Radio  Core Network

**Source:**

N2

**Date:** 17.01.00

**Subject:**

Introduction of Enhanced User Identity Confidentiality

**Work item:**

Security

**Category:**

(only one category shall be marked with an X)

F Correction   
A Corresponds to a correction in an earlier release   
B Addition of feature   
C Functional modification of feature   
D Editorial modification

**Release:**

Phase 2   
Release 96   
Release 97   
Release 98   
Release 99   
Release 00

**Reason for change:**

The procedures for Enhanced User Identity Confidentiality are introduced.

**Clauses affected:**

2.6, 4.1.2.1, 4.1.2.9

**Other specs**

Other 3G core specifications

→ List of CRs: 23.002-???, 23.003-015r2, 23.018-036r2, 23.060-???, 24.008-???, 25.331-???, 29.002-???, 31.102-???, 33.103-???, 33.105-???

**affected:**

Other GSM core specifications  
MS test specifications  
BSS test specifications  
O&M specifications

→ List of CRs:  
→ List of CRs:  
→ List of CRs:  
→ List of CRs:

**Other comments:**



help.doc

<----- double-click here for help and instructions on how to create a CR

## 2.4.2 Implicit IMSI detach

Implicit IMSI detach operation is the action taken by the VLR to mark an MS as detached when there has been no successful contact between the MS and the network for a time determined by the implicit detach timer. The value of the implicit detach timer is derived from the periodic location updating timer. During an established radio contact, the implicit detach timer shall be prevented from triggering implicit detach. At the release of the radio connection, the implicit detach timer shall be reset and restarted. Implicit IMSI detach shall also be performed in the case of a negative response to an IMEI check.

## 2.5 Use of the term mobile station (MS) in the present document

In order to simplify the text the term Mobile Station (MS) as used in relation to location management refers to the entity where the IMSI is stored, i.e., in card operated MSs the term Mobile Station (MS) refers to the card.

## 2.6 Enhanced User Identity Confidentiality

Enhanced User Identity Confidentiality is a mechanism used in the 3<sup>rd</sup> generation mobile telecommunication system to allow the identification of a user on the radio access by means of the Encrypted Mobile Subscriber Identity (EMSI) and Temporarily Mobile Subscriber Identity (TEMSEI). For details concerning the structure of the EMSI and TEMSEI see 3G TS 23.003.

The serving VLR shall be able to request decryption of the user identity by the User Identity Decryption Node (UIDN) of the home network.

As a result of the decryption of the EMSI the UIDN shall provide the IMSI and the TEMSEI. The TEMSEI shall be used by the VLR for addressing of the MS, if the MS can not be addressed with a TMSI.

For details concerning the 3<sup>rd</sup> generation Security Architecture see 3G TS 33.102.

---

# 3 General procedures in the network related to Location Management

## 3.1 Procedures in the MSC related to Location Updating

The MSC shall pass messages related to location updating between the MS and the VLR.

## 3.2 Procedures in the VLR related to Location Updating

FFS

## 3.3 Procedures in the HLR related to Location Updating

FFS

## 3.4 Normal Location Updating and IMSI detach/attach operation

When receiving a Location Updating Request or an IMSI detach/attach message from an MS, the MSC shall convey the message to its associated Visitor Location Register. Any response from the location register shall similarly be conveyed to the MS.

## 3.5 IMSI enquiry procedure

The MS shall identify itself by either the IMSI, [the EMSI](#) or the TMSI plus Location Area Identification of the previous VLR. In the latter case the new VLR shall attempt to request the IMSI and authentication parameters from the previous VLR by the methods defined in GSM 09.02.

## 3.6 Information transfer between Visitor and Home Location Registers

### 3.6.1 Procedures for location management

Detailed procedures for exchange of and location updating information between visitor and home location registers are given in GSM 09.02. Below follows an overview of these procedures.

#### 3.6.1.1 Location updating procedure

This procedure is used when an MS registers with a Visitor Location Register.

The VLR provides its address to the HLR.

The VLR may also allocate an optional identity for the MS at location updating: the Local Mobile Station Identity (see GSM 03.03).

#### 3.6.1.2 Downloading of subscriber parameters to the VLR

As a part of the location updating procedure, the Home Location Register will convey the subscriber parameters of the MS which need to be known by the visitor location register for proper call handling. This procedure is also used whenever there is a change in the subscriber parameters that need to be conveyed to the VLR (e.g. change in subscription, a change in supplementary services activation status).

If the HPLMN applies the multinumbring option, different MSISDNs are allocated for different Basic Services (see GSM 09.07) and stored in the HLR. Among these MSISDNs, the Basic MSISDN Indicator as part of the HLR subscriber data (see GSM 03.08) marks the 'Basic MSISDN' to be sent to the VLR at location update. It is used in the VLR for call handling as calling party and as line identity.

#### 3.6.1.3 Location cancellation procedure

The procedure is used by the home location register to remove a MS from a visitor location register. The procedure will normally be used when the MS has moved to an area controlled by a different location register. The procedure can also be used in other cases, e.g. an MS ceases to be a subscriber of the Home PLMN.

#### 3.6.1.4 Mobile subscriber purging procedure

A VLR may purge the subscriber data for an MS which has not established radio contact for a period determined by the network operator. Purging means to delete the subscriber data and to "freeze" the TMSI that has been allocated to the purged MS in order to avoid double TMSI allocation. The VLR shall inform the HLR of the purging.

When the HLR is informed of the purging, it shall set the flag "MS purged" in the IMSI record of the MS concerned. Presence of the "MS purged" flag will cause any request for routing information for a call or short message to the MS to be treated as if the MS were not reachable.

In the VLR, the "frozen" TMSI is freed for usage in the TMSI allocation procedure by location updating for the purged MS in the same VLR, location cancellation for the purged MS or, in exceptional cases, by O&M.

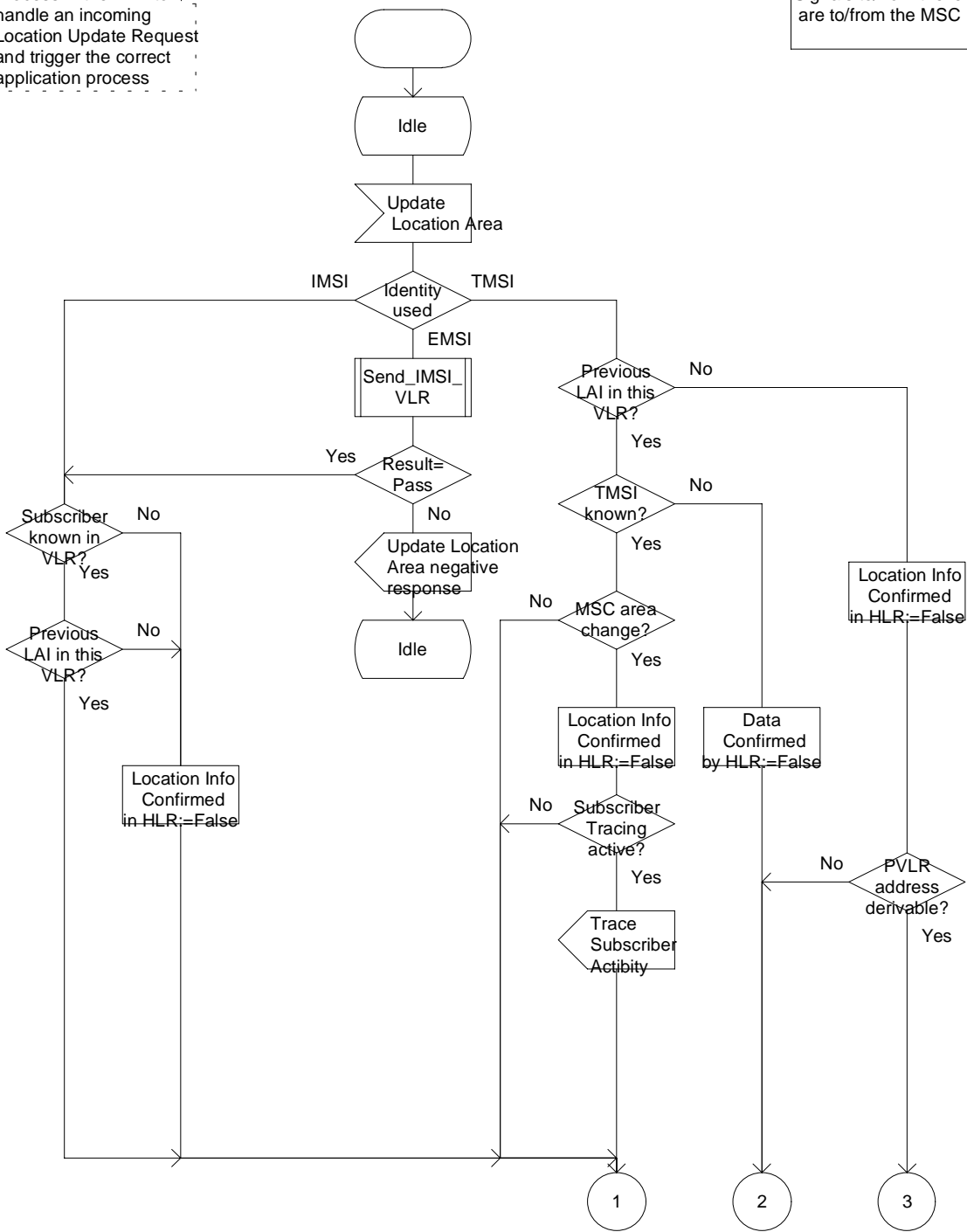
In the HLR, the "MS purged" flag is reset by the location updating procedure and after reload of data from the non-volatile back-up that is performed when the HLR restarts after a failure.

### Process Update\_Location\_Area\_VLR

### ULA\_VLR1(4)

Process in the VLR to handle an incoming Location Update Request and trigger the correct application process

Signals to/from the left are to/from the MSC





Process Update\_Location\_Area\_VLR

ULA\_VLR1(4)

Process in the VLR to handle an incoming Location Update Request and trigger the correct application process

Signals to/from the left are to/from the MSC

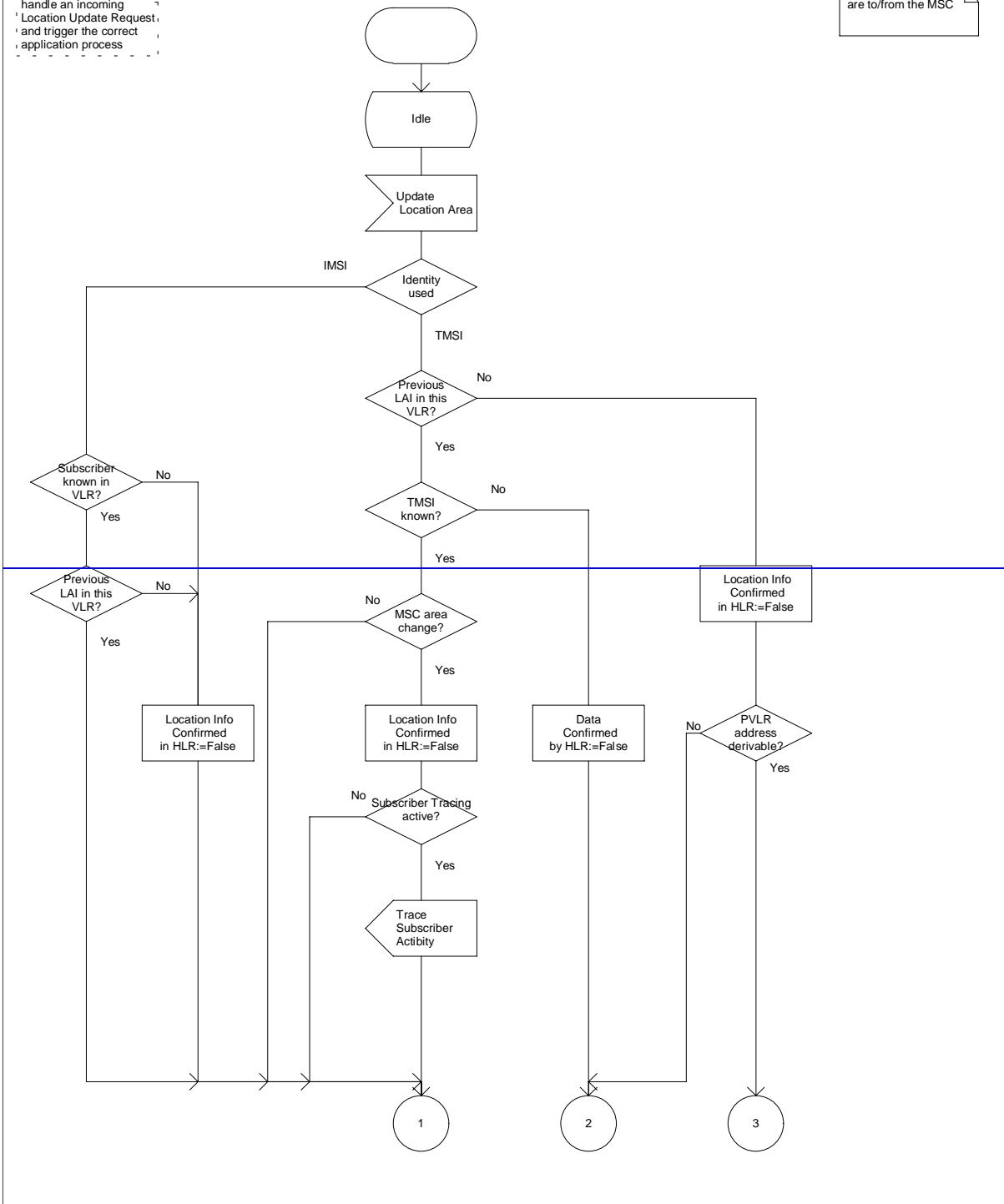
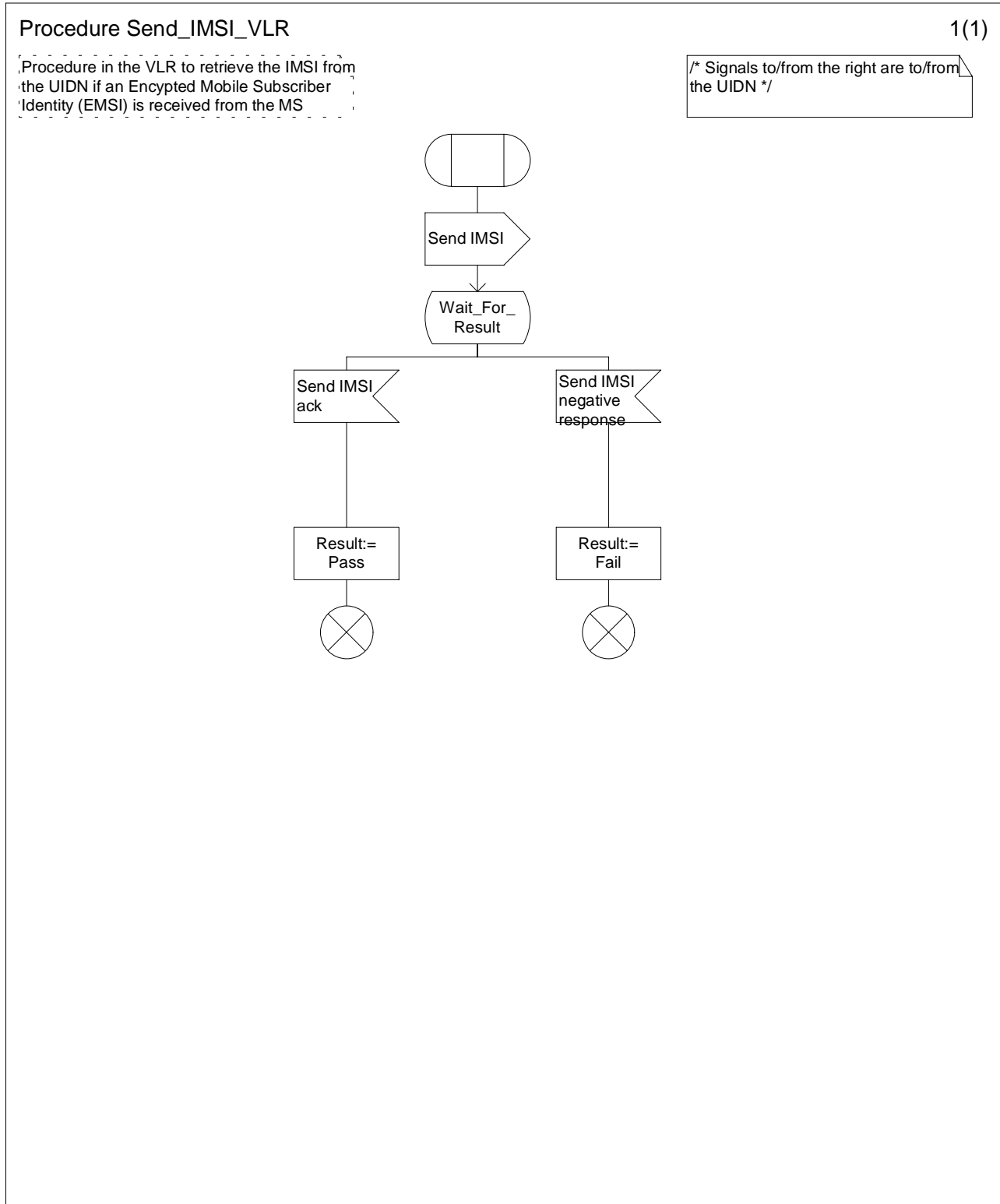


Figure 4.1.2.1 (sheet 1 of 4): Process Update\_Location\_Area\_VLR

### 4.1.2.9 Procedure Send\_IMSI\_VLR



**Figure 4.1.2.9: Procedure Send\_IMSI\_VLR**

# CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

**23.018 CR 036r3**

Current Version: **3.3.0**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **CN#07**  
list expected approval meeting # here ↑

for approval   
for information

strategic   
non-strategic  (for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: <ftp://ftp.3gpp.org/Information/CR-Form-v2.doc>

**Proposed change affects:** (U)SIM  ME  UTRAN / Radio  Core Network   
(at least one should be marked with an X)

**Source:** N2 **Date:** 01.03.00

**Subject:** Introduction of Enhanced User Identity Confidentiality

**Work item:** Security

**Category:** F Correction  **Release:** Phase 2   
A Corresponds to a correction in an earlier release  Release 96   
(only one category shall be marked with an X) B Addition of feature  Release 97   
C Functional modification of feature  Release 98   
D Editorial modification  Release 99   
Release 00

**Reason for change:** This CR introduces the changes required for Enhanced User Identity Confidentiality.

**Clauses affected:** 7.1.2, 8.1.19, 8.1.28

**Other specs** Other 3G core specifications  → List of CRs: 23.002-???, 23.003-015, 23.008-???, 23.012-003, 23.060-???, 24.008-???, 25.331-???, 29.002-092, 31.102-???, 33.103-???, 33.105-???

**affected:** Other GSM core specifications  → List of CRs:  
MS test specifications  → List of CRs:  
BSS test specifications  → List of CRs:  
O&M specifications  → List of CRs:

**Other comments:** Revision 2 of this CR was already approved during the Milano meeting, however due to comments received after approval a further revision was necessary.



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## 7.1.2 Functional requirements of VLR

### 7.1.2.1 Process OCH\_VLR

### 7.1.2.2 Procedure Process\_Access\_Request\_VLR

[Sheet 1: the procedure Send\\_IMSI\\_VLR is defined in the Location Management Procedures in 3G TS 23.012.](#)

Sheet 1: it is a network operator decision (subject to MoU requirements) how often an MS should be authenticated.

Sheet 2: the processes Update\_Location\_VLR and Subscriber\_Present\_VLR are described in GSM 09.02 [23]

Sheet 2: it is a network operator decision (subject to MoU requirements) whether a connection should be ciphered.

Sheet 3: it is a network operator decision (subject to MoU requirements) how often an IMEI should be checked.

Sheet 3, sheet 4, sheet 5: the procedure CCBS\_Report\_MS\_Activity is specific to CCBS; it is specified in GSM 03.93 [19].

Sheet 5: it is a network operator decision whether emergency calls are allowed from an ME with no SIM.

### 7.1.2.3 Procedure OG\_Call\_Subscription\_Check\_VLR

Sheet 1: it is an implementation option to carry out the check for operator determined barring of all outgoing calls before the check on provisioning of the requested basic service.

Sheet 1: the procedure OG\_CUG\_Check is specific to CUG. If the VLR does not support CUG, processing continues from the "Yes" exit of the test "Result=Call allowed?".

Sheet 1: the procedure Get\_LI\_Subscription\_Info\_MO\_VLR is specific to CLIR and COLP. If the VLR supports neither CLIR nor COLP, the procedure call is omitted.

Sheet 1: the procedure Get\_AoC\_Subscription\_Info\_VLR is specific to AoC.

Sheet 1: the procedure UUS\_OCH\_Check\_Provision is specific to UUS; it is specified in GSM 03.87 [17]. If the VMSC does not support UUS, processing continues from the "Yes" exit of the test "Result=Pass?".

Sheet 2: the procedure CAMEL\_OCH\_VLR is specific to CAMEL; it is specified in GSM 03.78 for CAMEL Phase 1 [8] and GSM 03.78 for CAMEL Phase 2 [9]. If the VLR does not support CAMEL, processing continues from connector 1 to the call to the procedure Check\_OG\_Barring.

Sheet 2: the negative response "call barred" indicates whether the reason is operator determined barring or supplementary service barring, according to the result returned by the procedure Check\_OG\_Barring.

### [7.1.2.4 Procedure Update\\_TEMSI\\_VLR](#)

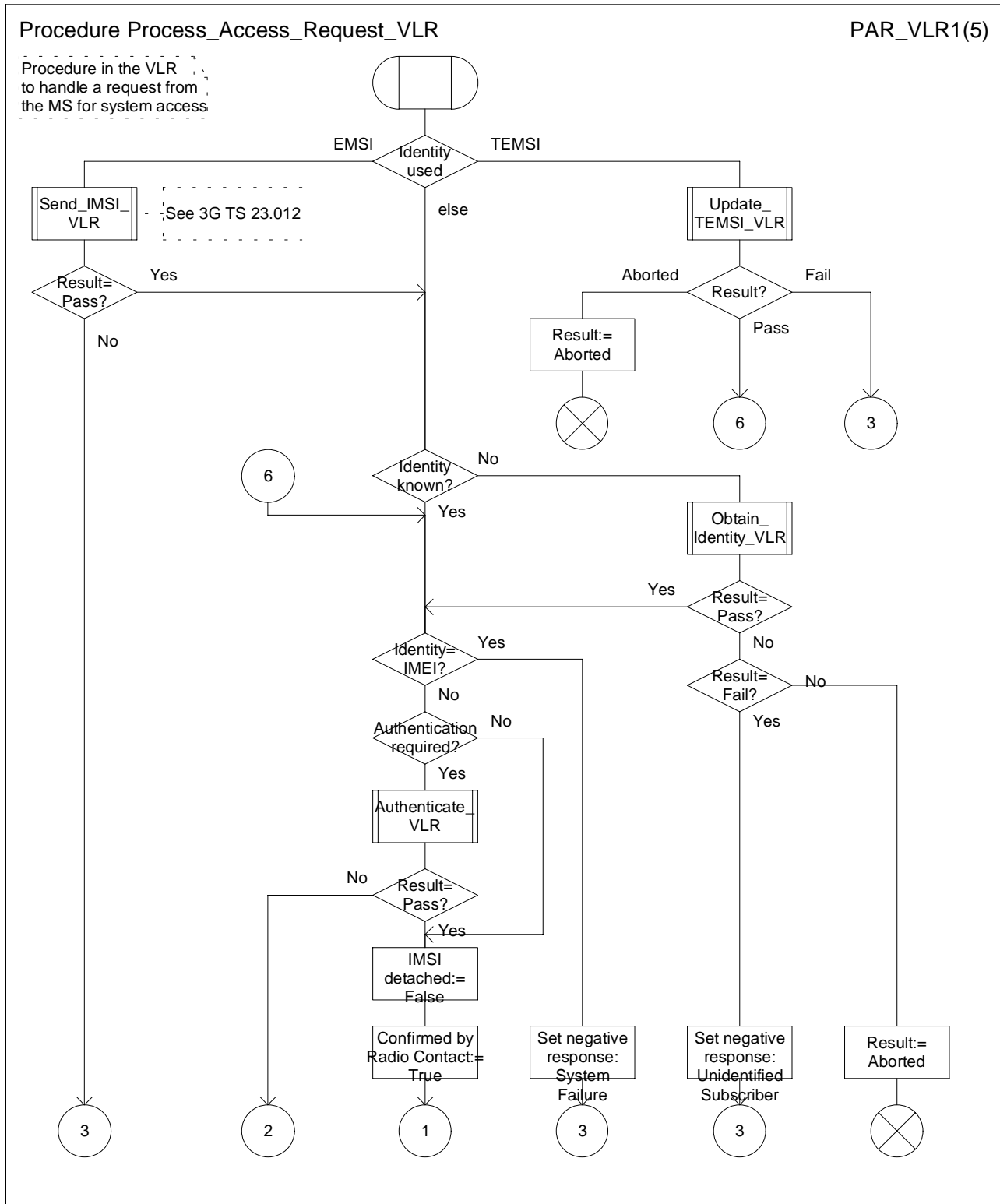
[Sheet 1: the procedure Send\\_IMSI\\_VLR is defined in the Location Management Procedures in 3G TS 23.012.](#)

### 7.1.2.4 Procedure Obtain\_Identity\_VLR

It is a network operator decision whether open (unciphered) identification of the MS by its IMSI is allowed.

### 7.1.2.5 Procedure Obtain\_IMSI\_VLR

[Sheet 1: the procedure Send\\_IMSI\\_VLR is defined in the Location Management Procedures in 3G TS 23.012.](#)



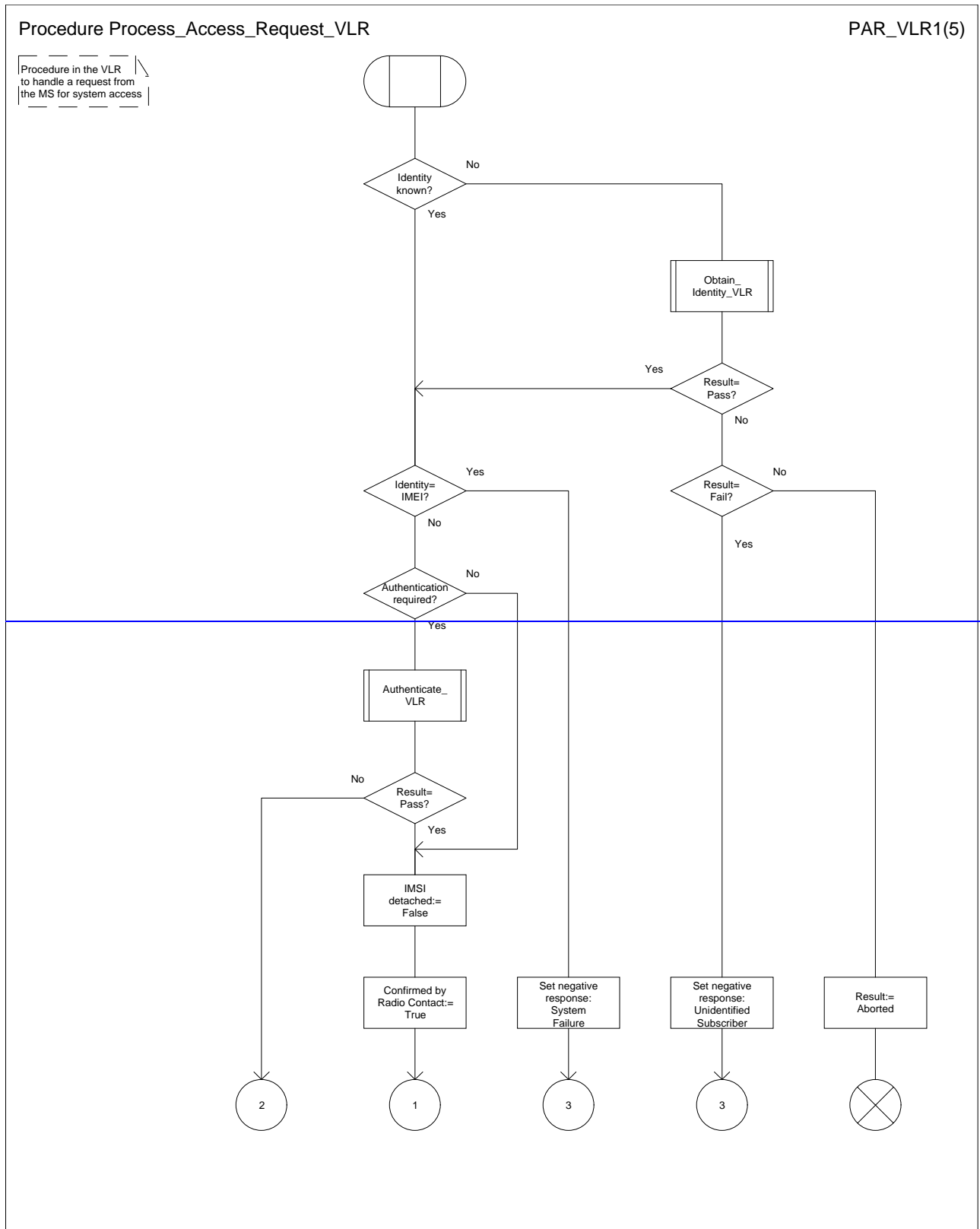


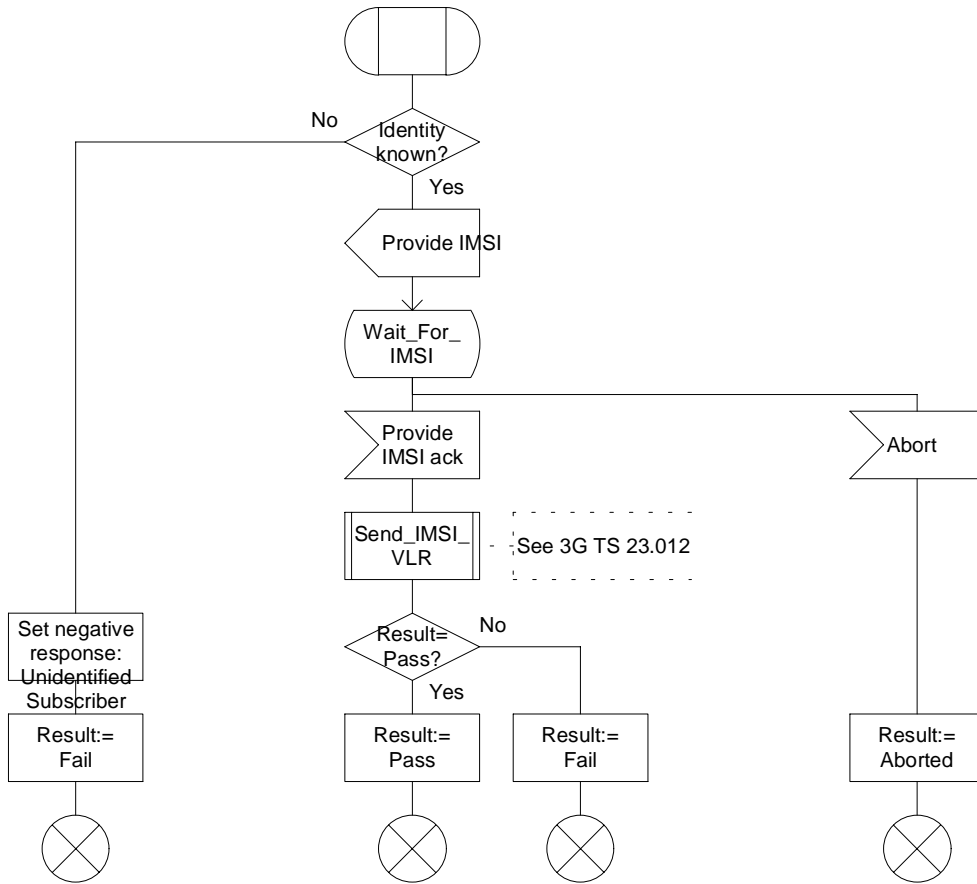
Figure 20a: Procedure Process\_Access\_Request\_VLR (sheet 1)

### Procedure Update\_TEMSI\_VLR

1(1)

Procedure in the VLR to update a TEMSI if successfully used

Signals to/from the left are to/from the MSC



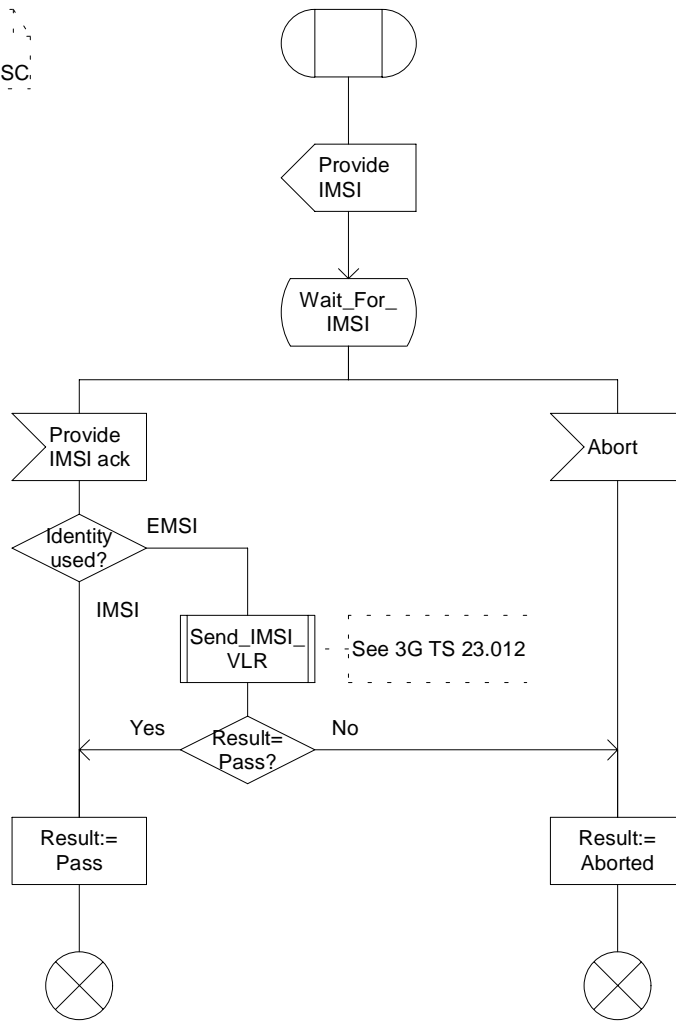
**Figure 22: Procedure Update TEMSI VLR**

### Procedure Obtain\_IMSI\_VLR

OIMSI\_V1(1)

Process in the VLR to obtain the IMSI from the MS via the MSC.

Signals to/from the left are to/from the MSC.





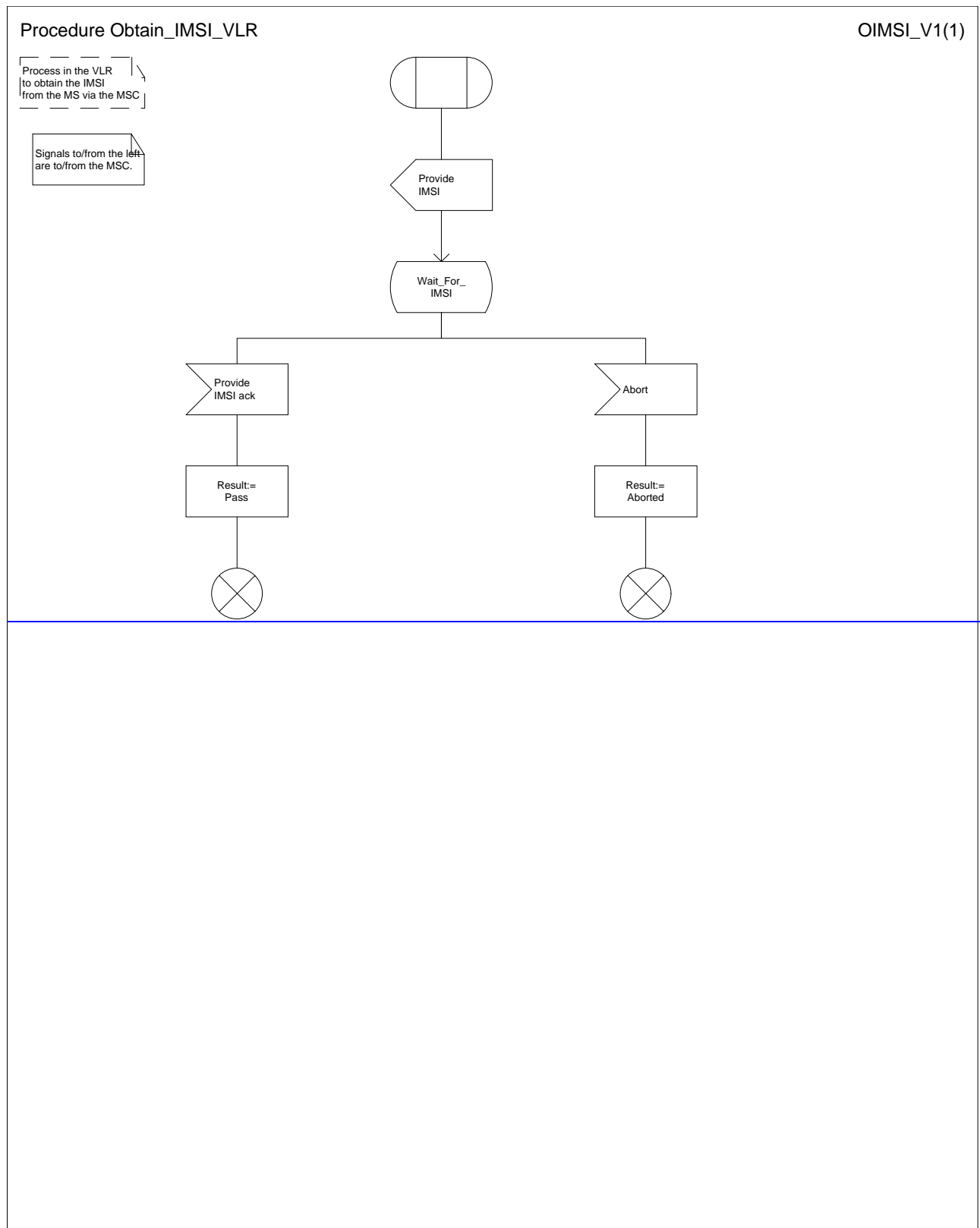


Figure 243: Procedure Obtain\_IMSI\_VLR

### 8.1.14 Obtain Subscriber Info

The following information elements are required:

Information element name	Required	Description
IMSI	M	IMSI of the MS for which information is required.
Subscriber state requested	C	Indicates that the VLR requires state information for the MS. Shall be present if state information is required; otherwise shall be absent.

### 8.1.15 Obtain Subscriber Info ack

The following information elements are required:

Information element name	Required	Description
Subscriber state	C	Indicates whether the MS is busy (i.e. engaged on a circuit-switched call) or assumed idle. Shall be present if the VLR requested state information; otherwise shall be absent.

### 8.1.16 Page MS

The following information elements are required:

Information element name	Required	Description
IMSI	M	IMSI of the MS to be paged.
Location area ID	M	Location area in which the MS is to be paged.
Page type	M	Indicates whether the paging is for a circuit-switched call, MT SMS delivery or SS activity
Paging via SGSN possible	C	Indicates that paging via the SGSN is possible. Shall be present if the VLR determines that the MS can be paged via the SGSN; otherwise shall be absent.
<a href="#">TEMSI</a>	<a href="#">C</a>	<a href="#">TEMSI to be broadcast to identify the MS. Shall be present if stored in the VLR and no TMSI is available for identification of the MS, otherwise shall be absent. Only one of TEMSI or TMSI shall be present.</a>
TMSI	O	TMSI to be broadcast to identify the MS. <a href="#">Only one of TEMSI or TMSI shall be present.</a>

### 8.1.17 Page MS negative response

The negative response information element can take the following values:

- Absent subscriber;
- Busy subscriber (More calls possible);
- Busy subscriber (NDUB);
- System failure;
- Unknown location area ID.

The Page MS negative response Busy subscriber (More calls possible) also indicates the basic service which applies for the established call.

## 8.1.18 Page MS via SGSN

The following information elements are required:

Information element name	Required	Description
IMSI	M	IMSI of the MS to be paged.
eMLPP priority	O	Circuit-switched paging priority.
TMSI	O	TMSI to be broadcast to identify the MS.
Channel type	O	Type of channel required for the call.

## 8.1.19 Process Access Request

The following information elements are required:

Information element name	Required	Description
CM service type	M	Indicates the type of access required: normal MO call, emergency call or page response. Other values (short message service and SS request) defined for this IE are not considered in this specification.
Access connection status	M	Indicates whether or not the connection to the MS is ciphered and whether or not it is authenticated.
Current location area ID	M	Identity of the location area from which the access request was received.
Serving cell ID	M	Identity of the cell in use by the served subscriber.
IMSI	C	IMSI of the MS requesting the access. For normal MO call <a href="#">one of IMSI, EMSI or TMSI shall be present</a> . For page response, one of IMSI, <a href="#">TEMSI</a> or TMSI shall be present. For emergency call, one of IMSI, TMSI, <a href="#">EMSI</a> or IMEI shall be present.
TMSI	C	TMSI of the MS requesting the access. For normal MO call <a href="#">one of IMSI, EMSI or TMSI shall be present</a> . For page response, one of IMSI, <a href="#">TEMSI</a> or TMSI shall be present. For emergency call, one of IMSI, <a href="#">EMSI</a> , TMSI or IMEI shall be present.
<a href="#">EMSI</a>	<a href="#">C</a>	<a href="#">EMSI of the MS requesting the access. For normal MO call one of IMSI, EMSI or TMSI shall be present. For emergency call, one of IMSI, TMSI, EMSI or IMEI shall be present.</a>
<a href="#">UIDN Address</a>	<a href="#">C</a>	<a href="#">Indicates the Address of the UIDN (see 3G TS 33.102). It shall be present if the subscriber is identified by the EMSI, otherwise shall be absent.</a>
<a href="#">TEMSI</a>	<a href="#">C</a>	<a href="#">TEMSI of the MS requesting the access. For page response, one of IMSI, TEMSI or TMSI shall be present.</a>
IMEI	C	IMEI of the MS requesting the access. For normal MO call or page response, one of IMSI or TMSI shall be present. For emergency call, one of IMSI, TMSI, <a href="#">EMSI</a> or IMEI shall be present.
CKSN	C	Cipher key sequence number of the MS requesting the access. Shall be present if TMSI is present; otherwise shall be absent.

## 8.1.20 Process Access Request ack

The following information elements are required:

Information element name	Required	Description
IMSI	C	IMSI of the MS requesting the access. For normal MO call or page response, shall be present. For emergency call, one of IMSI or IMEI shall be present.
IMEI	C	IMEI of the MS requesting the access. For normal MO call or page response, shall be absent. For emergency call, one of IMSI or IMEI shall be present.
MSISDN	O	MSISDN of the MS requesting the access.

### 8.1.28 Provide IMSI ack

The following information element is required:

Information element name	Required	Description
IMSI	<u>C</u> M	IMSI of the MS involved in the access request. <u>One of IMSI or EMSI shall be present.</u>
<u>EMSI</u>	<u>C</u>	<u>EMSI of the MS involved in the access request. One of IMSI or EMSI shall be present.</u>
<u>UIDN Address</u>	<u>C</u>	<u>Indicates the Address of the UIDN (see 3G TS 33.102). It shall be present if the subscriber is identified by the EMSI, otherwise shall be absent.</u>

### 8.1.29 Radio connection released

This message contains no information elements.

### 8.1.30 Search For MS

The following information elements are required:

Information element name	Required	Description
IMSI	M	IMSI of the MS to be paged in all location areas.
Page type	M	Indicates whether the paging is for a circuit-switched call, MT SMS delivery or SS activity
Paging via SGSN possible	C	Indicates that paging via the SGSN is possible. Shall be present if the VLR determines that the MS can be paged via the SGSN; otherwise shall be absent.
<u>TEMSI</u>	<u>C</u>	<u>TEMSI to be broadcast to identify the MS. Shall be present if stored in the VLR and no TMSI is available for identification of the MS, otherwise shall be absent. Only one of TEMSI or TMSI shall be present.</u>
TMSI	O	TMSI to be broadcast to identify the MS. <u>Only one of TEMSI or TMSI shall be present.</u>

### 8.1.31 Search For MS ack

The following information element is required:

Information element name	Required	Description
Location area ID	M	Location area in which the MS responded to the page.

### 8.1.32 Search For MS negative response

The negative response information element can take the following values:

- Absent subscriber;
- Busy subscriber (More calls possible);
- Busy subscriber (NDUB);
- System failure.

The Search For MS negative response Busy subscriber (More calls possible) also indicates the basic service which applies for the established call.

# CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

**29.002 CR 092r4**

Current Version: **3.3.1**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **CN#07**  
list expected approval meeting # here ↑

for approval   
for information

strategic   
non-strategic  (for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: <ftp://ftp.3gpp.org/Information/CR-Form-v2.doc>

**Proposed change affects:** (U)SIM  ME  UTRAN / Radio  Core Network   
(at least one should be marked with an X)

**Source:** N2 **Date:** 01/03/00

**Subject:** Introduction of Enhanced User Identity Confidentiality

**Work item:** Security

**Category:** F Correction  **Release:** Phase 2   
A Corresponds to a correction in an earlier release  Release 96   
(only one category shall be marked with an X) B Addition of feature  Release 97   
C Functional modification of feature  Release 98   
D Editorial modification  Release 99   
Release 00

**Reason for change:** This CR introduces the changes required for Enhanced User Identity Confidentiality.

**Clauses affected:**

**Other specs** Other 3G core specifications  → List of CRs: 23.002-???, 23.003-015, 23.008-???, 23.012-003, 23.018-036, 23.060-???, 24.008-???, 25.331-???, 31.102-???, 33.103-???, 33.105-???

**affected:** Other GSM core specifications  → List of CRs:  
MS test specifications  → List of CRs:  
BSS test specifications  → List of CRs:  
O&M specifications  → List of CRs:

**Other comments:**



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←-----

## 5.1.2 Overload control for MAP entities

For all MAP entities, especially the HLR, the following overload control method is applied:

If overload of a MAP entity is detected requests for certain MAP operations (see tables 5.1/1, 5.1/2, 5.1/3 and 5.1/4) may be ignored by the responder. The decision as to which MAP Operations may be ignored is made by the MAP service provider and is based upon the priority of the application context.

Since most of the affected MAP operations are supervised in the originating entity by TC timers (medium) an additional delay effect is achieved for the incoming traffic.

If overload levels are applicable in the Location Registers the MAP operations should be discarded taking into account the priority of their application context (see table 5.1/1 for HLR, table 5.1/2 for MSC/VLR, table 5.1/3 for the SGSN and table 5.1/4 for the SMLC; the lowest priority is discarded first).

The ranking of priorities given in the tables 5.1/1, 5.1/2, 5.1/3 and 5.1/4 is not normative. The tables can only be seen as a proposal which might be changed due to network operator/implementation matters.

**Table 5.1/1: Priorities of Application Contexts for HLR as Responder**

<b>Priority high</b>	<b>Responder = HLR</b>	<b>Initiating Entity</b>
	<u>Mobility Management</u>	
	networkLocUp (updateLocation), (restoreData/v2), (sendParameters/v1)	VLR
	gprsLocationUpdate (updateGPRSLocation/v3),	SGSN
	infoRetrieval (sendAuthenticationInfo/v2/v3), (sendParameters/v1)	VLR/SGSN
	istAlerting (istAlert/v3) (purgeMS/v2/v3)	MSC msPurging      VLR
	msPurging (purgeMS/v3)	SGSN
	<u>Short Message Service</u>	
	shortMsgGateway (sendRoutingInfoforSM), (reportSM-DeliveryStatus)	GMSC
	mwdMngt VLR/SGSN (readyForSM/v2/v3), (noteSubscriberPresent/v1)	
	<u>Mobile Terminating Traffic</u>	
	locInfoRetrieval (sendRoutingInfo)	GMSC
	anyTimeEnquiry (anyTimeInterrogation)	gsmSCF
	reporting (statusReport)	VLR
	<u>Location Services</u>	
	locationSvcGateway (sendRoutingInfoforLCS/v3)	GMLC
	<u>Subscriber Controlled Inputs (Supplementary Services)</u>	
	networkFunctionalSs (registerSS), (eraseSS), (activateSS), (deactivateSS), (interrogateSS), (registerPassword), (processUnstructuredSS-Data/v1), (beginSubscriberActivity/v1)	VLR
	callCompletion (registerCCEnter), (eraseCCEnter)	VLR
	networkUnstructuredSs (processUnstructuredSS-Request/v2)	VLR
	imsiRetrieval (sendIMSI/v2/v3)	VLR
	gprsLocationInfoRetrieval (sendRoutingInfoForGprs/v3)	GGSN/SGSN
	failureReport (failureReport/v3)	GGSN/SGSN
<b>Priority low</b>		

NOTE: The application context name is the last component but one of the object identifier.  
 Operation names are given in brackets for information with "/vn" appended to vn only operations.

**Table 5.1/3: Priorities of Application Contexts for SGSN as Responder**

<b>Responder = SGSN</b>	<b>Initiating Entity</b>
<b>Priority high</b>	
<u><i>Mobility and Location Register Management</i></u>	
locationCancel (cancelLocation v3)	HLR
reset (reset)	HLR
subscriberDataMngt (insertSubscriberData v3), (deleteSubscriberData v3)	HLR
tracing (activateTraceMode), (deactivateTraceMode)	HLR
<u><i>Short Message Service</i></u>	
shortMsgMT-Relay (MT-ForwardSM v3) (forwardSM v1/v2)	MSC
<u><i>Network-Requested PDP context activation</i></u>	
gprsNotify HLR (noteMsPresentForGprs v3),	
<b>Priority low</b>	

NOTE: The application context name is the last component but one of the object identifier.  
 Operation names are given in brackets for information with "/vn" appended to vn.

**Table 5.1/2: Priorities of Application Contexts for MSC/VLR as Responder**



<b>Responder = MSC/VLR</b>	<b>Initiating Entity</b>
<b>Priority high</b>	
<u>Handover</u>	
handoverControl (prepareHandover/v2), (performHandover/v1)	MSC
<u>Mobility and Location Register Management</u>	
locationCancel (cancelLocation)	HLR
reset (reset)	HLR
immediateTermination (istCommand/v3)	HLR
interVlrInfoRetrieval (sendIdentification/v2/v3), (sendParameters/v1)	VLR
subscriberDataMngt (insertSubscriberData), (deleteSubscriberData)	HLR
tracing (activateTraceMode), (deactivateTraceMode)	HLR
<u>Short Message Service</u>	
shortMsgMO-Relay (MO-ForwardSM v3) (forwardSM v1/v2)	MSC/SGSN
shortMsgMT-Relay (MT-ForwardSM v3) (forwardSM v1/v2)	MSC
shortMsgAlert (alertServiceCentre/v2), (alertServiceCentreWithoutResult/v1)	HLR
<u>Mobile Terminating Traffic</u>	
roamingNbEnquiry (provideRoamingNumber)	HLR
callControlTransfer (resumeCallHandling)	MSC
subscriberInfoEnquiry (provideSubscriberInformation)	HLR
reporting (remoteUserFree) (SetReportingState)	HLR
<u>Location Services</u>	
locationSvcEnquiry (provideSubscriberLocation v3)	GMLC
<u>Network-Initiated USSD</u>	
networkUnstructuredSs (unstructuredSS-Request/v2), (unstructuredSS-Notify/v2)	HLR
<b>Priority low</b>	

NOTE: The application context name is the last component but one of the object identifier.  
Operation names are given in brackets for information with "/vn" appended to vn only operations.

**\*\*\* Next Modified Section \*\*\***

### 6.1.3.11 Summary table

The following tables summarize the SCCP address used for invoke operations. As a principle, within a PLMN either an SPC or a GT may be used (network operation option), whereas when addressing an entity outside the PLMN the GT must be used. The address type mentioned in the table (e.g. MSISDN) is used as GT or to derive the SPC.

For a response, the originating address passed in the invoke is used as SCCP Called Party Address. For extra-PLMN addressing the own E.164 entity address is used as SCCP Calling Party Address; for intra-PLMN addressing an SPC derived from the entity number may be used instead. When using an SPC, the SPC may be taken directly from MTP.

Table 6.1/1

to from	fixed net work	HLR	VLR	MSC	EIR	gsmSCF	SIWF	SGSN	GGSN
fixed network	---	E:GT T:MSISDN	---	---	---	---	---	---	---
home location register	---	---	I:SPC/GT E:GT T:VLR NUMBER	---	---	I:SPC/GT E:GT T:gsmSCF NUMBER	---	I:SPC/GT E:GT T:SGSN NUMBER	I:SPC/GT E:GT T:GGSN NUMBER
visitor location register	---	I:SPC/GT E:GT T:MGT (outside World Zone 1)/MSISDN (World Zone 1)/HLR NUMBER (note)	I:SPC/GT E:GT T:VLR NUMBER	---	---	I:SPC/GT E:GT T:gsmSCF NUMBER	---	---	---
mobile-services switching centre	---	I:SPC/GT E:GT T:MSISDN	I:SPC/GT E:GT T:VLR NUMBER	I:SPC/GT E:GT T:MSC NUMBER	I:SPC/GT E:GT T:EIR NUMBER	I:SPC/GT E:GT T:gsmSCF NUMBER	I:SPC/GT E:GT T:SIWF NUMBER	I:SPC/GT E:GT T:SGSN NUMBER	---
gsm Service Control Function	---	I:SPC/GT E:GT T:MSISDN	---	---	---	---	---	---	---
Shared Inter Working Function	---	---	---	I:SPC/GT E:GT T:MSC NUMBER	---	---	---	---	---
Serving GPRS Support Node	---	I:SPC/GT E:GT T:MGT/ MSISDN/HL R NUMBER	---	I:SPC/GT E:GT T:MSC NUMBER	I:SPC/GT E:GT T:EIR NUMBER	---	---	---	---
Gateway GPRS Support Node	---	I:SPC/GT E:GT T:MGT	---	---	---	---	---	---	---
Gateway Mobile Location Center	---	I:SPC/GT E:GT T:MSISDN, MGT (outside World Zone 1) or IMSI (World Zone 1) (note)	---	I:SPC/GT E:GT T:MSC NUMBER	---	---	---	---	---

I: Intra-PLMN E: Extra(Inter)-PLMN T: Address Type

GT: Global Title MGT: E.214 Mobile Global Title SPC: Signalling Point Code

NOTE: For initiating the location updating procedure and an authentication information retrieval from the HLR preceding it, the VLR has to derive the HLR address from the IMSI of the MS. The result can be an SPC or an E.214 Mobile Global Title if CCITT or ITU-T SCCP is used, or IMSI itself if ANSI SCCP is used (ANSI SCCP is used in World Zone 1).. When continuing the established update location dialogue (as with any other dialogue) the VLR must derive the routing information towards the HLR from the Calling Party Address received with the first responding CONTINUE message until the dialogue terminating message is received.

For transactions invoked by the VLR after update location completion, the VLR may derive the information for addressing the HLR from addresses received in the course of the update location procedure (MSISDN or HLR number) or from the IMSI.

When invoking the Restore Data procedure and an authentication information retrieval from the HLR preceding it, the VLR must derive the information for addressing the HLR from the address information received in association with the roaming number request. This may be either the IMSI received as a parameter of the MAP message requesting the Roaming Number or the Calling Party Address associated with the MAP message requesting the Roaming Number.

The gsmSCF shall be addressed using more than one Global Title number. The first Global Title number is used to address a gsmSCF for MAP. The second Global Title number is used to address a gsmSCF for CAP.

For querying the HLR to obtain the VMSC address to support location services, the GMLC has to derive the HLR address from either the MSISDN or IMSI of the target MS. When using the IMSI, the result can be an SPC or an E.214 Mobile Global Title if CCITT or ITU-T SCCP is used, or IMSI itself if ANSI SCCP is used (ANSI SCCP is used in World Zone 1).

**Table 6.1/2**

<b>to from</b>	<b>UIDN</b>	<b>GMLC</b>
<b>fixed network</b>	---	---
<b>home location register</b>	---	---
<b>visitor location register</b>	I:SPC/GT E:GT T:UIDN NUMBER	---
<b>mobile-services switching centre</b>	---	---
<b>gsm Service Control Function</b>	---	I:SPC/GT E:GT T:MSISDN
<b>Shared Inter Working Function</b>	---	---
<b>Serving GPRS Support Node</b>	I:SPC/GT E:GT T:UIDN NUMBER	---
<b>Gateway GPRS Support Node</b>	---	---
<b>Gateway Mobile Location Center</b>	---	

I: Intra-PLMN  
GT: Global Title

E: Extra(Inter)-PLMN  
MGT: E.214 Mobile Global Title

T: Address Type  
SPC: Signalling Point Code

**\*\*\* Next Modified Section \*\*\***

## 7.6 Definition of parameters

Following is an alphabetic list of parameters used in the common MAP-services in subclause 7.3:

Application context name	7.3.1	Refuse reason	7.3.1
Destination address	7.3.1	Release method	7.3.2
Destination reference	7.3.1	Responding address	7.3.1
Diagnostic information	7.3.4	Result	7.3.1
Originating address	7.3.1	Source	7.3.5
Originating reference	7.3.1	Specific information	7.3.1/7.3.2/7.3.4
Problem diagnostic	7.3.6	User reason	7.3.4
Provider reason	7.3.5		

Following is an alphabetic list of parameters contained in this clause:

Absent Subscriber Diagnostic SM	7.6.8.9	IST Information Withdrawn	7.6.3.68
Access connection status	7.6.9.3	IST Support Indicator	7.6.3.69
Access signalling information	7.6.9.5	Kc	7.6.7.4
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Linked Id	7.6.1.2
Additional number	7.6.2.46	LMSI	7.6.2.16
Additional signal info	7.6.9.10	Location Information	7.6.2.30
Additional SM Delivery Outcome	7.6.8.11	Location update type	7.6.9.6
Age Indicator	7.6.3.72	Lower Layer Compatibility	7.6.3.42
Alert Reason	7.6.8.8	LSA Information	7.6.3.56
Alert Reason Indicator	7.6.8.10	LSA Information Withdraw	7.6.3.58
Alerting Pattern	7.6.3.44	Mobile Not Reachable Reason	7.6.3.51
All GPRS Data	7.6.3.53	Modification request for CSI	7.6.3.81
All Information Sent	7.6.1.5	Modification request for SS Information	7.6.3.82
APN	7.6.2.42	More Messages To Send	7.6.8.7
Authentication set list	7.6.7.1	MS ISDN	7.6.2.17
B-subscriber Address	7.6.2.36	MSC number	7.6.2.11
B subscriber Number	7.6.2.48	MSIsdn-Alert	7.6.2.29
B subscriber subaddress	7.6.2.49	MWD status	7.6.8.3
Basic Service Group	7.6.4.40	Network Access Mode	7.6.3.50
Bearer service	7.6.4.38	Network node number	7.6.2.43
BSS-apdu	7.6.9.1	Network resources	7.6.10.1
Call Barring Data	7.6.3.83	Network signal information	7.6.9.8
Call barring feature	7.6.4.19	New password	7.6.4.20
Call barring information	7.6.4.18	No reply condition timer	7.6.4.7
Call Direction	7.6.5.8	North American Equal Access preferred Carrier Id	7.6.2.34
Call Forwarding Data	7.6.3.84	Number Portability Status	7.6.5.14
Call Info	7.6.9.9	ODB Data	7.6.3.85
Call reference	7.6.5.1	ODB General Data	7.6.3.9
Call Termination Indicator	7.6.3.67	ODB HPLMN Specific Data	7.6.3.10
Called number	7.6.2.24	OMC Id	7.6.2.18
Calling number	7.6.2.25	Originally dialled number	7.6.2.26
CAMEL Subscription Info	7.6.3.78	Originating entity number	7.6.2.10
CAMEL Subscription Info Withdraw	7.6.3.38	Override Category	7.6.4.4
Cancellation Type	7.6.3.52	P-TMSI	7.6.2.47
Category	7.6.3.1	PDP-Address	7.6.2.45
CCBS Feature	7.6.5.8	PDP-Context identifier	7.6.3.55
Channel Type	7.6.5.9	PDP-Type	7.6.2.44
Chosen Channel	7.6.5.10	Pre-paging supported	7.6.5.15
Ciphering mode	7.6.7.7	Previous location area Id	7.6.2.4
Cksn	7.6.7.5	Protocol Id	7.6.9.7
CLI Restriction	7.6.4.5	Provider error	7.6.1.3
CM service type	7.6.9.2	QoS-Subscribed	7.6.3.47
Complete Data List Included	7.6.3.54	Rand	7.6.7.2
CUG feature	7.6.3.26	Regional Subscription Data	7.6.3.11
CUG index	7.6.3.25	Regional Subscription Response	7.6.3.12
CUG info	7.6.3.22	Requested Info	7.6.3.31
CUG interlock	7.6.3.24	Requested Subscription Info	7.6.3.86
CUG Outgoing Access indicator	7.6.3.8	Roaming number	7.6.2.19
CUG subscription	7.6.3.23	Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
CUG Subscription Flag	7.6.3.37	Roaming Restriction Due To Unsupported Feature	7.6.3.13
Current location area Id	7.6.2.6	Service centre address	7.6.2.27
Current password	7.6.4.21	Serving Cell Id	7.6.2.37
eMLPP Information	7.6.4.41	SGSN address	7.6.2.39
EMSI	7.6.2.3	SGSN CAMEL Subscription Info	7.6.3.75
Equipment status	7.6.3.2	SGSN number	7.6.2.38
Extensible Basic Service Group	7.6.3.5	SIWF Number	7.6.2.35
Extensible Bearer service	7.6.3.3	SoLSA Support Indicator	7.6.3.57
Extensible Call barring feature	7.6.3.21	SM Delivery Outcome	7.6.8.6
Extensible Call barring information	7.6.3.20	SM-RP-DA	7.6.8.1
Extensible Call barring information for CSE	7.6.3.79	SM-RP-MTI	7.6.8.16
Extensible Forwarding feature	7.6.3.16	SM-RP-OA	7.6.8.2

Extensible Forwarding info	7.6.3.15	SM-RP-PRI	7.6.8.5
Extensible Forwarding information for CSE	7.6.3.80	SM-RP-SMEA	7.6.8.17
Extensible Forwarding Options	7.6.3.18	SM-RP-UI	7.6.8.4
Extensible No reply condition timer	7.6.3.19	Sres	7.6.7.3
Extensible QoS-Subscribed	7.6.3.74	SS-Code	7.6.4.1
Extensible SS-Data	7.6.3.29	SS-Data	7.6.4.3
Extensible SS-Info	7.6.3.14	SS-Event	7.6.4.42
Extensible SS-Status	7.6.3.17	SS-Event-Data	7.6.4.43
Extensible Teleservice	7.6.3.4	SS-Info	7.6.4.24
External Signal Information	7.6.9.4	SS-Status	7.6.4.2
Forwarded-to number	7.6.2.22	Stored location area Id	7.6.2.5
Forwarded-to subaddress	7.6.2.23	Subscriber State	7.6.3.30
Forwarding feature	7.6.4.16	Subscriber Status	7.6.3.7
Forwarding information	7.6.4.15	Super-Charger Supported in HLR	7.6.3.70
Forwarding Options	7.6.4.6	Super-Charger Supported in Serving Network Entity	7.6.3.71
GGSN address	7.6.2.40	Supported CAMEL Phases in VLR	7.6.3.36
GGSN number	7.6.2.41	Supported CAMEL Phases in SGSN	7.6.3.36A
GMSC CAMEL Subscription Info	7.6.3.34	Suppress T-CSI	7.6.3.33
GPRS enhancements support indicator	7.6.3.73	Suppression of Announcement	7.6.3.32
GPRS Node Indicator	7.6.8.14	Target cell Id	7.6.2.8
GPRS Subscription Data	7.6.3.46	Target location area Id	7.6.2.7
GPRS Subscription Data Withdraw	7.6.3.45	Target MSC number	7.6.2.12
GPRS Support Indicator	7.6.8.15	Teleservice	7.6.4.39
Group Id	7.6.2.33	TEMSI	7.6.2.4
GSM bearer capability	7.6.3.6	TMSI	7.6.2.2
Guidance information	7.6.4.22	Trace reference	7.6.10.2
Handover number	7.6.2.21	Trace type	7.6.10.3
High Layer Compatibility	7.6.3.43	User error	7.6.1.4
HLR Id	7.6.2.15	USSD Data Coding Scheme	7.6.4.36
HLR number	7.6.2.13	USSD String	7.6.4.37
HO-Number Not Required	7.6.6.7	UU Data	7.6.5.12
IMEI	7.6.2.3	UUS CF Interaction	7.6.5.13
IMSI	7.6.2.1	VBS Data	7.6.3.40
Inter CUG options	7.6.3.27	VGCS Data	7.6.3.39
Intra CUG restrictions	7.6.3.28	VLR CAMEL Subscription Info	7.6.3.35
Invoke Id	7.6.1.1	VLR number	7.6.2.14
ISDN Bearer Capability	7.6.3.41	VPLMN address allowed	7.6.3.48
IST Alert Timer	7.6.3.66	Zone Code	7.6.2.28

**\*\*\* First New Section \*\*\***

### 7.6.2.3 EMSI

This parameter is the Encrypted Mobile Subscriber Identity defined in 3G TS 23.003.

### 7.6.2.4 TEMSI

This parameter is the Temporarily Encrypted Mobile Subscriber Identity defined in 3G TS 23.003.

**\*\*\* Next Modified Section \*\*\***

## 8.1.4 MAP\_SEND\_IDENTIFICATION service

### 8.1.4.1 Definition

The MAP\_SEND\_IDENTIFICATION service is used between a VLR and a previous VLR to retrieve IMSI, TEMSI and authentication sets for a subscriber registering afresh in that VLR.

The MAP\_SEND\_IDENTIFICATION service is a confirmed service using the service primitives defined in table 8.1/4.

#### 8.1.4.2 Service primitives

**Table 8.1/4: MAP\_SEND\_IDENTIFICATION**

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
TMSI	M	M(=)		
Number of requested vectors	M	M(=)		
Segmentation prohibited indicator	C	C(=)		
IMSI			C	C(=)
TEMSI			C	C(=)
Authentication set			U	C(=)
User error			C	C(=)
Provider error				O

#### 8.1.4.3 Parameter definitions and use

##### Invoke Id

See definition in subclause 7.6.1.

##### TMSI

See definition in subclause 7.6.2.

##### TEMSI

See definition in subclause 7.6.2. It shall be contained in the MAP\_SERVICE\_IDENTIFICATION Response and Confirm service if a TEMSI is stored in previous VLR. Otherwise it shall be absent.

##### Number of requested vectors

A number indicating how many authentication vectors the new VLR is prepared to receive.

##### Segmentation prohibited indicator

This parameter indicates if the new VLR or SGSN allows message segmentation.

##### IMSI

See definition in subclause 7.6.2. The IMSI is to be returned if the service succeeds.

##### Authentication set

See definition in subclause 7.6.7. If the service succeeds a list of up to five authentication sets is returned, if there are any available.

##### User error

This parameter is mandatory if the service fails. The following error cause defined in subclause 7.6.1 may be used, depending on the nature of the fault:

- unidentified subscriber.

##### Provider error

For definition of provider errors see subclause 7.6.1.

**\*\*\* Next Modified Section \*\*\***

## 9.2.1 MAP-SEND-IMSI service

### 9.2.1.1 Definition

This service is used by a VLR in order to fetch the IMSI of a subscriber in case of some Operation & Maintenance procedure where subscriber data are needed in the Visited PLMN and MSISDN is the only subscriber's identity known. This service is used by a VLR or SGSN in order to fetch the IMSI and TEMSI of a subscriber if the Mobile station identifies itself with an Encrypted Mobile Subscriber Identity (EMSI).

It is a confirmed service and consists of the primitive shown in table 9.2/1.

### 9.2.1.2 Service primitives

**Table 9.2/1: MAP-SEND-IMSI**

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
MSISDN	C	C(=)		
EMSI	C	C(=)		
IMSI			C	C(=)
TEMSI			C	C(=)
User error			C	C(=)
Provider error				O

### 9.2.1.3 Parameter use

All parameters are described in subclause 7.6. The following clarifications are applicable:

#### User error

Only one of the following values is applicable:

- Unknown subscriber;
- Unexpected data value;
- Data missing.

**\*\*\* Next Modified Section \*\*\***

## 17.1.6 Application Contexts

The following informative table lists the latest versions of the Application Contexts used in this specification, with the operations used by them and, where applicable, whether or not the operation description is exactly the same as for previous versions. Information in sections 17.6 & 17.7 relates only to the ACs in this table.

AC Name	AC Version	Operations Used	Comments *
locationCancellationContext	v3	cancelLocation	
equipmentMngtContext	v2	checkIMEI	
imsiRetrievalContext	v3	sendIMSI	
infoRetrievalContext	v3	sendAuthenticationInfo	
interVlrInfoRetrievalContext	v3	sendIdentification	
handoverControlContext	v2	prepareHandover forwardAccessSignalling sendEndSignal processAccessSignalling prepareSubsequentHandover	
mwdMngtContext	v3	readyForSM	
msPurgingContext	v3	purgeMS	



shortMsgAlertContext	v2	alertServiceCentre	
resetContext	v2	reset	
networkUnstructuredSsContext	v2	processUnstructuredSS-Request unstructuredSS-Request unstructuredSS-Notify	
tracingContext	v3	activateTraceMode deactivateTraceMode	
networkFunctionalSsContext	v2	registerSS eraseSS activateSS deactivateSS registerPassword interrogateSS getPassword	
shortMsgMO-RelayContext	v3	mo-forwardSM	
shortMsgMT-RelayContext	v3	mt-forwardSM	
shortMsgGatewayContext	v3	sendRoutingInfoForSM reportSM-DeliveryStatus InformServiceCentre	the syntax of this operation has been extended in comparison with release 96 version
networkLocUpContext	v3	updateLocation forwardCheckSs-Indication restoreData insertSubscriberData activateTraceMode	the syntax is the same in v1 & v2
gprsLocationUpdateContext	v3	updateGprsLocation insertSubscriberData activateTraceMode	
subscriberDataMngtContext	v3	insertSubscriberData deleteSubscriberData	
roamingNumberEnquiryContext	v3	provideRoamingNumber	
locationInfoRetrievalContext	v3	sendRoutingInfo	
gprsNotifyContext	v3	noteMsPresentForGprs	
gprsLocationInfoRetrievalContext	v3	sendRoutingInfoForGprs	
failureReportContext	v3	failureReport	
callControlTransferContext	v4	resumeCallHandling	
subscriberInfoEnquiryContext	v3	provideSubscriberInfo	
anyTimeEnquiryContext	v3	anyTimeInterrogation	
anyTimeInfoHandlingContext	v3	anyTimeSubscriptionInterrogation anyTimeModification	
ss-InvocationNotificationContext	v3	ss-InvocationNotification	
siWFSAlocationContext	v3	provideSIWFSSNumber siWFSSignallingModify	
groupCallControlContext	v3	prepareGroupCall processGroupCallSignalling forwardGroupCallSignalling sendGroupCallEndSignal	
reportingContext	v3	setReportingState statusReport remoteUserFree	
callCompletionContext	v3	registerCC-Entry eraseCC-Entry	
istAlertingContext	v3	istAlert	
ImmediateTerminationContext	v3	istCommand	
locationSvcEnquiryContext	v3	provideSubscriberLocation subscriberLocationReport	
locationSvcGatewayContext	v3	sendRoutingInfoForLCS	
mm-EventReportingContext	v3	noteMM-Event	
subscriberDataModificationNotificationContext	v3	noteSubscriberDataModified	

NOTE (\*): The syntax of the operations is not the same as in previous versions unless explicitly stated

**\*\*\* Next Modified Section\*\*\***

### 17.2.2.6 IMSI retrieval

This operation package includes the operation required for the IMSI retrieval procedure between HLR and VLR. Furthermore it is used for retrieval of IMSI and TEMSI between UIDN and VLR and between UIDN and SGSN.

```
IMSIRetrievalPackage-v3 ::= OPERATION-PACKAGE
-- Supplier is HLR if Consumer is VLR
-- Supplier is UIDN if Consumer is VLR
-- Supplier id UIDN if Consumer is SGSN
CONSUMER INVOKES {
    sendIMSI}
```

The v2-equivalent package can be determined according to the rules described in subclause 17.2.1. **\*\*\* Next Modified Section\*\*\***

### 17.3.2.13 IMSI Retrieval

This application context is used for IMSI retrieval between HLR and VLR. Furthermore this application context is used for retrieval of IMSI and TEMSI between UIDN and VLR or between UIDN and SGSN. For the UIDN - VLR and UIDN - SGSN interfaces only version 3 of this application context is applicable.

```
imsiRetrievalContext-v3 APPLICATION-CONTEXT
-- Responder is HLR if Initiator is VLR
-- Responder is UIDN if Initiator is VLR
-- responder is UIDN if Initiator is SGSN
INITIATOR CONSUMER OF {
    IMSIRetrievalPackage-v3}
::= {map-ac imsiRetrieval(26) version3(3)}
```

The following application-context-name is assigned to the v2-equivalent application-context:

```
{map-ac imsiRetrieval(26) version2(2)}
```

**\*\*\* Next Modified Section\*\*\***

## 17.3.3 ASN.1 Module for application-context-names

The following ASN.1 module summarizes the application-context-name assigned to MAP application-contexts.

```
MAP-ApplicationContexts {
    ccitt identified-organization (4) etsi (0) mobileDomain (0)
    gsm-Network (1) modules (3) map-ApplicationContexts (2) version6 (6)}
```

DEFINITIONS

::=

BEGIN

-- EXPORTS everything

IMPORTS

gsm-NetworkId,  
ac-Id

```
FROM MobileDomainDefinitions {
    ccitt (0) identified-organization (4) etsi (0) mobileDomain (0)
    mobileDomainDefinitions (0) version1 (1)}
;
```

-- application-context-names

```
map-ac OBJECT IDENTIFIER ::= {gsm-NetworkId ac-Id}
```

<b>networkLocUpContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac networkLocUp(1) version3(3)}
<b>locationCancellationContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac locationCancel(2) version3(3)}
<b>roamingNumberEnquiryContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac roamingNbEnquiry(3) version3(3)}
<b>locationInfoRetrievalContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac locInfoRetrieval(5) version3(3)}
<b>resetContext-v2</b> OBJECT IDENTIFIER ::=
{map-ac reset(10) version2(2)}
<b>handoverControlContext-v2</b> OBJECT IDENTIFIER ::=
{map-ac handoverControl(11) version2(2)}
<b>equipmentMngtContext-v2</b> OBJECT IDENTIFIER ::=
{map-ac equipmentMngt(13) version2(2)}
<b>infoRetrievalContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac infoRetrieval(14) version3(3)}
<b>interVlrInfoRetrievalContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac interVlrInfoRetrieval(15) version3(3)}
<b>subscriberDataMngtContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac subscriberDataMngt(16) version3(3)}
<b>tracingContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac tracing(17) version3(3)}
<b>networkFunctionalSsContext-v2</b> OBJECT IDENTIFIER ::=
{map-ac networkFunctionalSs(18) version2(2)}
<b>networkUnstructuredSsContext-v2</b> OBJECT IDENTIFIER ::=
{map-ac networkUnstructuredSs(19) version2(2)}
<b>shortMsgGatewayContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac shortMsgGateway(20) version3(3)}
<b>shortMsgMO-RelayContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac shortMsgMO-Relay(21) version3(3)}
<b>shortMsgAlertContext-v2</b> OBJECT IDENTIFIER ::=
{map-ac shortMsgAlert(23) version2(2)}
<b>mwdMngtContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac mwdMngt(24) version3(3)}
<b>shortMsgMT-RelayContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac shortMsgMT-Relay(25) version3(3)}
<b>imsiRetrievalContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac imsiRetrieval(26) version3(3)}
<b>msPurgingContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac msPurging(27) version3(3)}
<b>subscriberInfoEnquiryContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac subscriberInfoEnquiry(28) version3(3)}
<b>anyTimeInfoEnquiryContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac anyTimeInfoEnquiry(29) version3(3)}
<b>callControlTransferContext-v4</b> OBJECT IDENTIFIER ::=
{map-ac callControlTransfer(6) version4(4)}
<b>ss-InvocationNotificationContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac ss-InvocationNotification(36) version3(3)}
<b>sIWFSAllocationContext-v3</b> OBJECT IDENTIFIER ::=
{map-ac sIWFSAllocation(12) version3(3)}

```
groupCallControlContext-v3 OBJECT IDENTIFIER ::=
    {map-ac groupCallControl(31) version3(3)}
```

```
gprsLocationUpdateContext-v3 OBJECT IDENTIFIER ::=
    {map-ac gprsLocationUpdate(32) version3(3)}
```

```
gprsLocationInfoRetrievalContext-v3 OBJECT IDENTIFIER ::=
    {map-ac gprsLocationInfoRetrieval(33) version3(3)}
```

```
failureReportContext-v3 OBJECT IDENTIFIER ::=
    {map-ac failureReport(34) version3(3)}
```

```
gprsNotifyContext-v3 OBJECT IDENTIFIER ::=
    {map-ac gprsNotify(35) version3(3)}
```

```
reportingContext-v3 OBJECT IDENTIFIER ::=
    {map-ac reporting(7) version3(3)}
```

```
callCompletionContext-v3 OBJECT IDENTIFIER ::=
    {map-ac callCompletion(8) version3(3)}
```

```
istAlertingContext-v3 OBJECT IDENTIFIER ::=
    {map-ac istAlerting(4) version3(3)}
```

```
serviceTerminationContext-v3 OBJECT IDENTIFIER ::=
    {map-ac immediateTermination(9) version3(3)}
```

```
locationSvcGatewayContext-v3 OBJECT IDENTIFIER ::=
    {map-ac locationSvcGateway(37) version3(3)}
```

```
locationSvcEnquiryContext-v3 OBJECT IDENTIFIER ::=
    {map-ac locationSvcEnquiry(38) version3(3)}
```

```
mm-EventReportingContext-v3 OBJECT IDENTIFIER ::=
    {map-ac mm-EventReporting(42) version3(3)}
```

```
anyTimeInfoHandlingContext-v3 OBJECT IDENTIFIER ::=
    {map-ac anyTimeInfoHandling(43) version3(3)}
```

```
subscriberDataModificationNotificationContext-v3 OBJECT IDENTIFIER ::=
    {map-ac subscriberDataModificationNotification(22) version3(3)}
```

```
-- The following Object Identifiers are reserved for application-  
-- contexts existing in previous versions of the protocol
```

AC Name & Version	Object Identifier	
-- networkLocUpContext-v1	map-ac networkLocUp (1)	version1 (1)
-- networkLocUpContext-v2	map-ac networkLocUp (1)	version2 (2)
-- locationCancellationContext-v1	map-ac locationCancellation (2)	version1 (1)
-- locationCancellationContext-v2	map-ac locationCancellation (2)	version2 (2)
-- roamingNumberEnquiryContext-v1	map-ac roamingNumberEnquiry (3)	version1 (1)
-- roamingNumberEnquiryContext-v2	map-ac roamingNumberEnquiry (3)	version2 (2)
-- locationInfoRetrievalContext-v1	map-ac locationInfoRetrieval (5)	version1 (1)
-- locationInfoRetrievalContext-v2	map-ac locationInfoRetrieval (5)	version2 (2)
-- resetContext-v1	map-ac reset (10)	version1 (1)
-- handoverControlContext-v1	map-ac handoverControl (11)	version1 (1)
-- equipmentMngtContext-v1	map-ac equipmentMngt (13)	version1 (1)
-- infoRetrievalContext-v1	map-ac infoRetrieval (14)	version1 (1)
-- infoRetrievalContext-v2	map-ac infoRetrieval (14)	version2 (2)
-- interVlInfoRetrievalContext-v2	map-ac interVlInfoRetrieval (15)	version2 (2)
-- subscriberDataMngtContext-v1	map-ac subscriberDataMngt (16)	version1 (1)
-- subscriberDataMngtContext-v2	map-ac subscriberDataMngt (16)	version2 (2)
-- tracingContext-v1	map-ac tracing (17)	version1 (1)
-- tracingContext-v2	map-ac tracing (17)	version2 (2)
-- networkFunctionalSsContext-v1	map-ac networkFunctionalSs (18)	version1 (1)
-- shortMsgGatewayContext-v1	map-ac shortMsgGateway (20)	version1 (1)
-- shortMsgGatewayContext-v2	map-ac shortMsgGateway (20)	version2 (2)
-- shortMsgRelayContext-v1	map-ac shortMsgRelay (21)	version1 (1)
-- shortMsgAlertContext-v1	map-ac shortMsgAlert (23)	version1 (1)
-- mwdMngtContext-v1	map-ac mwdMngt (24)	version1 (1)
-- mwdMngtContext-v2	map-ac mwdMngt (24)	version2 (2)
-- shortMsgMT-RelayContext-v2	map-ac shortMsgMT-Relay (25)	version2 (2)
-- msPurgingContext-v2	map-ac msPurging (27)	version2 (2)
-- callControlTransferContext-v3	map-ac callControlTransferContext (6)	version3 (3)
-- imsiRetrievalContext-v2	map-ac imsiRetrieval(26)	version2(2)}

END

**\*\*\* Next Modified Section \*\*\***

## 17.7.1 Mobile Service data types

```

1  MAP-MS-DataTypes {
2      ccitt identified-organization (4) etsi (0) mobileDomain (0)
3      gsm-Network (1) modules (3) map-MS-DataTypes (11) version6 (6)}
4
5  DEFINITIONS
6
7  IMPLICIT TAGS
8
9  ::=
10
11 BEGIN
12
13 EXPORTS
14
15     -- location registration types
16     UpdateLocationArg,
17     UpdateLocationRes,
18     CancelLocationArg,
19     CancelLocationRes,
20     PurgeMS-Arg,
21     PurgeMS-Res,
22     SendIdentificationArg,
23     SendIdentificationRes,
24     UpdateGprsLocationArg,
25     UpdateGprsLocationRes,
26     IST-SupportIndicator,
27
28
29     -- handover types
30     PrepareHO-Arg,
31     PrepareHO-Res,
32     PrepareSubsequentHO-Arg,
33
34     -- authentication management types
35     SendAuthenticationInfoArg,
36     SendAuthenticationInfoRes,
37

```

```

38 -- security management types
39 EquipmentStatus,
40 Kc,
41
42 -- subscriber management types
43 InsertSubscriberDataArg,
44 InsertSubscriberDataRes,
45 DeleteSubscriberDataArg,
46 DeleteSubscriberDataRes,
47 SubscriberData,
48 ODB-Data,
49 SubscriberStatus,
50 ZoneCodeList,
51 maxNumOfZoneCodes,
52 O-C SI,
53 D-C SI,
54 O-BcsmCamelTDPCriteriaList,
55 T-BCSM-CAMEL-TDP-CriteriaList,
56 SS-C SI,
57 ServiceKey,
58 DefaultCallHandling,
59 CamelCapabilityHandling,
60 BasicServiceCriteria,
61 SupportedCamelPhases,
62 maxNumOfCamelTDPData,
63 CUG-Index,
64 CUG-Interlock,
65 InterCUG-Restrictions,
66 IntraCUG-Options,
67 IST-AlertTimerValue,
68 T-C SI,
69 T-BcsmTriggerDetectionPoint,
70
71 -- fault recovery types
72 ResetArg,
73 RestoreDataArg,
74 RestoreDataRes,
75
76 -- subscriber information enquiry types
77 ProvideSubscriberInfoArg,
78 ProvideSubscriberInfoRes,
79 SubscriberInfo,
80 LocationInformation,
81 SubscriberState,
82
83 -- any time information enquiry types
84 AnyTimeInterrogationArg,
85 AnyTimeInterrogationRes,
86
87 -- any time information handling types
88 AnyTimeSubscriptionInterrogationArg,
89 AnyTimeSubscriptionInterrogationRes,
90 AnyTimeModificationArg,
91 AnyTimeModificationRes,
92
93 -- subscriber data modification notification types
94 NoteSubscriberDataModifiedArg,
95 NoteSubscriberDataModifiedRes,
96
97 -- gprs location information retrieval types
98 SendRoutingInfoForGprsArg,
99 SendRoutingInfoForGprsRes,
100
101 -- failure reporting types
102 FailureReportArg,
103 FailureReportRes,
104
105 -- gprs notification types
106 NoteMsPresentForGprsArg,
107 NoteMsPresentForGprsRes,
108
109 -- Mobility Management types
110 NoteMM-EventArg,
111 NoteMM-EventRes
112
113
114
115 ;
116

```

```

117 IMPORTS
118     maxNumOfSS,
119     SS-SubscriptionOption,
120     SS-List,
121     SS-ForBS-Code,
122     Password
123 FROM MAP-SS-DataTypes {
124     ccitt identified-organization (4) etsi (0) mobileDomain (0)
125     gsm-Network (1) modules (3) map-SS-DataTypes (14) version6 (6)}
126
127     SS-Code
128 FROM MAP-SS-Code {
129     ccitt identified-organization (4) etsi (0) mobileDomain (0)
130     gsm-Network (1) modules (3) map-SS-Code (15) version6 (6)}
131
132     Ext-BearerServiceCode
133 FROM MAP-BS-Code {
134     ccitt identified-organization (4) etsi (0) mobileDomain (0)
135     gsm-Network (1) modules (3) map-BS-Code (20) version6 (6)}
136
137     Ext-TeleserviceCode
138 FROM MAP-TS-Code {
139     ccitt identified-organization (4) etsi (0) mobileDomain (0)
140     gsm-Network (1) modules (3) map-TS-Code (19) version6 (6)}
141
142
143     AddressString,
144     ISDN-AddressString,
145     ISDN-SubaddressString,
146     ExternalSignalInfo,
147     IMSI,
148     TMSI,
149     TEMSI,
150     HLR-List,
151     LMSI,
152     Identity,
153     GlobalCellId,
154     CellIdOrLAI,
155     Ext-BasicServiceCode,
156     NAEA-PreferredCI,
157     EMLPP-Info,
158     SubscriberIdentity,
159     AgeOfLocationInformation,
160     LCSClientExternalID,
161     LCSClientInternalID
162
163
164
165 FROM MAP-CommonDataTypes {
166     ccitt identified-organization (4) etsi (0) mobileDomain (0)
167     gsm-Network (1) modules (3) map-CommonDataTypes (18) version6 (6)}
168
169     ExtensionContainer
170 FROM MAP-ExtensionDataTypes {
171     ccitt identified-organization (4) etsi (0) mobileDomain (0)
172     gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version6 (6)}
173
174     AbsentSubscriberDiagnosticSM
175 FROM MAP-ER-DataTypes {
176     ccitt identified-organization (4) etsi (0) mobileDomain (0)
177     gsm-Network (1) modules (3) map-ER-DataTypes (17) version6 (6)}
178
179
180 ;
181
182
183 -- location registration types
184
185 UpdateLocationArg ::= SEQUENCE {
186     imsi                IMSI,
187
188     msc-Number          [1] ISDN-AddressString,
189     vlr-Number          ISDN-AddressString,
190     lmsi                [10] LMSI OPTIONAL,
191     extensionContainer  ExtensionContainer OPTIONAL,
192     ... ,
193     vlr-Capability     [6] VLR-Capability OPTIONAL }
194

```

```

195 VLR-Capability ::= SEQUENCE{
196     supportedCamelPhases      [0] SupportedCamelPhases      OPTIONAL,
197     extensionContainer        ExtensionContainer        OPTIONAL,
198     ... ,
199     solsaSupportIndicator     [2] NULL                      OPTIONAL,
200     istSupportIndicator       [1] IST-SupportIndicator    OPTIONAL,
201     superChargerSupportedInServingNetworkEntity [3] SuperChargerInfo    OPTIONAL }
202
203 SuperChargerInfo ::= CHOICE {
204     sendSubscriberData        [0] NULL,
205     subscriberDataStored     [1] AgeIndicator }
206
207 AgeIndicator ::= OCTET STRING (SIZE (1..6))
208     -- The internal structure of this parameter is implementation specific.
209
210
211 IST-SupportIndicator ::= ENUMERATED {
212     basicISTSupported         (0),
213     istCommandSupported      (1), ...}
214 -- exception handling:
215 -- reception of values > 1 shall be mapped to ' istCommandSupported '
216
217
218 UpdateLocationRes ::= SEQUENCE {
219     hlr-Number                ISDN-AddressString,
220     extensionContainer        ExtensionContainer        OPTIONAL,
221     ... }
222
223
224 CancelLocationArg ::= [3] SEQUENCE {
225     identity                  Identity,
226     cancellationType          CancellationType        OPTIONAL,
227     extensionContainer        ExtensionContainer        OPTIONAL,
228     ...}
229
230
231 CancellationType ::= ENUMERATED {
232     updateProcedure           (0),
233     subscriptionWithdraw      (1),
234     ...}
235 -- The HLR shall not send values other than listed above
236
237
238 CancelLocationRes ::= SEQUENCE {
239     extensionContainer        ExtensionContainer        OPTIONAL,
240     ...}
241
242 PurgeMS-Arg ::= [3] SEQUENCE {
243     imsi                     IMSI,
244     vlr-Number               [0] ISDN-AddressString    OPTIONAL,
245     sgsn-Number              [1] ISDN-AddressString    OPTIONAL,
246     extensionContainer        ExtensionContainer        OPTIONAL,
247     ...}
248
249 PurgeMS-Res ::= SEQUENCE {
250     freezeTMSI               [0] NULL                OPTIONAL,
251     freezeP-TMSI             [1] NULL                OPTIONAL,
252     extensionContainer        ExtensionContainer        OPTIONAL,
253     ...}
254
255 SendIdentificationArg ::= SEQUENCE {
256     tmsi                     TMSI,
257     numberOfRequestedVectors  NumberOfRequestedVectors,
258     segmentationProhibited   NULL                      OPTIONAL,
259     -- if segmentation is prohibited the previous VLR shall not send the result
260     -- within a TC-CONTINUE message.
261     extensionContainer        ExtensionContainer        OPTIONAL,
262     ...}
263

```



```

264 SendIdentificationRes ::= [3] SEQUENCE {
265     imsi                IMSI                OPTIONAL,
266     -- IMSI must be present if SendIdentificationRes is not segmented.
267     -- If the TC-Continue segmentation option is taken the IMSI must be
268     -- present in one segmented transmission of SendIdentificationRes.
269     temsi               [0] TEMSI           OPTIONAL,
270     authenticationSetList [1] AuthenticationSetList OPTIONAL,
271     extensionContainer  [2] ExtensionContainer OPTIONAL,
272     ...}
273
274 AuthenticationSetList ::= CHOICE {
275     tripletList         [0] TripletList,
276     quintupletList     [1] QuintupletList }
277
278 TripletList ::= SEQUENCE SIZE (1..5) OF
279     AuthenticationTriplet
280
281 QuintupletList ::= SEQUENCE SIZE (1..5) OF
282     AuthenticationQuintuplet
283
284 AuthenticationTriplet ::= SEQUENCE {
285     rand                RAND,
286     sres                SRES,
287     kc                  Kc,
288     ...}
289
290 AuthenticationQuintuplet ::= SEQUENCE {
291     rand                RAND,
292     xres                XRES,
293     ck                  CK,
294     ik                  IK,
295     autn                AUTN,
296     ...}
297
298 RAND ::= OCTET STRING (SIZE (16))
299
300 SRES ::= OCTET STRING (SIZE (4))
301
302 Kc ::= OCTET STRING (SIZE (8))
303
304 XRES ::= OCTET STRING (SIZE (4..16))
305
306 CK ::= OCTET STRING (SIZE (16))
307
308 IK ::= OCTET STRING (SIZE (16))
309
310 AUTN ::= OCTET STRING (SIZE (14..18))
311
312 AUTS ::= OCTET STRING (SIZE (12..16))
313
314 -- gprs location registration types
315
316 UpdateGprsLocationArg ::= SEQUENCE {
317     imsi                IMSI,
318     sgsn-Number         ISDN-AddressString,
319     sgsn-Address        GSN-Address,
320     extensionContainer  ExtensionContainer    OPTIONAL,
321     ... ,
322     sgsn-Capability    [0] SGSN-Capability  OPTIONAL }
323
324 SGSN-Capability ::= SEQUENCE{
325     solsaSupportIndicator NULL                OPTIONAL,
326     extensionContainer    [1] ExtensionContainer OPTIONAL,
327     ... ,
328     superChargerSupportedInServingNetworkEntity [2] SuperChargerInfo OPTIONAL,
329     gprsEnhancementsSupportIndicator [3] NULL    OPTIONAL,
330     supportedCamelPhases [4] SupportedCamelPhases OPTIONAL }
331
332 GSN-Address ::= OCTET STRING (SIZE (5..17))
333     -- Octets are coded according to TS GSM 03.03
334
335 UpdateGprsLocationRes ::= SEQUENCE {
336     hlr-Number           ISDN-AddressString,
337     extensionContainer  ExtensionContainer    OPTIONAL,
338     ...}
339

```

```

340 -- handover types
341
342 PrepareHO-Arg ::= SEQUENCE {
343     targetCellId                GlobalCellId                OPTIONAL,
344     ho-NumberNotRequired        NULL                    OPTIONAL,
345     bss-APDU                    ExternalSignalInfo        OPTIONAL,
346     ...}
347
348 PrepareHO-Res ::= SEQUENCE {
349     handoverNumber              ISDN-AddressString        OPTIONAL,
350     bss-APDU                    ExternalSignalInfo        OPTIONAL,
351     ...}
352
353 PrepareSubsequentHO-Arg ::= SEQUENCE {
354     targetCellId                GlobalCellId,
355     targetMSC-Number            ISDN-AddressString,
356     bss-APDU                    ExternalSignalInfo,
357     ...}
358
359 -- authentication management types
360
361 SendAuthenticationInfoArg ::= SEQUENCE {
362     imsi                        [0] IMSI,
363     numberOfRequestedVectors    NumberOfRequestedVectors,
364     segmentationProhibited     NULL                    OPTIONAL,
365     -- if segmentation is prohibited the HLR shall not send the result within
366     -- a TC-CONTINUE message.
367     immediateResponsePreferred [1] NULL                    OPTIONAL,
368     -- if present, the HLR may send an immediate response with the available authentication
369     -- vectors (see § 8.5.2 for more information).
370     re-synchronisationInfo     Re-synchronisationInfo    OPTIONAL,
371     extensionContainer          [2] ExtensionContainer    OPTIONAL,
372     ...}
373
374 NumberOfRequestedVectors ::= INTEGER (1..5)
375
376 Re-synchronisationInfo ::= SEQUENCE {
377     rand                        RAND,
378     rand-ms                    RAND,
379     auts                       AUTS,
380     ...}
381
382 SendAuthenticationInfoRes ::= [3] SEQUENCE {
383     authenticationSetList       AuthenticationSetList    OPTIONAL,
384     extensionContainer          ExtensionContainer        OPTIONAL,
385     ...}
386
387
388 -- security management types
389
390 EquipmentStatus ::= ENUMERATED {
391     whiteListed (0),
392     blackListed (1),
393     greyListed (2)}
394
395
396 -- subscriber management types
397

```

```

398 InsertSubscriberDataArg ::= SEQUENCE {
399     imsi [0] IMSI OPTIONAL,
400     COMPONENTS OF SubscriberData,
401     extensionContainer [14] ExtensionContainer OPTIONAL,
402     ... ,
403     naea-PreferredCI [15] NAEA-PreferredCI OPTIONAL,
404     -- naea-PreferredCI is included at the discretion of the HLR operator.
405     gprsSubscriptionData [16] GPRSSubscriptionData OPTIONAL,
406     roamingRestrictedInSgsnDueToUnsupportedFeature [23] NULL
407     OPTIONAL,
408     networkAccessMode [24] NetworkAccessMode OPTIONAL,
409     lsaInformation [25] LSAInformation OPTIONAL,
410     lmu-Indicator [21] NULL OPTIONAL,
411     lcsInformation [22] LCSInformation OPTIONAL,
412     istAlertTimer [26] IST-AlertTimerValue OPTIONAL,
413     superChargerSupportedInHLR [27] AgeIndicator OPTIONAL
414 }
415 -- If the Network Access Mode parameter is sent, it shall be present only in
416 -- the first sequence if the segmentation is used

```

```

418 IST-AlertTimerValue ::= INTEGER (15..255)

```

```

420 LCSInformation ::= SEQUENCE {
421     gmlc-List [0] GMLC-List OPTIONAL,
422     lcs-PrivacyExceptionList [1] LCS-PrivacyExceptionList OPTIONAL,
423     molr-List [2] MOLR-List OPTIONAL,
424     ... }

```

```

426 GMLC-List ::= SEQUENCE SIZE (1..maxNumOfGMLC) OF
427     ISDN-AddressString
428 -- if segmentation is used, the complete GMLC-List shall be sent in one segment

```

```

430 maxNumOfGMLC INTEGER ::= 5

```

```

433 NetworkAccessMode ::= ENUMERATED {
434     bothMSCAndSGSN (0),
435     onlyMSC (1),
436     onlySGSN (2),
437     ... }
438 -- if unknown values are received in NetworkAccessMode
439 -- they shall be discarded.

```

```

441 GPRSDataList ::= SEQUENCE SIZE (1..maxNumOfPDP-Contexts) OF
442     PDP-Context

```

```

444 maxNumOfPDP-Contexts INTEGER ::= 50

```

```

446 PDP-Context ::= SEQUENCE {
447     pdp-ContextId ContextId,
448     pdp-Type [16] PDP-Type,
449     pdp-Address [17] PDP-Address OPTIONAL,
450     qos-Subscribed [18] QoS-Subscribed,
451     vplmnAddressAllowed [19] NULL OPTIONAL,
452     apn [20] APN ,
453     extensionContainer [21] ExtensionContainer OPTIONAL,
454     ... ,
455     ext-QoS-Subscribed [0] Ext-QoS-Subscribed OPTIONAL }
456 -- qos-Subscribed shall be discarded if ext-QoS-Subscribed is received and supported

```

```

458 ContextId ::= INTEGER (1..maxNumOfPDP-Contexts)

```

```

460 GPRSSubscriptionData ::= SEQUENCE {
461     completeDataListIncluded NULL OPTIONAL,
462     -- If segmentation is used, completeDataListIncluded may only be present in the
463     -- first segment.
464     gprsDataList [1] GPRSDataList,
465     extensionContainer [2] ExtensionContainer OPTIONAL,
466     ... ,
467     sgsn-CAMEL-SubscriptionInfo [3] SGSN-CAMEL-SubscriptionInfo OPTIONAL }

```

```

470 SGSN-CAMEL-SubscriptionInfo ::= SEQUENCE {
471     gprs-CSI [0] GPRS-CSI OPTIONAL,
472     sms-CSI [1] SMS-CSI OPTIONAL,
473     extensionContainer [2] ExtensionContainer OPTIONAL,
474     ... }
475
476 GPRS-CSI ::= SEQUENCE {
477     gprs-CamelTDPDataList [0] GPRS-CamelTDPDataList,
478     camelCapabilityHandling [1] CamelCapabilityHandling,
479     extensionContainer [2] ExtensionContainer OPTIONAL,
480     notificationToCSE [3] NULL OPTIONAL,
481     csiActive [4] NULL OPTIONAL,
482     ... }
483 -- notificationToCSE and csiActive shall not be present when GPRS-CSI is sent to SGSN.
484 -- They may only be included in ATSI/ATM Ack message.
485
486 GPRS-CamelTDPDataList ::= SEQUENCE SIZE (1..maxNumOfCamelTDPData) OF
487     GPRS-CamelTDPData
488 -- GPRS-CamelTDPDataList shall not contain more than one instance of
489 -- GPRS-CamelTDPData containing the same value for gprs-TriggerDetectionPoint.
490
491 GPRS-CamelTDPData ::= SEQUENCE {
492     gprs-TriggerDetectionPoint [0] GPRS-TriggerDetectionPoint,
493     serviceKey [1] ServiceKey,
494     gsmSCF-Address [2] ISDN-AddressString,
495     defaultSessionHandling [3] DefaultGPRS-Handling,
496     extensionContainer [4] ExtensionContainer OPTIONAL,
497     ...
498 }
499
500 DefaultGPRS-Handling ::= ENUMERATED {
501     continueTransaction (0) ,
502     releaseTransaction (1) ,
503     ... }
504 -- exception handling:
505 -- reception of values in range 2-31 shall be treated as "continueTransaction"
506 -- reception of values greater than 31 shall be treated as "releaseTransaction"
507
508 GPRS-TriggerDetectionPoint ::= ENUMERATED {
509     attach (1),
510     attachChangeOfPosition (2),
511     pdp-ContextEstablishment (11),
512     pdp-ContextEstablishmentAcknowledgement (12),
513     pdp-ContextChangeOfPosition (14),
514     ... }
515 -- exception handling:
516 -- For GPRS-CamelTDPData sequences containing this parameter with any
517 -- other value than the ones listed the receiver shall ignore the whole
518 -- GPRS-CamelTDPData sequence.
519
520 APN ::= OCTET STRING (SIZE (2..63))
521 -- Octets are coded according to TS GSM 03.03
522
523
524 PDP-Type ::= OCTET STRING (SIZE (2))
525 -- Octets are coded according to TS GSM 09.60
526
527 PDP-Address ::= OCTET STRING (SIZE (1..16))
528 -- Octets are coded according to TS GSM 09.60
529
530 -- The possible size values are:
531 -- 1-7 octets X.25 address type
532 -- 4 octets IPv4 address type
533 -- 16 octets IPv6 address type
534
535 QoS-Subscribed ::= OCTET STRING (SIZE (3))
536 -- Octets are coded according to TS GSM 04.08.
537
538 Ext-QoS-Subscribed ::= OCTET STRING (SIZE (3..15))
539 -- Octets are coded according to 3G TS 24.008.
540

```

```

541 LSAOnlyAccessIndicator ::= ENUMERATED {
542     accessOutsideLSAsAllowed (0),
543     accessOutsideLSAsRestricted (1)}
544
545 LSADataList ::= SEQUENCE SIZE (1..maxNumOfLSAs) OF
546     LSAData
547
548 maxNumOfLSAs INTEGER ::= 20
549
550 LSAData ::= SEQUENCE {
551     lsaIdentity [0] LSAIdentity,
552     lsaPriority [1] LSAPriority,
553     lsaActiveModeIndicator [2] NULL OPTIONAL,
554     lsaActiveModeSupportIndicator [3] NULL OPTIONAL,
555     extensionContainer [4] ExtensionContainer OPTIONAL,
556     ...}
557
558 LSAInformation ::= SEQUENCE {
559     completeDataListIncluded NULL OPTIONAL,
560     -- If segmentation is used, completeDataListIncluded may only be present in the
561     -- first segment.
562     lsaOnlyAccessIndicator [1] LSAOnlyAccessIndicator OPTIONAL,
563     lsaDataList [2] LSADataList OPTIONAL,
564     extensionContainer [3] ExtensionContainer OPTIONAL,
565     ...}
566
567
568 LSAIdentity ::= OCTET STRING (SIZE (3))
569 -- Octets are coded according to TS GSM 03.03
570
571 LSAPriority ::= OCTET STRING (SIZE (1))
572 -- Octets are coded according to TS GSM 08.08
573
574
575 SubscriberData ::= SEQUENCE {
576     msisdn [1] ISDN-AddressString OPTIONAL,
577     category [2] Category OPTIONAL,
578     subscriberStatus [3] SubscriberStatus OPTIONAL,
579     bearerServiceList [4] BearerServiceList OPTIONAL,
580     -- The exception handling for reception of unsupported / not allocated
581     -- bearerServiceCodes is defined in section 6.8.1
582     teleserviceList [6] TeleserviceList OPTIONAL,
583     -- The exception handling for reception of unsupported / not allocated
584     -- teleserviceCodes is defined in section 6.8.1
585     provisionedSS [7] Ext-SS-InfoList OPTIONAL,
586     odb-Data [8] ODB-Data OPTIONAL,
587     roamingRestrictionDueToUnsupportedFeature [9] NULL OPTIONAL,
588     regionalSubscriptionData [10] ZoneCodeList OPTIONAL,
589     vbsSubscriptionData [11] VBSDataList OPTIONAL,
590     vgcsSubscriptionData [12] VGCSDataList OPTIONAL,
591     vlrCamelSubscriptionInfo [13] VlrCamelSubscriptionInfo OPTIONAL,
592     }
593
594 Category ::= OCTET STRING (SIZE (1))
595 -- The internal structure is defined in CCITT Rec Q.763.
596
597 SubscriberStatus ::= ENUMERATED {
598     serviceGranted (0),
599     operatorDeterminedBarring (1)}
600
601 BearerServiceList ::= SEQUENCE SIZE (1..maxNumOfBearerServices) OF
602     Ext-BearerServiceCode
603
604 maxNumOfBearerServices INTEGER ::= 50
605
606 TeleserviceList ::= SEQUENCE SIZE (1..maxNumOfTeleservices) OF
607     Ext-TeleserviceCode
608
609 maxNumOfTeleservices INTEGER ::= 20
610
611 ODB-Data ::= SEQUENCE {
612     odb-GeneralData ODB-GeneralData,
613     odb-HPLMN-Data ODB-HPLMN-Data OPTIONAL,
614     extensionContainer ExtensionContainer OPTIONAL,
615     ...}
616

```

```

617 ODB-GeneralData ::= BIT STRING {
618     alIog-CallsBarred (0),
619     internationalOGCallsBarred (1),
620     internationalOGCallsNotToHPLMN-CountryBarred (2),
621     interzonalOGCallsBarred (6),
622     interzonalOGCallsNotToHPLMN-CountryBarred (7),
623     interzonalOGCallsAndInternationalOGCallsNotToHPLMN-CountryBarred (8),
624     premiumRateInformationOGCallsBarred (3),
625     premiumRateEntertainmentOGCallsBarred (4),
626     ss-AccessBarred (5),
627     allECT-Barred (9),
628     chargeableECT-Barred (10),
629     internationalECT-Barred (11),
630     interzonalECT-Barred (12),
631     doublyChargeableECT-Barred (13),
632     multipleECT-Barred (14)} (SIZE (15..32))
633 -- exception handling: reception of unknown bit assignments in the
634 -- ODB-GeneralData type shall be treated like unsupported ODB-GeneralData
635
636 ODB-HPLMN-Data ::= BIT STRING {
637     plmn-SpecificBarringType1 (0),
638     plmn-SpecificBarringType2 (1),
639     plmn-SpecificBarringType3 (2),
640     plmn-SpecificBarringType4 (3)} (SIZE (4..32))
641 -- exception handling: reception of unknown bit assignments in the
642 -- ODB-HPLMN-Data type shall be treated like unsupported ODB-HPLMN-Data
643
644 Ext-SS-InfoList ::= SEQUENCE SIZE (1..maxNumOfSS) OF
645     Ext-SS-Info
646
647 Ext-SS-Info ::= CHOICE {
648     forwardingInfo [0] Ext-ForwInfo,
649     callBarringInfo [1] Ext-CallBarInfo,
650     cug-Info [2] CUG-Info,
651     ss-Data [3] Ext-SS-Data,
652     emlpp-Info [4] EMLPP-Info}
653
654
655 Ext-ForwInfo ::= SEQUENCE {
656     ss-Code SS-Code,
657     forwardingFeatureList Ext-ForwFeatureList,
658     extensionContainer [0] ExtensionContainer OPTIONAL,
659     ...}
660
661 Ext-ForwFeatureList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
662     Ext-ForwFeature
663
664 Ext-ForwFeature ::= SEQUENCE {
665     basicService Ext-BasicServiceCode OPTIONAL,
666     ss-Status [4] Ext-SS-Status,
667     forwardedToNumber [5] ISDN-AddressString OPTIONAL,
668     -- When this data type is sent from an HLR which supports CAMEL Phase 2
669     -- to a VLR that supports CAMEL Phase 2 the VLR shall not check the
670     -- format of the number
671     forwardedToSubaddress [8] ISDN-SubaddressString OPTIONAL,
672     forwardingOptions [6] Ext-ForwOptions OPTIONAL,
673     noReplyConditionTime [7] Ext-NoRepCondTime OPTIONAL,
674     extensionContainer [9] ExtensionContainer OPTIONAL,
675     ...}
676
677 Ext-SS-Status ::= OCTET STRING (SIZE (1..5))
678
679 -- OCTET 1:
680 --
681 -- bits 8765: 0000 (unused)
682 -- bits 4321: Used to convey the "P bit", "R bit", "A bit" and "Q bit",
683 -- representing supplementary service state information
684 -- as defined in TS GSM 03.11
685
686 -- bit 4: "Q bit"
687
688 -- bit 3: "P bit"
689
690 -- bit 2: "R bit"
691
692 -- bit 1: "A bit"
693
694 -- OCTETS 2-5: reserved for future use. They shall be discarded if

```

```

695 | -- received and not understood.
696 |
697 |
698 | Ext-ForwOptions ::= OCTET STRING (SIZE (1..5))
699 |
700 |   -- OCTET 1:
701 |
702 |   -- bit 8: notification to forwarding party
703 |   -- 0 no notification
704 |   -- 1 notification
705 |
706 |   -- bit 7: redirecting presentation
707 |   -- 0 no presentation
708 |   -- 1 presentation
709 |
710 |   -- bit 6: notification to calling party
711 |   -- 0 no notification
712 |   -- 1 notification
713 |
714 |   -- bit 5: 0 (unused)
715 |
716 |   -- bits 43: forwarding reason
717 |   -- 00 ms not reachable
718 |   -- 01 ms busy
719 |   -- 10 no reply
720 |   -- 11 unconditional
721 |
722 |   -- bits 21: 00 (unused)
723 |
724 |   -- OCTETS 2-5: reserved for future use. They shall be discarded if
725 |   -- received and not understood.
726 |
727 | Ext-NoRepCondTime ::= INTEGER (1..100)
728 |   -- Only values 5-30 are used.
729 |   -- Values in the ranges 1-4 and 31-100 are reserved for future use
730 |   -- If received:
731 |   --     values 1-4 shall be mapped on to value 5
732 |   --     values 31-100 shall be mapped on to value 30
733 |
734 | Ext-CallBarInfo ::= SEQUENCE {
735 |   ss-Code                               SS-Code,
736 |   callBarringFeatureList                Ext-CallBarFeatureList,
737 |   extensionContainer                     ExtensionContainer           OPTIONAL,
738 |   ...}
739 |
740 | Ext-CallBarFeatureList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
741 |   Ext-CallBarringFeature
742 |
743 | Ext-CallBarringFeature ::= SEQUENCE {
744 |   basicService                           Ext-BasicServiceCode           OPTIONAL,
745 |   ss-Status [4] Ext-SS-Status,
746 |   extensionContainer                     ExtensionContainer             OPTIONAL,
747 |   ...}
748 |
749 | CUG-Info ::= SEQUENCE {
750 |   cug-SubscriptionList                   CUG-SubscriptionList,
751 |   cug-FeatureList                        CUG-FeatureList
752 |   extensionContainer                     [0] ExtensionContainer        OPTIONAL,
753 |   ...}
754 |
755 | CUG-SubscriptionList ::= SEQUENCE SIZE (0..maxNumOfCUG) OF
756 |   CUG-Subscription
757 |
758 | CUG-Subscription ::= SEQUENCE {
759 |   cug-Index CUG-Index,
760 |   cug-Interlock                          CUG-Interlock,
761 |   intraCUG-Options                       IntraCUG-Options,
762 |   basicServiceGroupList                  Ext-BasicServiceGroupList     OPTIONAL,
763 |   extensionContainer                     [0] ExtensionContainer        OPTIONAL,
764 |   ...}
765 |
766 | CUG-Index ::= INTEGER (0..32767)
767 |   -- The internal structure is defined in ETS 300 138.
768 |
769 | CUG-Interlock ::= OCTET STRING (SIZE (4))
770 |

```

```

771 IntraCUG-Options ::= ENUMERATED {
772     noCUG-Restrictions (0),
773     cugIC-CallBarred (1),
774     cugOG-CallBarred (2)}
775
776 maxNumOfCUG INTEGER ::= 10
777
778 CUG-FeatureList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
779     CUG-Feature
780
781 Ext-BasicServiceGroupList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
782     Ext-BasicServiceCode
783
784 maxNumOfExt-BasicServiceGroups INTEGER ::= 32
785
786 CUG-Feature ::= SEQUENCE {
787     basicService                Ext-BasicServiceCode                OPTIONAL,
788     preferentialCUG-Indicator   CUG-Index OPTIONAL,
789     interCUG-Restrictions       InterCUG-Restrictions,
790     extensionContainer          ExtensionContainer                OPTIONAL,
791     ...}
792
793 InterCUG-Restrictions ::= OCTET STRING (SIZE (1))
794
795     -- bits 876543: 000000 (unused)
796     -- Exception handling:
797     -- bits 876543 shall be ignored if received and not understood
798
799     -- bits 21
800     -- 00 CUG only facilities
801     -- 01 CUG with outgoing access
802     -- 10 CUG with incoming access
803     -- 11 CUG with both outgoing and incoming access
804
805 Ext-SS-Data ::= SEQUENCE {
806     ss-Code                SS-Code,
807     ss-Status [4] Ext-SS-Status,
808     ss-SubscriptionOption  SS-SubscriptionOption                OPTIONAL,
809     basicServiceGroupList  Ext-BasicServiceGroupList            OPTIONAL,
810     extensionContainer      [5] ExtensionContainer                OPTIONAL,
811     ...}
812
813 LCS-PrivacyExceptionList ::= SEQUENCE SIZE (1..maxNumOfPrivacyClass) OF
814     LCS-PrivacyClass
815
816 maxNumOfPrivacyClass INTEGER ::= 4
817
818 LCS-PrivacyClass ::= SEQUENCE {
819     ss-Code                SS-Code,
820     ss-Status              Ext-SS-Status,
821     privacyVerificationByMSuser [0] NULL                OPTIONAL,
822     -- privacyVerificationByMSuser is expected only for SS-code = callunrelated
823     externalClientList     [1] ExternalClientList        OPTIONAL,
824     -- externalClientList is expected only for SS-code = callunrelated
825     plmnClientList         [2] PLMNClientList            OPTIONAL,
826     -- plmnClientList is expected only for SS-code = plmn
827     extensionContainer      [3] ExtensionContainer        OPTIONAL,
828     -- if segmentation is used, the complete LCS-PrivacyClass shall be sent in one segment
829     ...}
830
831 ExternalClientList ::= SEQUENCE SIZE (0..maxNumOfExternalClient) OF
832     ExternalClient
833
834 maxNumOfExternalClient INTEGER ::= 5
835
836 PLMNClientList ::= SEQUENCE SIZE (1..maxNumOfPLMNClient) OF
837     LCSCClientInternalID
838
839 maxNumOfPLMNClient INTEGER ::= 5
840

```



```

841 ExternalClient ::= SEQUENCE {
842     clientIdentity          LCSClientExternalID,
843     gmlc-Restriction        [0] GMLC-Restriction          OPTIONAL,
844     notificationToMSUser    [1] NotificationToMSUser      OPTIONAL,
845     extensionContainer       [2] ExtensionContainer        OPTIONAL,
846     ... }
847
848 GMLC-Restriction ::= ENUMERATED {
849     gmlc-List                (0),
850     home-Country             (1)}
851
852 NotificationToMSUser ::= ENUMERATED {
853     notification              (0),
854     notificationWithPrivacyVerification (1)}
855
856 MOLR-List ::= SEQUENCE SIZE (1..maxNumOfMOLR-Class) OF
857     MOLR-Class
858
859 maxNumOfMOLR-Class INTEGER ::= 3
860
861 MOLR-Class ::= SEQUENCE {
862     ss-Code                  SS-Code,
863     ss-Status                Ext-SS-Status,
864     extensionContainer        [0] ExtensionContainer        OPTIONAL,
865     ...}
866
867 ZoneCodeList ::= SEQUENCE SIZE (1..maxNumOfZoneCodes)
868     OF ZoneCode
869
870 ZoneCode ::= OCTET STRING (SIZE (2))
871     -- internal structure is defined in TS GSM 03.03
872
873 maxNumOfZoneCodes INTEGER ::= 10
874
875 InsertSubscriberDataRes ::= SEQUENCE {
876     teleserviceList          [1] TeleserviceList            OPTIONAL,
877     bearerServiceList        [2] BearerServiceList          OPTIONAL,
878     ss-List                  [3] SS-List                    OPTIONAL,
879     odb-GeneralData          [4] ODB-GeneralData            OPTIONAL,
880     regionalSubscriptionResponse [5]
881         RegionalSubscriptionResponse OPTIONAL,
882     supportedCamelPhases     [6] SupportedCamelPhases        OPTIONAL,
883     extensionContainer        [7] ExtensionContainer        OPTIONAL,
884     ...}
885
886 RegionalSubscriptionResponse ::= ENUMERATED {
887     networkNode-AreaRestricted (0),
888     tooManyZoneCodes          (1),
889     zoneCodesConflict          (2),
890     regionalSubscNotSupported (3)}
891
892 DeleteSubscriberDataArg ::= SEQUENCE {
893     imsi                     [0] IMSI,
894     basicServiceList         [1] BasicServiceList            OPTIONAL,
895     -- The exception handling for reception of unsupported/not allocated
896     -- basicServiceCodes is defined in section 6.8.2
897     ss-List                  [2] SS-List                    OPTIONAL,
898     roamingRestrictionDueToUnsupportedFeature [4] NULL          OPTIONAL,
899     regionalSubscriptionIdentifier [5] ZoneCode              OPTIONAL,
900     vbsGroupIndication        [7] NULL                      OPTIONAL,
901     vgcsGroupIndication       [8] NULL OPTIONAL,
902     camelSubscriptionInfoWithdraw [9] NULL OPTIONAL,
903     extensionContainer        [6] ExtensionContainer OPTIONAL,
904     ...,
905     gprsSubscriptionDataWithdraw [10] GPRSSubscriptionDataWithdraw OPTIONAL,
906     roamingRestrictedInSgsnDueToUnsupportedFeature [11] NULL          OPTIONAL,
907     lsaInformationWithdraw     [12] LSAInformationWithdraw    OPTIONAL,
908     gmlc-ListWithdraw          [13] NULL                      OPTIONAL,
909     istInformationWithdraw     [14] NULL                      OPTIONAL }
910
911 GPRSSubscriptionDataWithdraw ::= CHOICE {
912     allGPRSData              NULL,
913     contextIdList            ContextIdList}
914
915 ContextIdList ::= SEQUENCE SIZE (1..maxNumOfPDP-Contexts) OF
916     ContextId
917

```

```

918 LSAInformationWithdraw ::= CHOICE {
919     allLSAData                NULL,
920     lsaIdentityList           LSAIdentityList }
921
922 LSAIdentityList ::= SEQUENCE SIZE (1..maxNumOfLSAs) OF
923     LSAIdentity
924
925 BasicServiceList ::= SEQUENCE SIZE (1..maxNumOfBasicServices) OF
926     Ext-BasicServiceCode
927
928 maxNumOfBasicServices INTEGER ::= 70
929
930 DeleteSubscriberDataRes ::= SEQUENCE {
931     regionalSubscriptionResponse [0]
932     regionalSubscriptionResponse RegionalSubscriptionResponse OPTIONAL,
933     extensionContainer           ExtensionContainer           OPTIONAL,
934     ...}
935
936 VlrCamelSubscriptionInfo ::= SEQUENCE {
937     o-CSI [0] O-CSI OPTIONAL,
938     extensionContainer [1] ExtensionContainer OPTIONAL,
939     ...,
940     ss-CSI [2] SS-CSI OPTIONAL,
941     o-BcsmCamelTDP-CriteriaList [4] O-BcsmCamelTDPCriteriaList OPTIONAL,
942     tif-CSI [3] NULL OPTIONAL,
943     m-CSI [5] M-CSI OPTIONAL,
944     sms-CSI [6] SMS-CSI OPTIONAL,
945     vt-CSI [7] T-CSI OPTIONAL,
946     t-BCSM-CAMEL-TDP-CriteriaList [8] T-BCSM-CAMEL-TDP-CriteriaList OPTIONAL,
947     d-CSI [9] D-CSI OPTIONAL
948 }
949
950 D-CSI ::= SEQUENCE {
951     dp-AnalysedInfoCriteriaList DP-AnalysedInfoCriteriaList,
952     camelCapabilityHandling      CamelCapabilityHandling,
953     extensionContainer           ExtensionContainer           OPTIONAL,
954     ...}
955
956 DP-AnalysedInfoCriteriaList ::= SEQUENCE SIZE (1..maxNumOfDP-AnalysedInfoCriteria) OF
957     DP-AnalysedInfoCriterium
958
959 maxNumOfDP-AnalysedInfoCriteria INTEGER ::= 10
960
961 DP-AnalysedInfoCriterium ::= SEQUENCE {
962     dialledNumber ISDN-AddressString,
963     serviceKey    ServiceKey,
964     gsmSCF-Address ISDN-AddressString,
965     defaultCallHandling DefaultCallHandling,
966     extensionContainer ExtensionContainer           OPTIONAL,
967     ...}
968
969 SS-CSI ::= SEQUENCE {
970     ss-CamelData SS-CamelData,
971     extensionContainer ExtensionContainer           OPTIONAL,
972     ...}
973
974 SS-CamelData ::= SEQUENCE {
975     ss-EventList SS-EventList,
976     gsmSCF-Address ISDN-AddressString,
977     extensionContainer [0] ExtensionContainer           OPTIONAL,
978     ...,
979     notificationToCSE [1] NULL OPTIONAL,
980     csiActive [2] NULL OPTIONAL
981 }
982 -- notificationToCSE and csiActive shall not be present when SS-CSI is sent to VLR.
983 -- They may only be included in ATSI/ATM Ack message.
984
985 SS-EventList ::= SEQUENCE SIZE (1..maxNumOfCamelSSEvents) OF SS-Code
986 -- Actions for the following SS-Code values are defined in CAMEL Phase 3:
987 -- ect SS-Code ::= '00110001'B
988 -- multiPTY SS-Code ::= '01010001'B
989 -- cd SS-Code ::= '00100100'B
990 -- ccbs SS-Code ::= '01000100'B
991 -- all other SS codes shall be ignored
992
993 maxNumOfCamelSSEvents INTEGER ::= 10
994

```

```

995 O-CSI ::= SEQUENCE {
996   o-BcsmCamelTDPDataList      O-BcsmCamelTDPDataList,
997   extensionContainer           ExtensionContainer           OPTIONAL,
998   ...,
999   camelCapabilityHandling     [0] CamelCapabilityHandling   OPTIONAL,
1000  notificationToCSE           [1] NULL                     OPTIONAL,
1001  csiActive                    [2] NULL                     OPTIONAL
1002 }
1003 -- notificationtoCSE and csiActive shall not be present when O-CSI is sent to VLR/GMSC.
1004 -- They may only be included in ATSI/ATM Ack message.
1005
1006 O-BcsmCamelTDPDataList ::= SEQUENCE SIZE (1..maxNumOfCamelTDPData) OF
1007   O-BcsmCamelTDPData
1008 -- O-BcsmCamelTDPDataList shall not contain more than one instance of
1009 -- O-BcsmCamelTDPData containing the same value for o-BcsmTriggerDetectionPoint.
1010 -- For CAMEL Phase 2, this means that only one instance of O-BcsmCamelTDPData is allowed
1011 -- with o-BcsmTriggerDetectionPoint being equal to DP2.
1012
1013 maxNumOfCamelTDPData INTEGER ::= 10
1014
1015 O-BcsmCamelTDPData ::= SEQUENCE {
1016   o-BcsmTriggerDetectionPoint O-BcsmTriggerDetectionPoint,
1017   serviceKey                  ServiceKey,
1018   gsmSCF-Address             [0] ISDN-AddressString,
1019   defaultCallHandling        [1] DefaultCallHandling,
1020   extensionContainer          [2] ExtensionContainer           OPTIONAL,
1021   ...
1022 }
1023
1024 ServiceKey ::= INTEGER (0..2147483647)
1025
1026 O-BcsmTriggerDetectionPoint ::= ENUMERATED {
1027   collectedInfo (2),
1028   ... ,
1029   routeSelectFailure (4) }
1030 -- exception handling:
1031 -- For O-BcsmCamelTDPData sequences containing this parameter with any
1032 -- other value than the ones listed the receiver shall ignore the whole
1033 -- O-BcsmCamelTDPData sequence.
1034 -- For O-BcsmCamelTDP-Criteria sequences containing this parameter with any
1035 -- other value than the ones listed the receiver shall ignore the whole
1036 -- O-BcsmCamelTDP-Criteria sequence.
1037
1038 O-BcsmCamelTDPCriteriaList ::= SEQUENCE SIZE (1..maxNumOfCamelTDPData) OF
1039   O-BcsmCamelTDP-Criteria
1040
1041 T-BCSM-CAMEL-TDP-CriteriaList ::= SEQUENCE SIZE (1..maxNumOfCamelTDPData) OF
1042   T-BCSM-CAMEL-TDP-Criteria
1043
1044 O-BcsmCamelTDP-Criteria ::= SEQUENCE {
1045   o-BcsmTriggerDetectionPoint O-BcsmTriggerDetectionPoint,
1046   destinationNumberCriteria   [0] DestinationNumberCriteria   OPTIONAL,
1047   basicServiceCriteria        [1] BasicServiceCriteria        OPTIONAL,
1048   callTypeCriteria            [2] CallTypeCriteria            OPTIONAL,
1049   ...,
1050   o-CauseValueCriteria        [3] O-CauseValueCriteria        OPTIONAL,
1051   extensionContainer           [4] ExtensionContainer           OPTIONAL }
1052
1053 T-BCSM-CAMEL-TDP-Criteria ::= SEQUENCE {
1054   t-BCSM-TriggerDetectionPoint T-BcsmTriggerDetectionPoint,
1055   basicServiceCriteria         [0] BasicServiceCriteria         OPTIONAL,
1056   t-CauseValueCriteria        [1] T-CauseValueCriteria        OPTIONAL,
1057   ... }
1058
1059 DestinationNumberCriteria ::= SEQUENCE {
1060   matchType                   [0] MatchType,
1061   destinationNumberList       [1] DestinationNumberList       OPTIONAL,
1062   destinationNumberLengthList [2] DestinationNumberLengthList   OPTIONAL,
1063   -- one or both of destinationNumberList and destinationNumberLengthList
1064   -- shall be present
1065   ... }
1066
1067 DestinationNumberList ::= SEQUENCE SIZE (1..maxNumOfCamelDestinationNumbers) OF
1068   ISDN-AddressString
1069 -- The receiving entity shall not check the format of a number in
1070 -- the dialled number list
1071

```

```

1072 DestinationNumberLengthList ::= SEQUENCE SIZE (1..maxNumOfCamelDestinationNumberLengths) OF
1073                                     INTEGER(1..maxNumOfISDN-AddressDigits)
1074
1075 BasicServiceCriteria ::= SEQUENCE SIZE(1..maxNumOfCamelBasicServiceCriteria) OF
1076     Ext-BasicServiceCode
1077
1078 maxNumOfISDN-AddressDigits INTEGER ::= 15
1079
1080 maxNumOfCamelDestinationNumbers INTEGER ::= 10
1081
1082 maxNumOfCamelDestinationNumberLengths INTEGER ::= 3
1083
1084 maxNumOfCamelBasicServiceCriteria INTEGER ::= 5
1085
1086 CallTypeCriteria ::= ENUMERATED {
1087     forwarded (0),
1088     notForwarded (1)}
1089
1090 MatchType ::= ENUMERATED {
1091     inhibiting (0),
1092     enabling (1)}
1093
1094 O-CauseValueCriteria ::= SEQUENCE SIZE(1..maxNumOfCAMEL-O-CauseValueCriteria) OF
1095     CauseValue
1096
1097 T-CauseValueCriteria ::= SEQUENCE SIZE(1..maxNumOfCAMEL-T-CauseValueCriteria) OF
1098     CauseValue
1099
1100 maxNumOfCAMEL-O-CauseValueCriteria INTEGER ::= 5
1101
1102 maxNumOfCAMEL-T-CauseValueCriteria INTEGER ::= 5
1103
1104 CauseValue ::= OCTET STRING (SIZE(1))
1105 -- Type extracted from Cause parameter in ITU-T Recommendation Q.763.
1106 -- For the use of cause value refer to ITU-T Recommendation Q.850.
1107
1108
1109 DefaultCallHandling ::= ENUMERATED {
1110     continueCall (0) ,
1111     releaseCall (1) ,
1112     ...}
1113 -- exception handling:
1114 -- reception of values in range 2-31 shall be treated as "continueCall"
1115 -- reception of values greater than 31 shall be treated as "releaseCall"
1116
1117 CamelCapabilityHandling ::= INTEGER(1..16)
1118 -- value 1 = CAMEL phase 1,
1119 -- value 2 = CAMEL phase 2,
1120 -- value 3 = CAMEL Phase 3:
1121 -- reception of values greater than 3 shall be treated as CAMEL phase 3.
1122
1123 SupportedCamelPhases ::= BIT STRING {
1124     phase1 (0) ,
1125     phase2 (1) ,
1126     phase3 (2) } (SIZE (1..16))
1127 -- A node shall mark in the BIT STRING all CAMEL Phases it supports.
1128 -- Other values than listed above shall be discarded.
1129
1130 SMS-CSI ::= SEQUENCE {
1131     sms-CAMEL-TDP-DataList [0] SMS-CAMEL-TDP-DataList,
1132     camelCapabilityHandling [1] CamelCapabilityHandling ,
1133     extensionContainer [2] ExtensionContainer OPTIONAL,
1134     notificationToCSE [3] NULL OPTIONAL,
1135     csiActive [4] NULL OPTIONAL,
1136     ...}
1137 -- notificationToCSE and csiActive shall not be present when SMS-CSI is sent to VLR/SGSN.
1138 -- They may only be included in ATSI/ATM Ack message.
1139
1140 SMS-CAMEL-TDP-DataList ::= SEQUENCE SIZE (1..maxNumOfCamelTDPData) OF
1141     SMS-CAMEL-TDP-Data
1142 -- SMS-CAMEL-TDP-DataList shall not contain more than one instance of
1143 -- SMS-CAMEL-TDP-Data containing the same value for sms-TriggerDetectionPoint.
1144

```

```

1145 SMS-CAMEL-TDP-Data ::= SEQUENCE {
1146     sms-TriggerDetectionPoint [0] SMS-TriggerDetectionPoint,
1147     serviceKey [1] ServiceKey,
1148     gsmSCF-Address [2] ISDN-AddressString,
1149     defaultSMS-Handling [3] DefaultSMS-Handling,
1150     extensionContainer [4] ExtensionContainer OPTIONAL,
1151     ...
1152 }
1153
1154 SMS-TriggerDetectionPoint ::= ENUMERATED {
1155     sms-CollectedInfo (1),
1156     ... }
1157 -- exception handling:
1158 -- For SMS-CAMEL-TDP-Data sequences containing this parameter with any
1159 -- other value than the ones listed the receiver shall ignore the whole
1160 -- SMS-CAMEL-TDP-Data sequence.
1161
1162 DefaultSMS-Handling ::= ENUMERATED {
1163     continueTransaction (0) ,
1164     releaseTransaction (1) ,
1165     ...}
1166 -- exception handling:
1167 -- reception of values in range 2-31 shall be treated as "continueTransaction"
1168 -- reception of values greater than 31 shall be treated as "releaseTransaction"
1169
1170 M-CSI ::= SEQUENCE {
1171     mobilityTriggers MobilityTriggers,
1172     serviceKey ServiceKey,
1173     gsmSCF-Address [0] ISDN-AddressString,
1174     extensionContainer [1] ExtensionContainer OPTIONAL,
1175     notificationToCSE [2] NULL OPTIONAL,
1176     csiActive [3] NULL OPTIONAL,
1177     ...}
1178 -- notificationToCSE and csiActive shall not be present when M-CSI is sent to VLR.
1179 -- They may only be included in ATSI/ATM Ack message.
1180
1181 MobilityTriggers ::= SEQUENCE SIZE (1..maxNumOfMobilityTriggers) OF
1182     MM-Code
1183
1184 maxNumOfMobilityTriggers INTEGER ::= 10
1185
1186 MM-Code ::= OCTET STRING (SIZE (1))
1187 -- This type is used to indicate a Mobility Management event.
1188 -- Actions for the following M-Code values are defined in CAMEL Phase 3:
1189 --
1190 -- Location-update-in-same-VLR MM-Code ::= '00000000'B
1191 -- Location-update-to-other-VLR MM-Code ::= '00000001'B
1192 -- IMSI-Attach MM-Code ::= '00000010'B
1193 -- MS-initiated-IMSI-Detach MM-Code ::= '00000011'B
1194 -- Network-initiated-IMSI-Detach MM-Code ::= '00000100'B
1195 --
1196 -- If any other MM-code is received in M-CSI, then that MM-code shall be
1197 -- ignored.
1198
1199 T-CSI ::= SEQUENCE {
1200     t-BcsmCamelTDPDataList T-BcsmCamelTDPDataList,
1201     extensionContainer ExtensionContainer OPTIONAL,
1202     ...,
1203     camelCapabilityHandling [0] CamelCapabilityHandling OPTIONAL,
1204     notificationToCSE [1] NULL OPTIONAL,
1205     csi-Active [2] NULL OPTIONAL,
1206     }
1207 -- notificationToCSE and csi-Active shall not be present when T-CSI is sent to VLR/GMSC.
1208 -- They may only be included in ATSI/ATM Ack message.
1209
1210 T-BcsmCamelTDPDataList ::= SEQUENCE SIZE (1..maxNumOfCamelTDPData) OF
1211     T-BcsmCamelTDPData
1212 --- T-BcsmCamelTDPDataList shall not contain more than one instance of
1213 --- T-BcsmCamelTDPData containing the same value for t-BcsmTriggerDetectionPoint.
1214 --- For CAMEL Phase 2, this means that only one instance of T-BcsmCamelTDPData is allowed
1215 --- with t-BcsmTriggerDetectionPoint being equal to DP12.
1216 --- For CAMEL Phase 3, more TDP's are allowed.
1217

```

```

1218 T-BcsmCamelTDPData ::= SEQUENCE {
1219     t-BcsmTriggerDetectionPoint      T-BcsmTriggerDetectionPoint,
1220     serviceKey                       ServiceKey,
1221     gsmSCF-Address                   [0] ISDN-AddressString,
1222     defaultCallHandling               [1] DefaultCallHandling,
1223     extensionContainer                 [2] ExtensionContainer      OPTIONAL,
1224     ...}
1225
1226 T-BcsmTriggerDetectionPoint ::= ENUMERATED {
1227     termAttemptAuthorized (12),
1228     ... ,
1229     tBusy (13),
1230     tNoAnswer (14)}
1231 -- exception handling:
1232 -- For T-BcsmCamelTDPData sequences containing this parameter with any other
1233 -- value than the ones listed above, the receiver shall ignore the whole
1234 -- T-BcsmCamelTDPData sequence.
1235
1236
1237 -- gprs location information retrieval types
1238
1239 SendRoutingInfoForGprsArg ::= SEQUENCE {
1240     imsi                               [0] IMSI,
1241     ggsn-Address                       [1] GSN-Address      OPTIONAL,
1242     ggsn-Number                        [2] ISDN-AddressString,
1243     extensionContainer                  [3] ExtensionContainer  OPTIONAL,
1244     ...}
1245
1246 SendRoutingInfoForGprsRes ::= SEQUENCE {
1247     sgsn-Address                       [0] GSN-Address,
1248     ggsn-Address                       [1] GSN-Address      OPTIONAL,
1249     mobileNotReachableReason           [2] AbsentSubscriberDiagnosticSM OPTIONAL,
1250     extensionContainer                  [3] ExtensionContainer  OPTIONAL,
1251     ...}
1252
1253 -- failure report types
1254
1255 FailureReportArg ::= SEQUENCE {
1256     imsi                               [0] IMSI,
1257     ggsn-Number                        [1] ISDN-AddressString ,
1258     ggsn-Address                       [2] GSN-Address      OPTIONAL,
1259     extensionContainer                  [3] ExtensionContainer  OPTIONAL,
1260     ...}
1261
1262 FailureReportRes ::= SEQUENCE {
1263     ggsn-Address                       [0] GSN-Address      OPTIONAL,
1264     extensionContainer                  [1] ExtensionContainer  OPTIONAL,
1265     ...}
1266
1267 -- gprs notification types
1268
1269 NoteMsPresentForGprsArg ::= SEQUENCE {
1270     imsi                               [0] IMSI,
1271     sgsn-Address                       [1] GSN-Address,
1272     ggsn-Address                       [2] GSN-Address      OPTIONAL,
1273     extensionContainer                  [3] ExtensionContainer  OPTIONAL,
1274     ...}
1275
1276 NoteMsPresentForGprsRes ::= SEQUENCE {
1277     extensionContainer                  [0] ExtensionContainer  OPTIONAL,
1278     ...}
1279
1280 -- fault recovery types
1281
1282
1283 ResetArg ::= SEQUENCE {
1284     hlr-Number                         ISDN-AddressString,
1285     hlr-List                           HLR-List          OPTIONAL,
1286     ...}
1287
1288 RestoreDataArg ::= SEQUENCE {
1289     imsi                               IMSI,
1290     lmsi                               LMSI              OPTIONAL,
1291     extensionContainer                  ExtensionContainer  OPTIONAL,
1292     ... ,
1293     vlr-Capability                     [6] VLR-Capability  OPTIONAL }
1294

```

```

1295 RestoreDataRes ::= SEQUENCE {
1296     hlr-Number          ISDN-AddressString,
1297     msNotReachable     NULL                                OPTIONAL,
1298     extensionContainer  ExtensionContainer              OPTIONAL,
1299     ...}
1300
1301 -- VBS/VGCS types
1302 VBSDataList ::= SEQUENCE SIZE (1..maxNumOfVBSGroupIds) OF
1303     VoiceBroadcastData
1304
1305 VGCSDataList ::= SEQUENCE SIZE (1..maxNumOfVGCSGroupIds) OF
1306     VoiceGroupCallData
1307
1308 maxNumOfVBSGroupIds INTEGER ::= 50
1309
1310 maxNumOfVGCSGroupIds INTEGER ::= 50
1311
1312 VoiceGroupCallData ::= SEQUENCE {
1313     groupId              GroupId,
1314     extensionContainer  ExtensionContainer              OPTIONAL,
1315     ...}
1316
1317 VoiceBroadcastData ::= SEQUENCE {
1318     groupid              GroupId,
1319     broadcastInitEntitlement NULL                        OPTIONAL,
1320     extensionContainer  ExtensionContainer              OPTIONAL,
1321     ...}
1322
1323 GroupId ::= OCTET STRING (SIZE (3))
1324     -- Refers to the Group Identification as specified in GSM TS 03.03
1325     -- and 03.68/ 03.69
1326
1327 -- provide subscriber info types
1328
1329 ProvideSubscriberInfoArg ::= SEQUENCE {
1330     imsi      [0] IMSI,
1331     lmsi      [1] LMSI                                OPTIONAL,
1332     requestedInfo [2] RequestedInfo,
1333     extensionContainer [3] ExtensionContainer          OPTIONAL,
1334     ...}
1335
1336 ProvideSubscriberInfoRes ::= SEQUENCE {
1337     subscriberInfo      SubscriberInfo,
1338     extensionContainer  ExtensionContainer              OPTIONAL,
1339     ...}
1340
1341 SubscriberInfo ::= SEQUENCE {
1342     locationInformation [0] LocationInformation          OPTIONAL,
1343     subscriberState     [1] SubscriberState              OPTIONAL,
1344     extensionContainer  [2] ExtensionContainer            OPTIONAL,
1345     ...}
1346
1347 RequestedInfo ::= SEQUENCE {
1348     locationInformation [0] NULL                        OPTIONAL,
1349     subscriberState     [1] NULL                        OPTIONAL,
1350     extensionContainer  [2] ExtensionContainer            OPTIONAL,
1351     ...}
1352
1353 LocationInformation ::= SEQUENCE {
1354     ageOfLocationInformation AgeOfLocationInformation    OPTIONAL,
1355     geographicalInformation  [0] GeographicalInformation  OPTIONAL,
1356     vlr-number              [1] ISDN-AddressString        OPTIONAL,
1357     locationNumber          [2] LocationNumber            OPTIONAL,
1358     cellIdOrLAI             [3] CellIdOrLAI              OPTIONAL,
1359     extensionContainer      [4] ExtensionContainer        OPTIONAL,
1360     ... ,
1361     selectedLSA-Id         [5] LSAIdentity                OPTIONAL,
1362     msc-Number             [6] ISDN-AddressString        OPTIONAL,
1363     geodeticInformation    [7] GeodeticInformation        OPTIONAL }
1364

```

```

1365 GeographicalInformation ::= OCTET STRING (SIZE (8))
1366 -- Refers to geographical Information defined in GSM 03.32.
1367 -- Only the description of an ellipsoid point with uncertainty circle
1368 -- as specified in GSM 03.32 is allowed to be used
1369 -- The internal structure according to GSM 03.32 is as follows:
1370 --     Type of shape (ellipsoid point with uncertainty circle)           1 octet
1371 --     Degrees of Latitude                                               3 octets
1372 --     Degrees of Longitude                                              3 octets
1373 --     Uncertainty code                                                  1 octet
1374
GeodeticInformation ::= OCTET STRING (SIZE (10))
-- Refers to Calling Geodetic Location defined in Q.763 (1999).
-- Only the description of an ellipsoid point with uncertainty circle
-- as specified in Q.763 (1999) is allowed to be used
-- The internal structure according to Q.763 (1999) is as follows:
--     Screening and presentation indicators                               1 octet
--     Type of shape (ellipsoid point with uncertainty circle)           1 octet
--     Degrees of Latitude                                               3 octets
--     Degrees of Longitude                                              3 octets
--     Uncertainty code                                                  1 octet
--     Confidence                                                         1 octet
1375
LocationNumber ::= OCTET STRING (SIZE (2..10))
1376 -- the internal structure is defined in CCITT Rec Q.763
1377
SubscriberState ::= CHOICE {
1378     assumedIdle [0] NULL,
1379     camelBusy [1] NULL,
1380     netDetNotReachable NotReachableReason,
1381     notProvidedFromVLR [2] NULL}
1382
NotReachableReason ::= ENUMERATED {
1383     msPurged (0),
1384     imsiDetached (1),
1385     restrictedArea (2),
1386     notRegistered (3)}
1387
-- any time interrogation info types
1388
AnyTimeInterrogationArg ::= SEQUENCE {
1389     subscriberIdentity [0] SubscriberIdentity,
1390     requestedInfo [1] RequestedInfo,
1391     gsmSCF-Address [3] ISDN-AddressString,
1392     extensionContainer [2] ExtensionContainer OPTIONAL,
1393     ...}
1394
AnyTimeInterrogationRes ::= SEQUENCE {
1395     subscriberInfo SubscriberInfo,
1396     extensionContainer ExtensionContainer OPTIONAL,
1397     ...}
1398
-- any time information handling types
1399
AnyTimeSubscriptionInterrogationArg ::= SEQUENCE {
1400     subscriberIdentity [0] SubscriberIdentity,
1401     requestedSubscriptionInfo [1] RequestedSubscriptionInfo,
1402     gsmSCF-Address [2] ISDN-AddressString,
1403     extensionContainer [3] ExtensionContainer OPTIONAL,
1404     ...}
1405
AnyTimeSubscriptionInterrogationRes ::= SEQUENCE {
1406     callForwardingData [1] CallForwardingData OPTIONAL,
1407     callBarringData [2] CallBarringData OPTIONAL,
1408     odb-Info [3] ODB-Info OPTIONAL,
1409     camel-SubscriptionInfo [4] CAMEL-SubscriptionInfo OPTIONAL,
1410     supportedVLR-CAMEL-Phases [5] SupportedCamelPhases OPTIONAL,
1411     supportedSGSN-CAMEL-Phases [6] SupportedCamelPhases OPTIONAL,
1412     extensionContainer [7] ExtensionContainer OPTIONAL,
1413     ...}
1414
1415
1416
1417
1418
1419
1420
1421
1422
1423
1424

```



```

1425 RequestedSubscriptionInfo ::= SEQUENCE {
1426     requestedSS-Info           [1] SS-ForBS-Code           OPTIONAL,
1427     odb                        [2] NULL                OPTIONAL,
1428     requestedCAMEL-SubscriptionInfo [3] RequestedCAMEL-SubscriptionInfo OPTIONAL,
1429     supportedVLR-CAMEL-Phases    [4] NULL                OPTIONAL,
1430     supportedSGSN-CAMEL-Phases   [5] NULL                OPTIONAL,
1431     extensionContainer          [6] ExtensionContainer    OPTIONAL,
1432     ...}
1433
1434 RequestedCAMEL-SubscriptionInfo ::= ENUMERATED {
1435     o-CSI                      (0),
1436     t-CSI                      (1),
1437     vt-CSI                     (2),
1438     tif-CSI                    (3),
1439     gprs-CSI                   (4),
1440     sms-CSI                    (5),
1441     ss-CSI                     (6),
1442     m-CSI                     (7),
1443     d-csi                     (8)}
1444
1445 CallForwardingData ::= SEQUENCE {
1446     forwardingFeatureList      Ext-ForwFeatureList,
1447     notificationToCSE         NULL                OPTIONAL,
1448     extensionContainer        [0] ExtensionContainer    OPTIONAL,
1449     ...}
1450
1451 CallBarringData ::= SEQUENCE {
1452     callBarringFeatureList     Ext-CallBarFeatureList,
1453     password                   Password,
1454     wrongPasswordAttemptsCounter WrongPasswordAttemptsCounter,
1455     notificationToCSE         NULL                OPTIONAL,
1456     extensionContainer        ExtensionContainer    OPTIONAL,
1457     ...}
1458
1459 WrongPasswordAttemptsCounter ::= INTEGER (0..4)
1460
1461 ODB-Info ::= SEQUENCE {
1462     odb-Data                  ODB-Data,
1463     notificationToCSE         NULL                OPTIONAL,
1464     extensionContainer        ExtensionContainer    OPTIONAL,
1465     ...}
1466
1467 CAMEL-SubscriptionInfo ::= SEQUENCE {
1468     o-CSI                    [0] O-CSI                OPTIONAL,
1469     o-BcsmCamelTDP-CriteriaList [1] O-BcsmCamelTDPCriteriaList OPTIONAL,
1470     t-CSI                    [2] T-CSI                OPTIONAL,
1471     t-BCSM-CAMEL-TDP-CriteriaList [3] T-BCSM-CAMEL-TDP-CriteriaList OPTIONAL,
1472     vt-CSI                   [4] T-CSI                OPTIONAL,
1473     vt-BCSM-CAMEL-TDP-CriteriaList [5] T-BCSM-CAMEL-TDP-CriteriaList OPTIONAL,
1474     tif-CSI                  [6] NULL                OPTIONAL,
1475     tif-CSI-NotificationToCSE [7] NULL                OPTIONAL,
1476     gprs-CSI                 [8] GPRS-CSI            OPTIONAL,
1477     sms-CSI                  [9] SMS-CSI            OPTIONAL,
1478     ss-CSI                   [10] SS-CSI           OPTIONAL,
1479     m-CSI                    [11] M-CSI            OPTIONAL,
1480     extensionContainer       [12] ExtensionContainer    OPTIONAL,
1481     ...}
1482
1483 AnyTimeModificationArg ::= SEQUENCE {
1484     subscriberIdentity        [0] SubscriberIdentity,
1485     gsmSCF-Address           [1] ISDN-AddressString,
1486     modificationRequestFor-SS-Info [2] ModificationRequestFor-SS-Info OPTIONAL,
1487     modificationRequestFor-CSI [3] ModificationRequestFor-CSI OPTIONAL,
1488     extensionContainer        [4] ExtensionContainer    OPTIONAL,
1489     ...}
1490
1491 AnyTimeModificationRes ::= SEQUENCE {
1492     ss-InfoFor-CSE           [0] Ext-SS-InfoFor-CSE    OPTIONAL,
1493     camel-SubscriptionInfo [1] CAMEL-SubscriptionInfo    OPTIONAL,
1494     extensionContainer       [2] ExtensionContainer    OPTIONAL,
1495     ...}
1496

```

```

1497 ModificationRequestFor-SS-Info ::= SEQUENCE {
1498     ss-Code [0] SS-Code,
1499     basicService [1] Ext-BasicServiceCode OPTIONAL,
1500     ss-Status [2] Ext-SS-Status OPTIONAL,
1501     forwardedToNumber [3] AddressString OPTIONAL,
1502     forwardedToSubaddress [4] ISDN-SubaddressString OPTIONAL,
1503     noReplyConditionTime [5] Ext-NoRepCondTime OPTIONAL,
1504     modifyNotificationToCSE [6] ModificationInstruction OPTIONAL,
1505     extensionContainer [7] ExtensionContainer OPTIONAL,
1506     ...}
1507
1508 ModificationRequestFor-CSI ::= SEQUENCE {
1509     requestedCamelSubscriptionInfo [0] RequestedCAMEL-SubscriptionInfo OPTIONAL,
1510     modifyNotificationToCSE [1] ModificationInstruction OPTIONAL,
1511     modifyCSI-State [2] ModificationInstruction OPTIONAL,
1512     extensionContainer [3] ExtensionContainer OPTIONAL,
1513     ...}
1514
1515 ModificationInstruction ::= ENUMERATED {
1516     deactivate (0),
1517     activate (1)}
1518
1519 -- subscriber data modification notification types
1520
1521 NoteSubscriberDataModifiedArg ::= SEQUENCE {
1522     imsi IMSI,
1523     msisdn ISDN-AddressString,
1524     typeOfModification TypeOfModification,
1525     extensionContainer ExtensionContainer OPTIONAL,
1526     ...}
1527
1528 NoteSubscriberDataModifiedRes ::= SEQUENCE {
1529     extensionContainer ExtensionContainer OPTIONAL,
1530     ...}
1531
1532 TypeOfModification ::= ENUMERATED {
1533     callForwardingSS-Data (0),
1534     callBarringSS-Data (1),
1535     operatorDeterminedBarringData (2),
1536     camelSubscriptionInformation (3),
1537     ...}
1538 -- exception handling:
1539 -- reception of other values shall be treated as unexpected data
1540
1541
1542 -- mobility management event notification info types
1543
1544 NoteMM-EventArg ::= SEQUENCE {
1545     serviceKey ServiceKey,
1546     eventMet [0] MM-Code,
1547     imsi [1] IMSI,
1548     msisdn [2] ISDN-AddressString,
1549     locationInformation [3] LocationInformation OPTIONAL,
1550     lsaIdentity [4] LSAIdentity OPTIONAL,
1551     supportedCAMELPhases [5] SupportedCamelPhases OPTIONAL,
1552     extensionContainer [6] ExtensionContainer OPTIONAL,
1553     ...}
1554
1555 NoteMM-EventRes ::= SEQUENCE {
1556     extensionContainer ExtensionContainer OPTIONAL,
1557     ...}
1558
1559 Ext-SS-InfoFor-CSE ::= CHOICE {
1560     forwardingInfoFor-CSE [0] Ext-ForwardingInfoFor-CSE,
1561     callBarringInfoFor-CSE [1] Ext-CallBarringInfoFor-CSE
1562 }
1563
1564 Ext-ForwardingInfoFor-CSE ::= SEQUENCE {
1565     ss-Code [0] SS-Code,
1566     forwardingFeatureList [1] Ext-ForwFeatureList,
1567     notificationToCSE [2] NULL,
1568     extensionContainer [3] ExtensionContainer OPTIONAL,
1569     ...}
1570

```

```

1571 Ext-CallBarringInfoFor-CSE ::= SEQUENCE {
1572     ss-Code [0] SS-Code,
1573     callBarringFeatureList [1] Ext-CallBarFeatureList,
1574     password [2] Password,
1575     wrongPasswordAttemptsCounter [3] WrongPasswordAttemptsCounter,
1576     notificationToCSE [4] NULL,
1577     extensionContainer [5] ExtensionContainer OPTIONAL,
1578     ...}
1579
1580 END

```

**\*\*\* Next Modified Section \*\*\***

## 17.6.2 Operation and Maintenance Operations

```

1 MAP-OperationAndMaintenanceOperations {
2     ccitt identified-organization (4) etsi (0) mobileDomain (0)
3     gsm-Network (1) modules (3) map-OperationAndMaintenanceOperations (6)
4     version6 (6)}
5
6 DEFINITIONS
7
8 ::=
9
10 BEGIN
11
12 EXPORTS
13     ActivateTraceMode,
14     DeactivateTraceMode,
15     SendIMSI
16 ;
17
18 IMPORTS
19     OPERATION
20 FROM TCAPMessages {
21     ccitt recommendation q 773 modules (2) messages (1) version2 (2)}
22
23     SystemFailure,
24     DataMissing,
25     UnexpectedDataValue,
26     FacilityNotSupported,
27     UnknownSubscriber,
28     UnidentifiedSubscriber,
29     TracingBufferFull
30 FROM MAP-Errors {
31     ccitt identified-organization (4) etsi (0) mobileDomain (0)
32     gsm-Network (1) modules (3) map-Errors (10) version6 (6)}
33
34     ActivateTraceModeArg,
35     ActivateTraceModeRes,
36     DeactivateTraceModeArg,
37     DeactivateTraceModeRes
38 FROM MAP-OM-DataTypes {
39     ccitt identified-organization (4) etsi (0) mobileDomain (0)
40     gsm-Network (1) modules (3) map-OM-DataTypes (12) version6 (6)}
41 ;
42
43
44 ActivateTraceMode ::= OPERATION --Timer m
45     ARGUMENT
46         activateTraceModeArg ActivateTraceModeArg
47     RESULT
48         activateTraceModeRes ActivateTraceModeRes
49         -- optional
50     ERRORS {
51         SystemFailure,
52         DataMissing,
53         UnexpectedDataValue,
54         FacilityNotSupported,
55         UnidentifiedSubscriber,
56         TracingBufferFull}
57

```

```

58 DeactivateTraceMode ::= OPERATION --Timer m
59 ARGUMENT
60     deactivateTraceModeArg          DeactivateTraceModeArg
61 RESULT
62     deactivateTraceModeRes          DeactivateTraceModeRes
63     -- optional
64 ERRORS {
65     SystemFailure,
66     DataMissing,
67     UnexpectedDataValue,
68     FacilityNotSupported,
69     UnidentifiedSubscriber}
70
71 SendIMSI ::= OPERATION --Timer m
72 ARGUMENT
73     sendIMSI-Arg                    SendIMSI-Arg
74 RESULT
75     sendIMSI-Res                    SendIMSI-Res
76 ERRORS {
77     SystemFailure
78     DataMissing,
79     UnexpectedDataValue,
80     UnknownSubscriber}
81
82 END

```

**\*\*\* Next Modified Section \*\*\***

## 17.7.2 Operation and maintenance data types

```

1 MAP-OM-DataTypes {
2     ccitt identified-organization (4) etsi (0) mobileDomain (0)
3     gsm-Network (1) modules (3) map-OM-DataTypes (12) version6 (6)}
4
5 DEFINITIONS
6
7 IMPLICIT TAGS
8
9 ::=
10
11 BEGIN
12
13 EXPORTS
14     ActivateTraceModeArg,
15     ActivateTraceModeRes,
16     DeactivateTraceModeArg,
17     DeactivateTraceModeRes
18 ;
19
20 IMPORTS
21     AddressString,
22     IMSI,
23     EMSI,
24     TEMSI
25
26 FROM MAP-CommonDataTypes {
27     ccitt identified-organization (4) etsi (0) mobileDomain (0)
28     gsm-Network (1) modules (3) map-CommonDataTypes (18) version6 (6)}
29
30     ExtensionContainer
31 FROM MAP-ExtensionDataTypes {
32     ccitt identified-organization (4) etsi (0) mobileDomain (0)
33     gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version6 (6)}
34
35
36 ;
37
38
39 ActivateTraceModeArg ::= SEQUENCE {
40     imsi [0] IMSI OPTIONAL,
41     traceReference [1] TraceReference,
42     traceType [2] TraceType,
43     omc-Id [3] AddressString OPTIONAL,
44     extensionContainer [4] ExtensionContainer OPTIONAL,
45     ...}
46
47 TraceReference ::= OCTET STRING (SIZE (1..2))

```

```

48
49 TraceType ::= INTEGER
50 (0..255)
51 -- Trace types are fully defined in TS GSM 12.08.
52
53 ActivateTraceModeRes ::= SEQUENCE {
54     extensionContainer [0] ExtensionContainer OPTIONAL,
55     ...}
56
57 DeactivateTraceModeArg ::= SEQUENCE {
58     imsi [0] IMSI OPTIONAL,
59     traceReference [1] TraceReference,
60     extensionContainer [2] ExtensionContainer OPTIONAL,
61     ...}
62
63 DeactivateTraceModeRes ::= SEQUENCE {
64     extensionContainer [0] ExtensionContainer OPTIONAL,
65     ...}
66
67 SendIMSI-Arg SEQUENCE {
68     msisdn [0] ISDN-AddressString OPTIONAL,
69     emsi [1] EMSI OPTIONAL,
70     extensionContainer [2] ExtensionContainer OPTIONAL,
71     ...}
72 SendIMSI-Res SEQUENCE {
73     imsi [0] IMSI OPTIONAL,
74     temsi [1] TEMSI OPTIONAL,
75     extensionContainer [2] ExtensionContainer OPTIONAL,
76     ...}
77 END

```

**\*\*\* Next Modified Section\*\*\***

## 17.7.8 Common data types

```

1 MAP-CommonDataTypes {
2     ccitt identified-organization (4) etsi (0) mobileDomain (0)
3     gsm-Network (1) modules (3) map-CommonDataTypes (18) version6 (6)}
4
5 DEFINITIONS
6
7 IMPLICIT TAGS
8
9 ::=
10
11 BEGIN
12
13 EXPORTS
14
15     -- general data types and values
16     AddressString,
17     ISDN-AddressString,
18     maxISDN-AddressLength,
19     ISDN-SubaddressString,
20     ExternalSignalInfo,
21     Ext-ExternalSignalInfo,
22     SignalInfo,
23     maxSignalInfoLength,
24     AlertingPattern,
25
26     -- data types for numbering and identification
27     IMSI,
28     TMSI,
29     EMSI,
30     TEMSI,
31     Identity,
32     SubscriberId,
33     IMEI,
34     HLR-List,
35     LMSI,
36     GlobalCellId,
37     NetworkResource,
38     NAEA-PreferredCI,
39     NAEA-CIC,
40     ASCI-CallReference,
41     SubscriberIdentity,
42

```

```

43  -- data types for CAMEL
44  CellIdOrLAI,
45
46  -- data types for subscriber management
47  BasicServiceCode,
48  Ext-BasicServiceCode,
49  EMLPP-Info,
50  EMLPP-Priority,
51
52  -- data types for geographic location
53  AgeOfLocationInformation,
54  LCSCClientExternalID,
55  LCSCClientInternalID
56 ;
57
58 IMPORTS
59     TeleserviceCode,
60     Ext-TeleserviceCode
61 FROM MAP-TS-Code {
62     ccitt identified-organization (4) etsi (0) mobileDomain (0)
63     gsm-Network (1) modules (3) map-TS-Code (19) version6 (6)}
64
65     BearerServiceCode,
66     Ext-BearerServiceCode
67 FROM MAP-BS-Code {
68     ccitt identified-organization (4) etsi (0) mobileDomain (0)
69     gsm-Network (1) modules (3) map-BS-Code (20) version6 (6)}
70
71     ExtensionContainer
72 FROM MAP-ExtensionDataTypes {
73     ccitt identified-organization (4) etsi (0) mobileDomain (0)
74     gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version6 (6)}
75 ;
76
77
78 -- general data types
79
80 TBCD-STRING ::= OCTET STRING
81 -- This type (Telephony Binary Coded Decimal String) is used to
82 -- represent several digits from 0 through 9, *, #, a, b, c, two
83 -- digits per octet, each digit encoded 0000 to 1001 (0 to 9),
84 -- 1010 (*), 1011 (#), 1100 (a), 1101 (b) or 1110 (c); 1111 used
85 -- as filler when there is an odd number of digits.
86
87 -- bits 8765 of octet n encoding digit 2n
88 -- bits 4321 of octet n encoding digit 2(n-1) +1
89

```

```

90 AddressString ::= OCTET STRING (SIZE (1..maxAddressLength))
91 -- This type is used to represent a number for addressing
92 -- purposes. It is composed of
93 -- a) one octet for nature of address, and numbering plan
94 -- indicator.
95 -- b) digits of an address encoded as TBCD-String.
96
97 -- a) The first octet includes a one bit extension indicator, a
98 -- 3 bits nature of address indicator and a 4 bits numbering
99 -- plan indicator, encoded as follows:
100
101 -- bit 8: 1 (no extension)
102
103 -- bits 765: nature of address indicator
104 -- 000 unknown
105 -- 001 international number
106 -- 010 national significant number
107 -- 011 network specific number
108 -- 100 subscriber number
109 -- 101 reserved
110 -- 110 abbreviated number
111 -- 111 reserved for extension
112
113 -- bits 4321: numbering plan indicator
114 -- 0000 unknown
115 -- 0001 ISDN/Telephony Numbering Plan (Rec CCITT E.164)
116 -- 0010 spare
117 -- 0011 data numbering plan (CCITT Rec X.121)
118 -- 0100 telex numbering plan (CCITT Rec F.69)
119 -- 0101 spare
120 -- 0110 land mobile numbering plan (CCITT Rec E.212)
121 -- 0111 spare
122 -- 1000 national numbering plan
123 -- 1001 private numbering plan
124 -- 1111 reserved for extension
125
126 -- all other values are reserved.
127
128 -- b) The following octets representing digits of an address
129 -- encoded as a TBCD-STRING.
130
131 maxAddressLength INTEGER ::= 20
132
133 ISDN-AddressString ::=
134 AddressString (SIZE (1..maxISDN-AddressLength))
135 -- This type is used to represent ISDN numbers.
136
137 maxISDN-AddressLength INTEGER ::= 9
138

```

```

139 ISDN-SubaddressString ::=
140     OCTET STRING (SIZE (1..maxISDN-SubaddressLength))
141     -- This type is used to represent ISDN subaddresses.
142     -- It is composed of
143     -- a) one octet for type of subaddress and odd/even indicator.
144     -- b) 20 octets for subaddress information.
145
146     -- a) The first octet includes a one bit extension indicator, a
147     --     3 bits type of subaddress and a one bit odd/even indicator,
148     --     encoded as follows:
149
150     -- bit 8: 1 (no extension)
151
152     -- bits 765: type of subaddress
153     --     000 NSAP (X.213/ISO 8348 AD2)
154     --     010 User Specified
155     --     All other values are reserved
156
157     -- bit 4: odd/even indicator
158     --     0 even number of address signals
159     --     1 odd number of address signals
160     --     The odd/even indicator is used when the type of subaddress
161     --     is "user specified" and the coding is BCD.
162
163     -- bits 321: 000 (unused)
164
165     -- b) Subaddress information.
166     -- The NSAP X.213/ISO8348AD2 address shall be formatted as specified
167     -- by octet 4 which contains the Authority and Format Identifier
168     -- (AFI). The encoding is made according to the "preferred binary
169     -- encoding" as defined in X.213/ISO834AD2. For the definition
170     -- of this type of subaddress, see CCITT Rec I.334.
171
172     -- For User-specific subaddress, this field is encoded according
173     -- to the user specification, subject to a maximum length of 20
174     -- octets. When interworking with X.25 networks BCD coding should
175     -- be applied.

```

```

176
177 maxISDN-SubaddressLength INTEGER ::= 21

```

```

178
179 ExternalSignalInfo ::= SEQUENCE {
180     protocolId          ProtocolId,
181     signalInfo          SignalInfo,
182     -- Information about the internal structure is given in
183     -- subclause 7.6.9.
184     extensionContainer  ExtensionContainer OPTIONAL,
185     -- extensionContainer must not be used in version 2
186     ...}

```

```

187
188 SignalInfo ::= OCTET STRING (SIZE (1..maxSignalInfoLength))

```

```

189
190 maxSignalInfoLength INTEGER ::= 200
191     -- This NamedValue represents the theoretical maximum number of
192     -- octets which are available to carry a single data type,
193     -- without requiring segmentation to cope with the network layer
194     -- service. However, the actual maximum size available for a data
195     -- type may be lower, especially when other information elements
196     -- have to be included in the same component.

```

```

197
198 ProtocolId ::= ENUMERATED {
199     gsm-0408 (1),
200     gsm-0806 (2),
201     gsm-BSSMAP (3),
202     -- Value 3 is reserved and must not be used
203     ets-300102-1 (4)}

```

```

204
205 Ext-ExternalSignalInfo ::= SEQUENCE {
206     ext-ProtocolId      Ext-ProtocolId,
207     signalInfo          SignalInfo,
208     -- Information about the internal structure is given in
209     -- subclause 7.6.9.10
210     extensionContainer  ExtensionContainer OPTIONAL,
211     ...}

```

```

212

```



```

213 Ext-ProtocolId ::= ENUMERATED {
214     ets-300356 (1),
215     ...
216 }
217 -- exception handling:
218 -- For Ext-ExternalSignalInfo sequences containing this parameter with any
219 -- other value than the ones listed the receiver shall ignore the whole
220 -- Ext-ExternalSignalInfo sequence.
221
222 AlertingPattern ::= OCTET STRING (SIZE (1) )
223 -- This type is used to represent Alerting Pattern
224
225 -- bits 8765 : 0000 (unused)
226
227 -- bits 43 : type of Pattern
228 --     00 level
229 --     01 category
230 --     10 category
231 --     all other values are reserved.
232
233 -- bits 21 : type of alerting
234
235 alertingLevel-0 AlertingPattern ::= '00000000'B
236 alertingLevel-1 AlertingPattern ::= '00000001'B
237 alertingLevel-2 AlertingPattern ::= '00000010'B
238 -- all other values of Alerting level are reserved
239 -- Alerting Levels are defined in GSM 02.07
240
241 alertingCategory-1 AlertingPattern ::= '00000100'B
242 alertingCategory-2 AlertingPattern ::= '00000101'B
243 alertingCategory-3 AlertingPattern ::= '00000110'B
244 alertingCategory-4 AlertingPattern ::= '00000111'B
245 alertingCategory-5 AlertingPattern ::= '00001000'B
246 -- all other values of Alerting Category are reserved
247 -- Alerting categories are defined in GSM 02.07
248
249
250 -- data types for numbering and identification
251
252 IMSI ::= TBCD-STRING (SIZE (3..8))
253 -- digits of MCC, MNC, MSIN are concatenated in this order.
254
255 Identity ::= CHOICE {
256     imsi                    IMSI,
257     imsi-WithLMSI          IMSI-WithLMSI}
258
259 IMSI-WithLMSI ::= SEQUENCE {
260     imsi                    IMSI,
261     lmsi                    LMSI,
262     -- a special value 00000000 indicates that the LMSI is not in use
263     ...}
264
265 ASCII-CallReference ::= TBCD-STRING (SIZE (1..8))
266 -- digits of VGCS/VBC-area, Group-ID are concatenated in this order.
267
268
269 TMSI ::= OCTET STRING (SIZE (1..4))
270
271 EMSI ::= OCTET STRING (SIZE (1..12))
272
273 TEMSI ::= OCTET STRING (SIZE (1..8))
274
275 SubscriberId ::= CHOICE {
276     imsi                    [0] IMSI,
277     tmsi                    [1] TMSI}
278
279 IMEI ::= TBCD-STRING (SIZE (8))
280 -- Refers to International Mobile Station Equipment Identity
281 -- and Software Version Number (SVN) defined in TS GSM 03.03.
282 -- If the SVN is not present the last octet shall contain the
283 -- digit 0 and a filler.
284 -- If present the SVN shall be included in the last octet.
285
286 HLR-Id ::= IMSI
287 -- leading digits of IMSI, i.e. (MCC, MNC, leading digits of
288 -- MSIN) forming HLR Id defined in TS GSM 03.03.
289

```

```

290 HLR-List ::= SEQUENCE SIZE (1..maxNumOfHLR-Id) OF
291           HLR-Id
292
293 maxNumOfHLR-Id INTEGER ::= 50
294
295 IMSI ::= OCTET STRING (SIZE (4))
296
297 GlobalCellId ::= OCTET STRING (SIZE (5..7))
298   -- Refers to Cell Global Identification defined in TS GSM 03.03.
299   -- The internal structure is defined as follows:
300   -- octet 1 bits 4321      Mobile Country Code 1st digit
301   --           bits 8765      Mobile Country Code 2nd digit
302   -- octet 2 bits 4321      Mobile Country Code 3rd digit
303   --           bits 8765      Mobile Network Code 3rd digit
304   --                               or filler (1111) for 2 digit MNCs
305   -- octet 3 bits 4321      Mobile Network Code 1st digit
306   --           bits 8765      Mobile Network Code 2nd digit
307   -- octets 4 and 5        Location Area Code according to TS GSM 04.08
308   -- octets 6 and 7        Cell Identity (CI) according to TS GSM 04.08
309
310 NetworkResource ::= ENUMERATED {
311     plmn (0),
312     hlr (1),
313     vlr (2),
314     pvlr (3),
315     controllingMSC (4),
316     vmsc (5),
317     eir (6),
318     rss (7)}
319
320 NAEA-PreferredCI ::= SEQUENCE {
321     naea-PreferredCIC [0] NAEA-CIC,
322     extensionContainer [1] ExtensionContainer OPTIONAL,
323     ... }
324
325 NAEA-CIC ::= OCTET STRING (SIZE (3))
326   -- The internal structure is defined by the Carrier Identification
327   -- parameter in ANSI T1.113.3. Carrier codes between "000" and "999" may
328   -- be encoded as 3 digits using "000" to "999" or as 4 digits using
329   -- "0000" to "0999". Carrier codes between "1000" and "9999" are encoded
330   -- using 4 digits.
331
332 SubscriberIdentity ::= CHOICE {
333     imsi [0] IMSI,
334     msisdn [1] ISDN-AddressString
335     }
336
337 LCSCClientExternalID ::= SEQUENCE {
338     externalAddress [0] AddressString OPTIONAL,
339     extensionContainer [1] ExtensionContainer OPTIONAL,
340     ... }
341
342 LCSCClientInternalID ::= ENUMERATED {
343     broadcastService (0),
344     o-andM-HPLMN (1),
345     o-andM-VPLMN (2),
346     anonymousLocation (3),
347     targetMSSubscribedService (4),
348     ... }
349
350 -- data types for CAMEL
351
352
353 CellIdOrLAI ::= CHOICE {
354     cellIdFixedLength [0] CellIdFixedLength,
355     laiFixedLength [1] LAIFixedLength}
356

```

```

357 CellIdFixedLength ::= OCTET STRING (SIZE (7))
358 -- Refers to Cell Global Identification defined in TS GSM 03.03.
359 -- The internal structure is defined as follows:
360 -- octet 1 bits 4321      Mobile Country Code 1st digit
361 --      bits 8765      Mobile Country Code 2nd digit
362 -- octet 2 bits 4321      Mobile Country Code 3rd digit
363 --      bits 8765      Mobile Network Code 3rd digit
364 --                        or filler (1111) for 2 digit MNCs
365 -- octet 3 bits 4321      Mobile Network Code 1st digit
366 --      bits 8765      Mobile Network Code 2nd digit
367 -- octets 4 and 5      Location Area Code according to TS GSM 04.08
368 -- octets 6 and 7      Cell Identity (CI) according to TS GSM 04.08
369

```

```

370 LAIFixedLength ::= OCTET STRING (SIZE (5))
371 -- Refers to Location Area Identification defined in TS GSM 03.03.
372 -- The internal structure is defined as follows:
373 -- octet 1 bits 4321      Mobile Country Code 1st digit
374 --      bits 8765      Mobile Country Code 2nd digit
375 -- octet 2 bits 4321      Mobile Country Code 3rd digit
376 --      bits 8765      Mobile Network Code 3rd digit
377 --                        or filler (1111) for 2 digit MNCs
378 -- octet 3 bits 4321      Mobile Network Code 1st digit
379 --      bits 8765      Mobile Network Code 2nd digit
380 -- octets 4 and 5      Location Area Code according to TS GSM 04.08
381

```

```

382
383 -- data types for subscriber management
384

```

```

385 BasicServiceCode ::= CHOICE {
386     bearerService      [2] BearerServiceCode,
387     teleservice        [3] TeleserviceCode}
388

```

```

389 Ext-BasicServiceCode ::= CHOICE {
390     ext-BearerService   [2] Ext-BearerServiceCode,
391     ext-Teleservice     [3] Ext-TeleserviceCode}
392

```

```

393 EMLPP-Info ::= SEQUENCE {
394     maximumtitledPriority      EMLPP-Priority,
395     defaultPriority            EMLPP-Priority,
396     extensionContainer         ExtensionContainer          OPTIONAL,
397     ...}
398

```

```

399 EMLPP-Priority ::= INTEGER (0..15)
400 -- The mapping from the values A,B,0,1,2,3,4 to the integer-value is
401 -- specified as follows where A is the highest and 4 is the lowest
402 -- priority level
403 -- the integer values 7-15 are spare and shall be mapped to value 4
404

```

```

405 priorityLevelA      EMLPP-Priority ::= 6
406 priorityLevelB      EMLPP-Priority ::= 5
407 priorityLevel0      EMLPP-Priority ::= 0
408 priorityLevel1      EMLPP-Priority ::= 1
409 priorityLevel2      EMLPP-Priority ::= 2
410 priorityLevel3      EMLPP-Priority ::= 3
411 priorityLevel4      EMLPP-Priority ::= 4
412

```

```

413
414 -- data types for geographic location
415

```

```

416 AgeOfLocationInformation ::= INTEGER (0..32767)
417 -- the value represents the elapsed time in minutes since the last
418 -- network contact of the mobile station (i.e. the actuality of the
419 -- location information).
420 -- value "0" indicates that the MS is currently in contact with the
421 -- network
422 -- value "32767" indicates that the location information is at least
423 -- 32767 minutes old
424

```

```

425 END

```

## 25.6 Procedures for Enhanced User Identity Confidentiality

In the procedure for Enhanced User Identity Confidentiality the IMSI and the TEMSI of the subscriber is retrieved from the UIDN. The procedure is shown in figure 25.6/1.

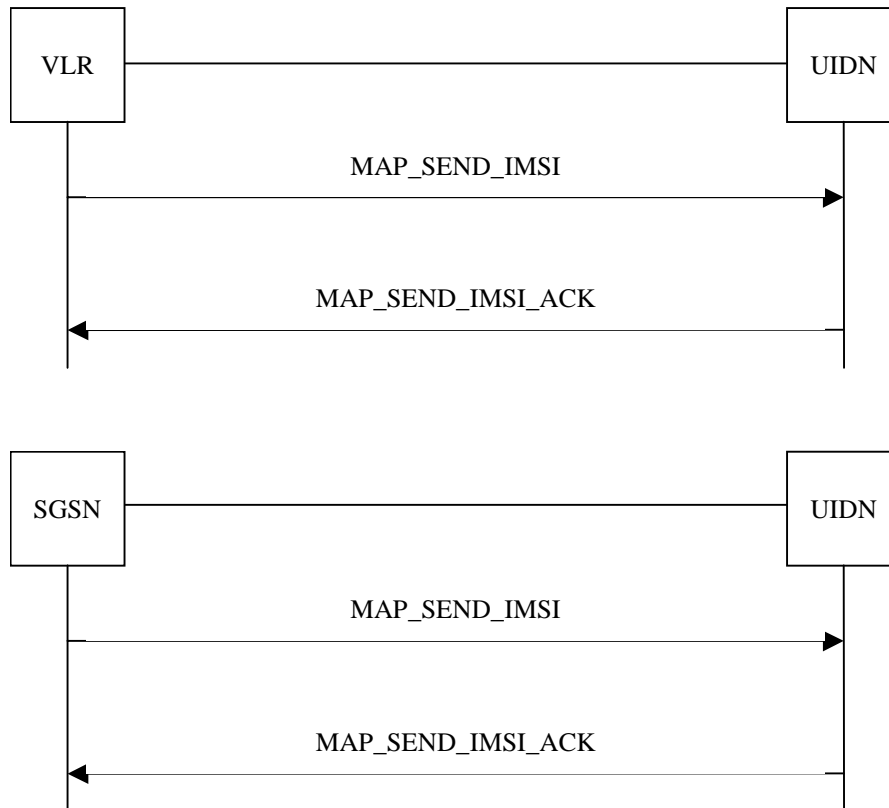


Figure 25.6/1: Message Flows to Enhanced User Identity Confidentiality

### 25.6.1 Enhanced user identity confidentiality procedure in the UIDN

Opening of the dialogue is described in the macro Receive\_Open\_Ind in subclause 25.1, with outcomes:

- procedure termination; or
- dialogue acceptance, with proceeding as below.

When receiving the MAP\_SEND\_IMSI indication, the UIDN will check the parameters and data in the primitive. Data errors are reported as an unexpected data value error or a data missing error depending on the nature of the error.

The UIDN will request decryption of the EMSI received in the MAP\_SEND\_IMSI indication from the decryption application. When the UIDN receives a SEND\_IMSI response from the decryption application then it shall pass this to the requesting entity and close the MAP provider service.

The enhanced user identity confidentiality procedure in the HLR is shown in figure 25.6/2.

Process EUC\_UIDN

25.6\_2(1)

Figure 25.6/2 The Enhanced User Identity Confidentiality Process in the UIDN

Signals to/from the left are to/from the VLR; signals to/from the right are to/from the decryption application in the UIDN

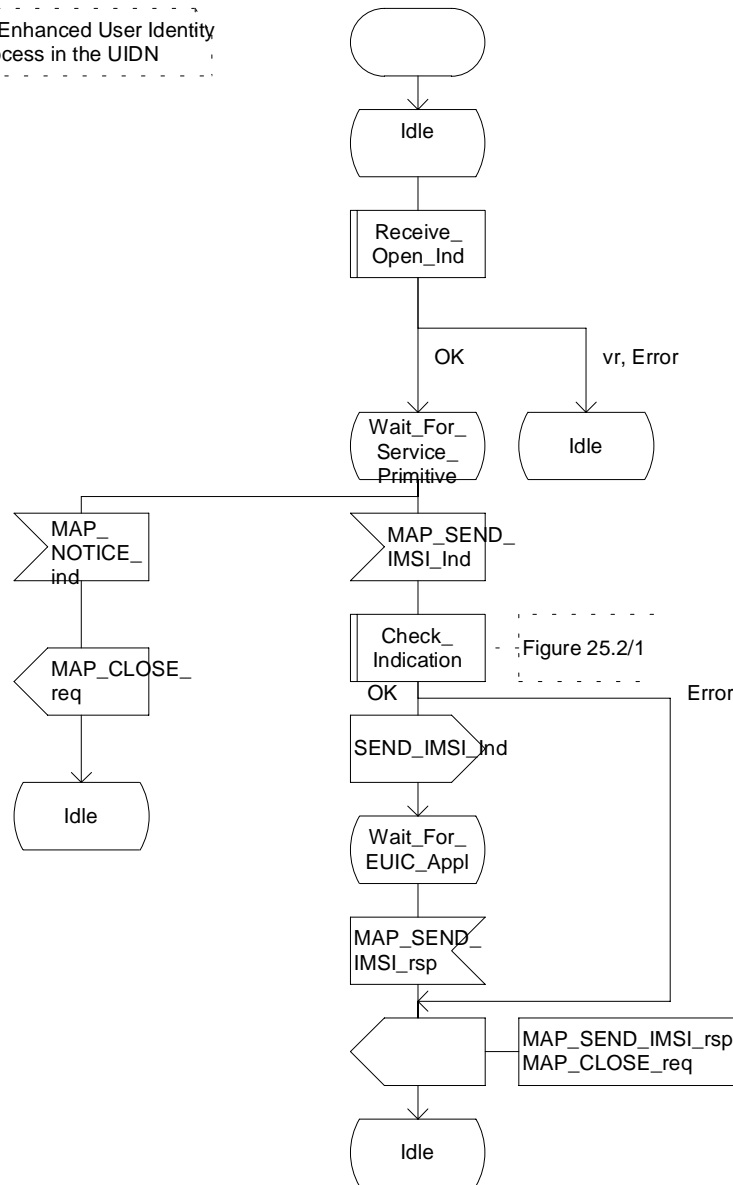


Figure 25.6/2: Process EUC\_HLR

## 25.6.2 Enhanced user identity confidentiality procedure in the VLR

When the Send IMSI request is received from the Location Management application, the VLR will send the MAP\_SEND\_IMSI request to the UIDN. The contents of the response is sent to the Location Management application.

The subscriber identity procedure in the VLR is shown in figure 25.6/3.

Process EUIC\_VLR

25.6\_3(1)

Figure 25.6/3 The Enhanced User Identity Confidentiality Process in the VLR

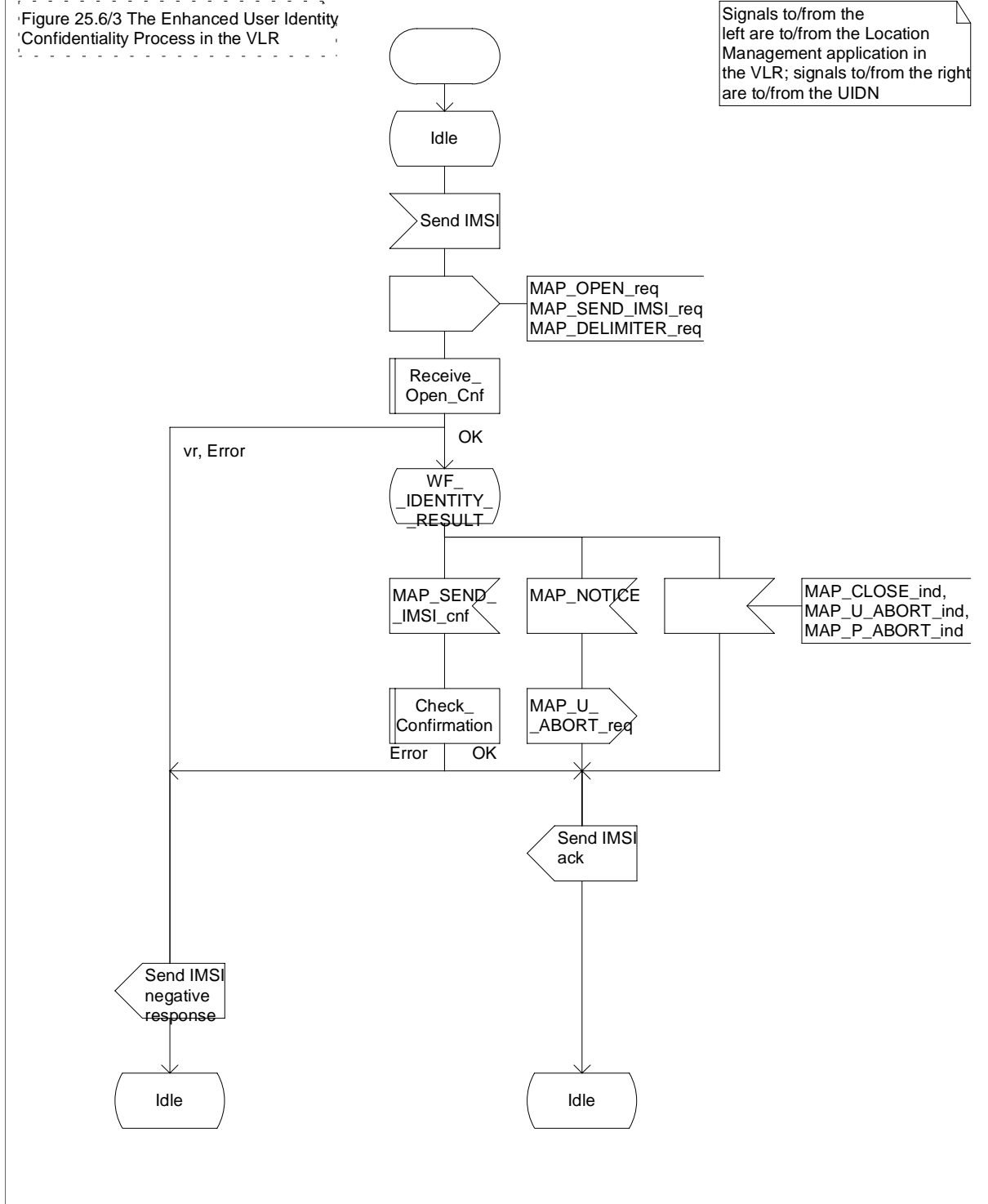


Figure 25.6/3: Process EUIC\_VLR

## 25.6.2 Enhanced user identity confidentiality procedure in the SGSN

When the Send IMSI request is received from the Location Management application, the SGSN will send the MAP\_SEND\_IMSI request to the UIDN. The contents of the response is sent to the Location Management application.

The subscriber identity procedure in the VLR is shown in figure 25.6/4.

Process EUI\_C\_SGSN

25.6\_4(1)

Figure 25.6/4 The Enhanced User Identity Confidentiality Process in the SGSN

Signals to/from the left are to/from the process in the SGSN; signals to/from the right are to/from the UIDN

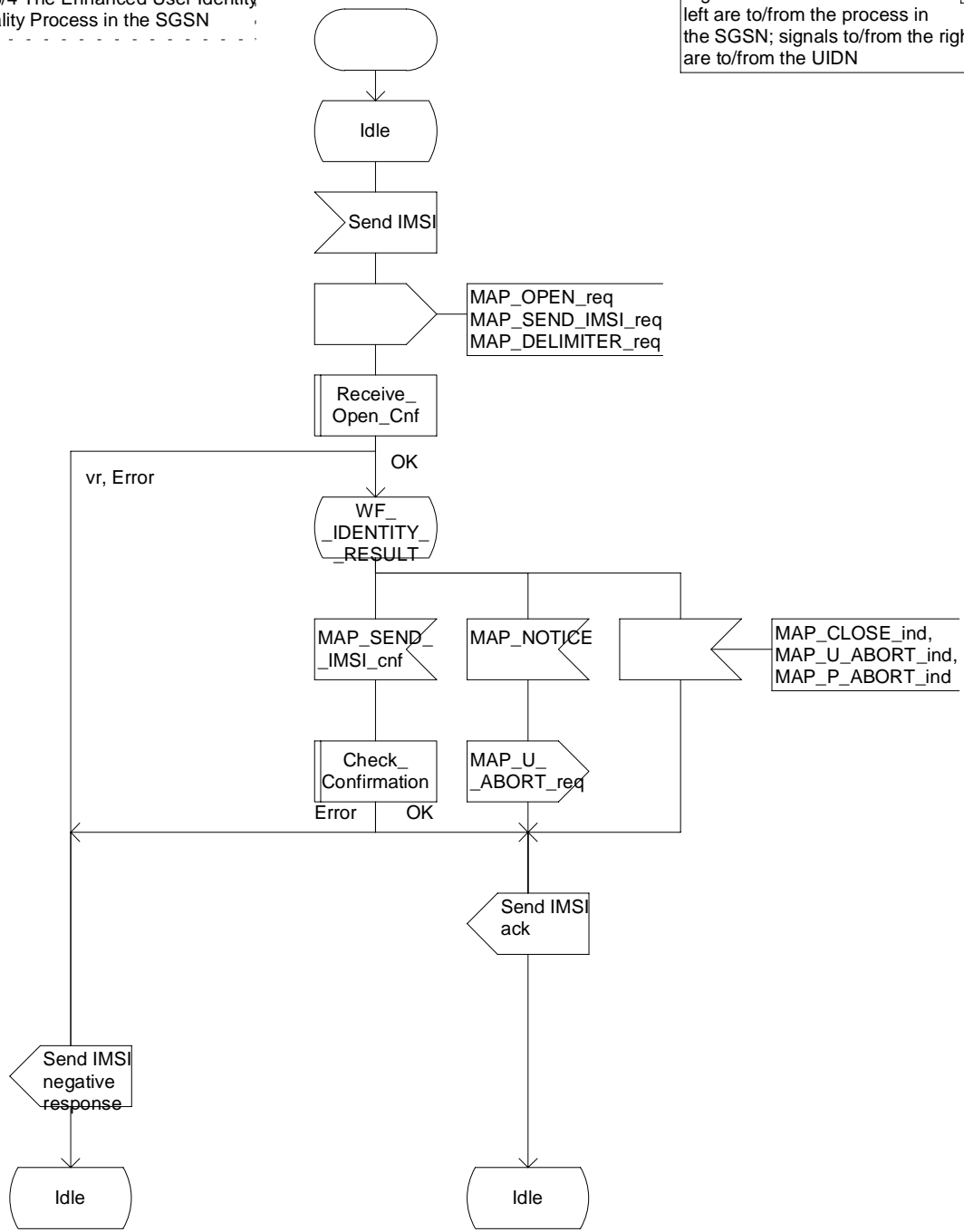


Figure 25.6/4: Process EUI\_C\_SGSN

## CHANGE REQUEST

Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.

**29.060 CR 082r1**

Current Version: **3.3.1**

GSM (AA.BB) or 3G (AA.BBB) specification number ↑

↑ CR number as allocated by MCC support team

For submission to: **CN#07**  
list expected approval meeting # here ↑

for approval   
for information

strategic   
non-strategic  (for SMG use only)

Form: CR cover sheet, version 2 for 3GPP and SMG The latest version of this form is available from: <ftp://ftp.3gpp.org/Information/CR-Form-v2.doc>

**Proposed change affects:** (U)SIM  ME  UTRAN / Radio  Core Network   
(at least one should be marked with an X)

**Source:** N2 **Date:** 01.03.00

**Subject:** Introduction of Enhanced User Identity Confidentiality

**Work item:** Security

**Category:** F Correction  **Release:** Phase 2   
A Corresponds to a correction in an earlier release  Release 96   
(only one category shall be marked with an X) B Addition of feature  Release 97   
C Functional modification of feature  Release 98   
D Editorial modification  Release 99   
Release 00

**Reason for change:** This CR introduces the changes required for Enhanced User Identity Confidentiality.

**Clauses affected:**

**Other specs** Other 3G core specifications  → List of CRs: 23.002-???, 23.003-015, 23.008-???, 23.012-003, 23.060-???, 24.008-???, 25.331-???, 29.002-092, 31.102-???, 33.103-???, 33.105-???

**affected:** Other GSM core specifications  → List of CRs:  
MS test specifications  → List of CRs:  
BSS test specifications  → List of CRs:  
O&M specifications  → List of CRs:

**Other comments:** The Type allocation for the new parameter TEMSI needs to be done if the CR is incorporated in the specification.



help.doc





**\*\*\* First Modified Section \*\*\***

## 7.5.2 Identification Response

The old SGSN shall send an Identification Response to the new SGSN as a response to a previous Identification Request.

Possible Cause values are:

- 'Request Accepted'
- 'IMSI not known'
- 'System failure'
- 'Mandatory IE incorrect'
- 'Mandatory IE missing'
- 'Optional IE incorrect'
- 'Invalid message format'
- 'Version not supported'
- 'P-TMSI Signature mismatch'

Only the Cause information element shall be included in the response if the Cause contains another value than 'Request accepted'.

The IMSI information element is mandatory if the Cause contains the value 'Request accepted'.

The TEMSI information element shall be included if a TEMSI was stored in the old SGSN and the Cause contains the value 'Request accepted'.

One or several Authentication Triplet information elements or up to 5 Authentication Quintuplet information elements may be included in the message if the Cause contains the value 'Request accepted'.

The optional Private Extension contains vendor or operator specific information.

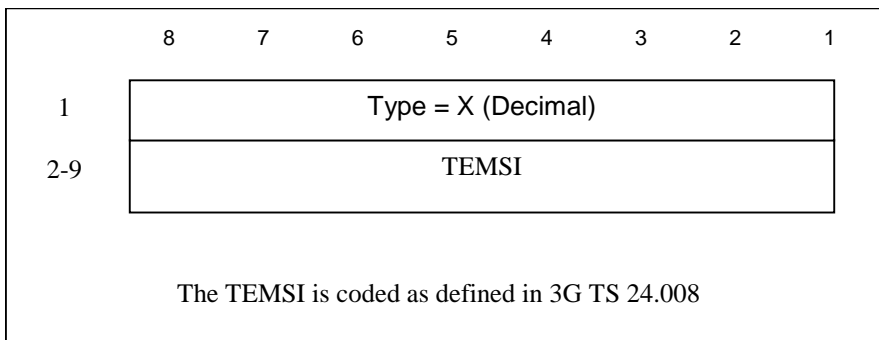
**Table 28: Information elements in an Identification Response**

Information element	Presence requirement	Reference
Cause	Mandatory	7.7.1
IMSI	Conditional	7.7.2
Authentication Triplet	Conditional	7.7.7
Authentication Quintuplet	Optional	7.7.27
<u>TEMSI</u>	<u>Conditional</u>	<u>7.7.35</u>
Private Extension	Optional	7.7.26

**\*\*\* New Section \*\*\***

### 7.7.35 Temporarily Encrypted Mobile Subscriber Identity (TEMSEI)

The TEMSEI information element is given by:



**Figure 49: TEMSEI information element**