3GPP TSG_CN#7 **NP-000078**

ETSI SMG3 Plenary Meeting #7,
Madrid, Spain
13th – 15th March 2000

Agenda item: **5.2.3**

Source: **TSG_N WG2**

Title: **CRs to 3G Work Item SoLSA**

Introduction:

This document contains **"6"** CRs on **Work Item SoLSA,** 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
N2B000086	03.08	A030		F	R98	7.2.0		Correction of LSA Information
N2B000087	03.16	A040		F	R98	7.2.0		Correction of LSA Information
N2B000088	09.02	A281		F	R98	7.2.0		Correction of LSA Information
N2B000065	23.008	013		A	R99	3.3.0		Correction of LSA Information
N2B000066	23.016	010		A	R99	3.2.0		Correction of LSA Information
N2B000100	29.002	087		A	R99	3.3.0		Correction of LSA Information

3GPP TSG-N WG2 #8
Kyoto, Japan, 17-21 Jan 2000

Document N2B000086
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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03.08	CR	A030	Current Version:	7.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: CN#07	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑	for information		non-strategic	X	

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 [X]

Source: N2 **Date:** 12 Jan 2000

Subject: Correction of LSA Information.

Work item: SoLSA

Category: *(only one category shall be marked with an X)*

F	Correction	X
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	X
Release 99	
Release 00	

Reason for change: In GSM 03.73 and GSM 08.08 a preferential access indicator, an active mode support indicator and an active mode indication are defined for each subscribed LSA in the LSA Information. In order to comply with this requirement GSM 03.08 needs to be updated with these indicators.

Clauses affected: 2.4.17, 4

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.008, 23.016, 29.002
Other GSM core specifications	X	→ List of CRs:	03.16, 09.02
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments: Category C1: Essential correction

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2.4.17 Localised Service Area Information

If a mobile subscriber has a localised service area subscription, the HLR shall store a list of up to 20 Localised Service Area Identities (LSA IDs) per PLMN. The structure of LSA ID is defined in GSM 03.03.

On updating the VLR or the SGSN, the HLR identifies the VPLMN given by the VLR or SGSN number and transfers the applicable LSA ID List to the VLR or SGSN. The VLR or SGSN derives from the LSA ID List the allowed LSA(s), priority of each LSA, the preferential access indicator, the active mode support indicator and active mode indication and the "LSA only access" indicator.

2.4.17.1 LSA Identity

LSA Identity (LSA ID) is defined in GSM 03.03. The element uniquely identifies a LSA.

2.4.17.2 LSA Priority

Localised Service Area Priority (LSA Priority) is defined in GSM 08.08. The LSA Priority is permanent subscriber data stored conditionally in the HLR.

2.4.17.3 LSA Preferential Access Indicator

The Localised Service Area Preferential Access Indicator defines if the subscriber shall be favoured in cells belonging to the LSA at resource allocation compared to other subscribers. The LSA Preferential Access Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.4 LSA Active Mode Support Indicator

The Localised Service Area Active Mode Support Indicator defines if cells belonging to the LSA shall be favoured for the subscriber compared to other cells at resource allocation. The LSA Active Mode Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.3~~5~~ LSA Only Access Indicator

The LSA Only Access Indicator defines if the subscriber is only allowed within its subscribed LSAs. The LSA Only Access Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.4~~6~~ LSA Active Mode Indicator

The Localised Service Area Active Mode Indicator defines if the LSA Identity of the cell in which the MS is currently in radio contact with shall be indicated to the subscriber in active mode. The LSA Active Mode Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.5~~7~~ VPLMN Identifier

The VPLMN Identifier identifies the VPLMN in which an LSA Identity is applicable. This identifier is not applicable to Universal LSA IDs as defined in GSM 03.03. The VPLMN identifier is permanent subscriber data stored conditionally in the HLR.

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);

Table a 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 each of the following references:

Table a 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	
LMSI	2.1.8	C	C	T	Note
Mobile Station Category	2.2.1	M	M	P	
LMU Identifier	2.2.1	C	C	P	
RAND, SRES and Kc	2.3.1	M	M	T	
Ciphering Key Sequence Number	2.3.2	-	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	2.4.9	C	-	P	
RSZI lists	2.4.10.1	C	-	P	
Zone Code List	2.4.10.2	-	C	P	
MSC area restricted flag	2.4.11	M	-	T	
LA not allowed flag	2.4.12	-	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.~~X~~17.1	C	C	P	
LSA Priority	2.4.~~X~~17.2	C	C	P	
LSA Preferential Access Indicator	2.4.17.3	C	C	P	
LSA Active Mode Support Indicator	2.4.17.4	C	C	P	
LSA Only Access Indicator	2.4.~~X~~17.~~3~~5	C	C	P	
LSA Active Mode Indicator	2.4.~~X~~17.~~4~~6	C	C	P	
VPLMN Identifier	2.4.~~X~~17.~~5~~7	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	2.14.1.1	C	C	P	
Terminating CAMEL Subscription Information	2.14.1.2	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	
FTN translation information flag(TIF-CSI)	2.14.1.6	C	-	P	
USSD General CAMEL service information (UG-CSI)	2.14.2	C	-	P	
Negotiated CAMEL Capability Handling	2.14.2	C	-	T	
Privacy Exception List	2.15.1.1	C	C	P	
Home GMLC Numbers	2.15.1.2	C	C	P	

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
TLLI	2.1.6	-	-	C	-	T	
Random TLLI	2.1.7	-	-	C	-	T	Note
IMEI	2.1.9	-	-	C	-	T	
RAND/SRES and Kc	2.3.1	M	-	M	-	T	
Ciphering Key Sequence Number	2.3.2	-	-	M	-	T	
Selected Ciphering Algorithm	2.3.3	-	-	M	-	T	
Current Kc	2.3.4	-	-	M	-	T	
P-TMSI Signature	2.3.5	-	-	C	-	T	
Routing Area Identity	2.4.3	-	-	M	-	T	
Cell Global Identification	2.4.4	-	-	C	-	T	
SGSN Number	2.4.8.1	M	C (Gs)	-	-	T	Note
GGSN Number	2.4.8.2	©	-	-	-	P	Note
VLR Number	2.4.5	M	-	C (Gs)	-	T	
RSZI Lists	2.4.10.1	C	-	-	-	P	
Zone Code List	2.4.10.2	-	-	C	-	P	
LA not allowed flag	2.4.12	-	-	M	-	T	
SGSN area restricted flag	2.4.13	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.~~X~~17.1	C	C	C	-	P	
LSA Priority	2.4.~~X~~17.2	C	C	C	-	P	
LSA Preferential Access Indicator	2.4.17.3	C	C	C	-	P	
LSA Active Mode Support Indicator	2.4.17.4	C	C	C	-	P	
LSA Only Access Indicator	2.4.~~X~~17.~~3~~5	C	C	C	-	P	
LSA Active Mode Indicator	2.4.~~X~~17.~~4~~6	C	C	C	-	P	
VPLMN Identifier	2.4.~~X~~17.~~5~~7	C	-	-	-	P	
Provision of teleservice	2.5.2	C	-	C	-	P	
Transfer of SM option	2.5.4	M	-	-	-	P	
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	
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	
MNRG	2.7.2	M	-	M	M	T	
MNRR	2.7.7	C	-	-	-	T	
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

NOTE 1: 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 2: 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.

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Kyoto, Japan, 17-21 Jan 2000

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CHANGE REQUEST

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03.16	CR	A040	Current Version:	7.1.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	CN#07	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic	X	

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 [X]

Source: N2 **Date:** 12 Jan 2000

Subject: Correction of LSA Information.

Work item: SoLSA

Category: *(only one category shall be marked with an X)*

F	Correction	X
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	X
Release 99	
Release 00	

Reason for change: According to GSM 03.73 the priority, a preferential access indicator and an active mode support indicator are defined for each subscribed LSA in the LSA Information. In GSM 08.08 they are defined as an octet string and are refered to as attributes to the LSA. An active mode indicator is also defined per each subscribed LSA but this is not forwarded on the A interface to the BSS.
In order to comply with these TS GSM 03.16 needs to be updated.

Clauses affected: 4.5.4

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.008, 23.016, 29.002
Other GSM core specifications	X	→ List of CRs:	03.08, 09.02
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments: Category C1: Essential correction

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4.5.4 Consistency of supplementary service data

In some cases, the protocol used between the HLR and VLR encodes some data that is not EBSG-related SS data with an EBSG qualifier. In this case, the HLR shall ensure that when this data is sent it is always the same for all EBSGs. If this data is modified, the HLR must send the supplementary service data to the VLR for all EBSGs which meet all the following criteria:

- at least one basic service in the EBSG is supported; and
- the supplementary service is applicable to at least one (possibly different) basic service in the EBSG; and
- the subscriber has a subscription to at least one (possibly different) basic service in the EBSG.

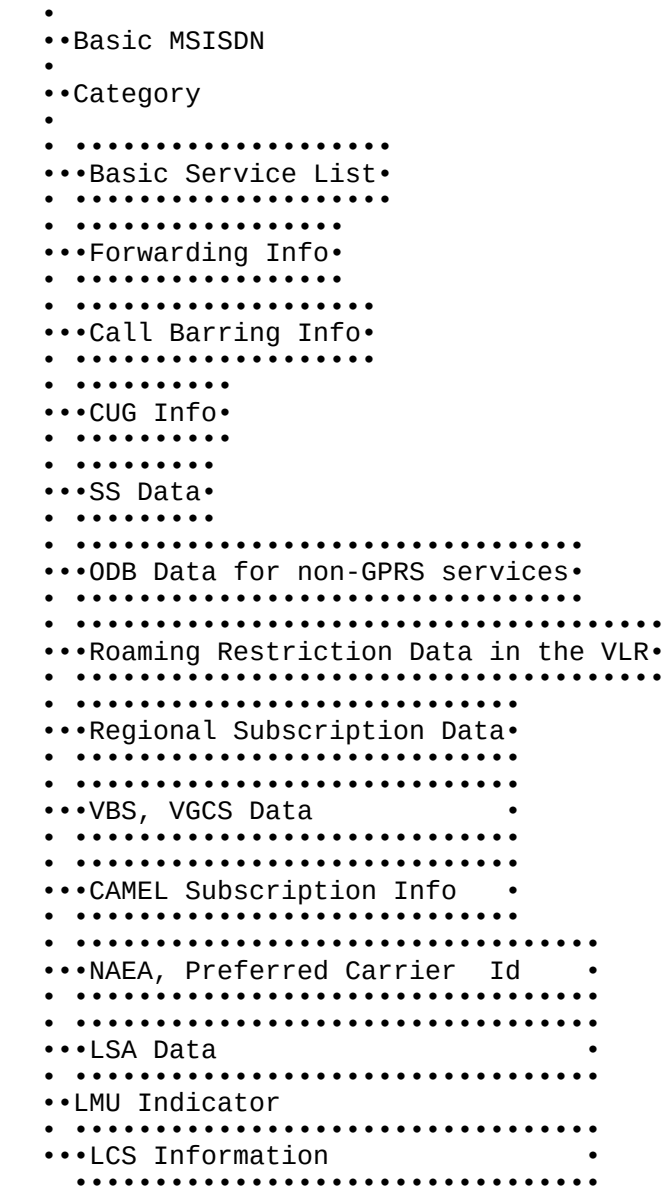


Figure 1: Abstract data structure of non-GPRS Subscriber Data (Data sent to the VLR)

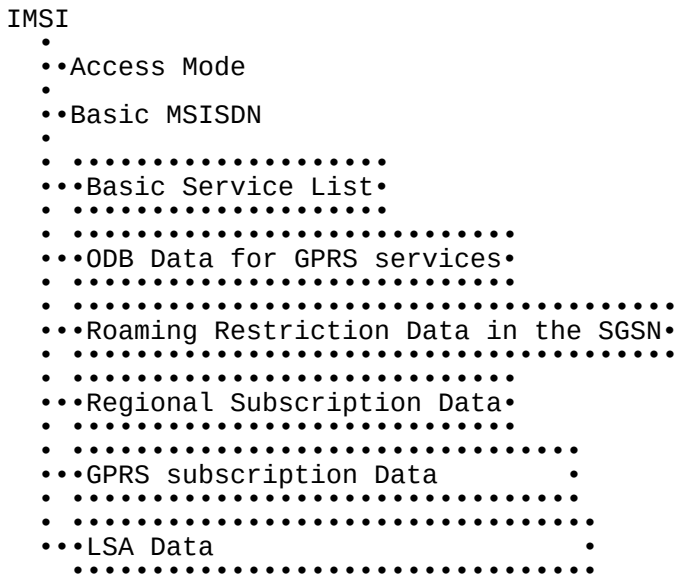
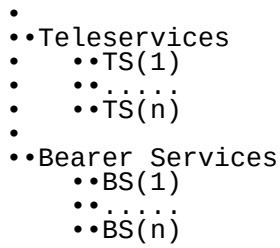
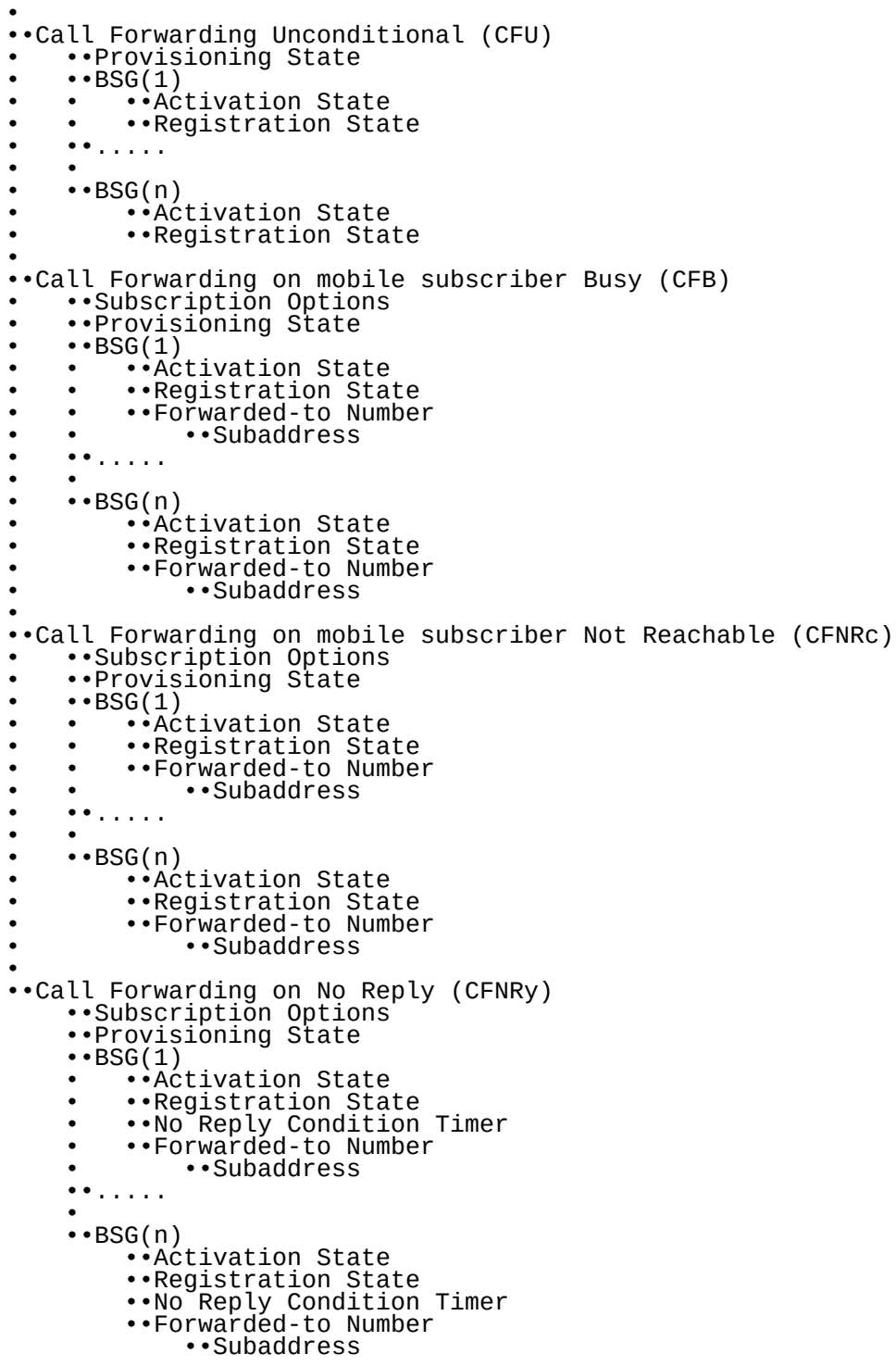


Figure 1a: Abstract data structure of GPRS Subscriber Data (Data sent to the SGSN)



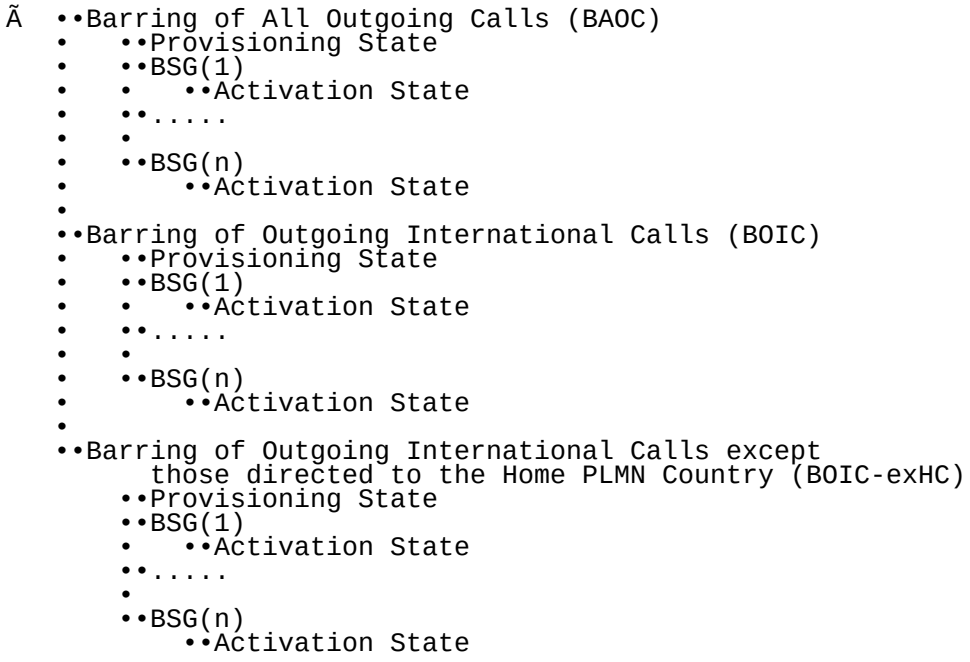
NOTE: For detailed information see GSM 02.01, GSM 02.02, GSM 03.03 and GSM 09.02.

Figure 2: Basic Service List



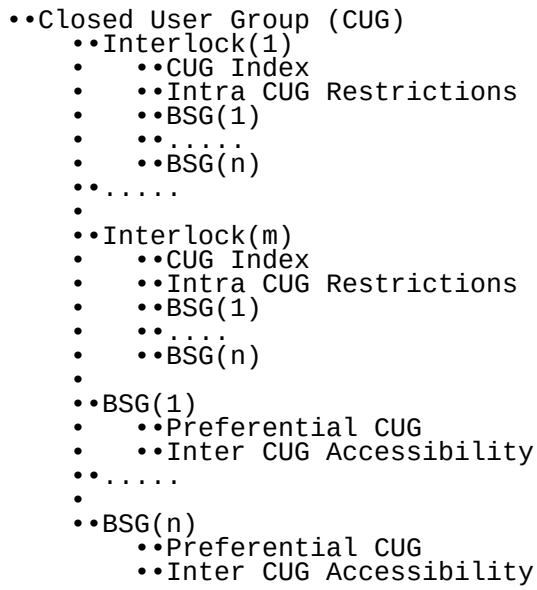
NOTE: For detailed information see GSM 03.82 and GSM 09.02.

Figure 3: Forwarding Info



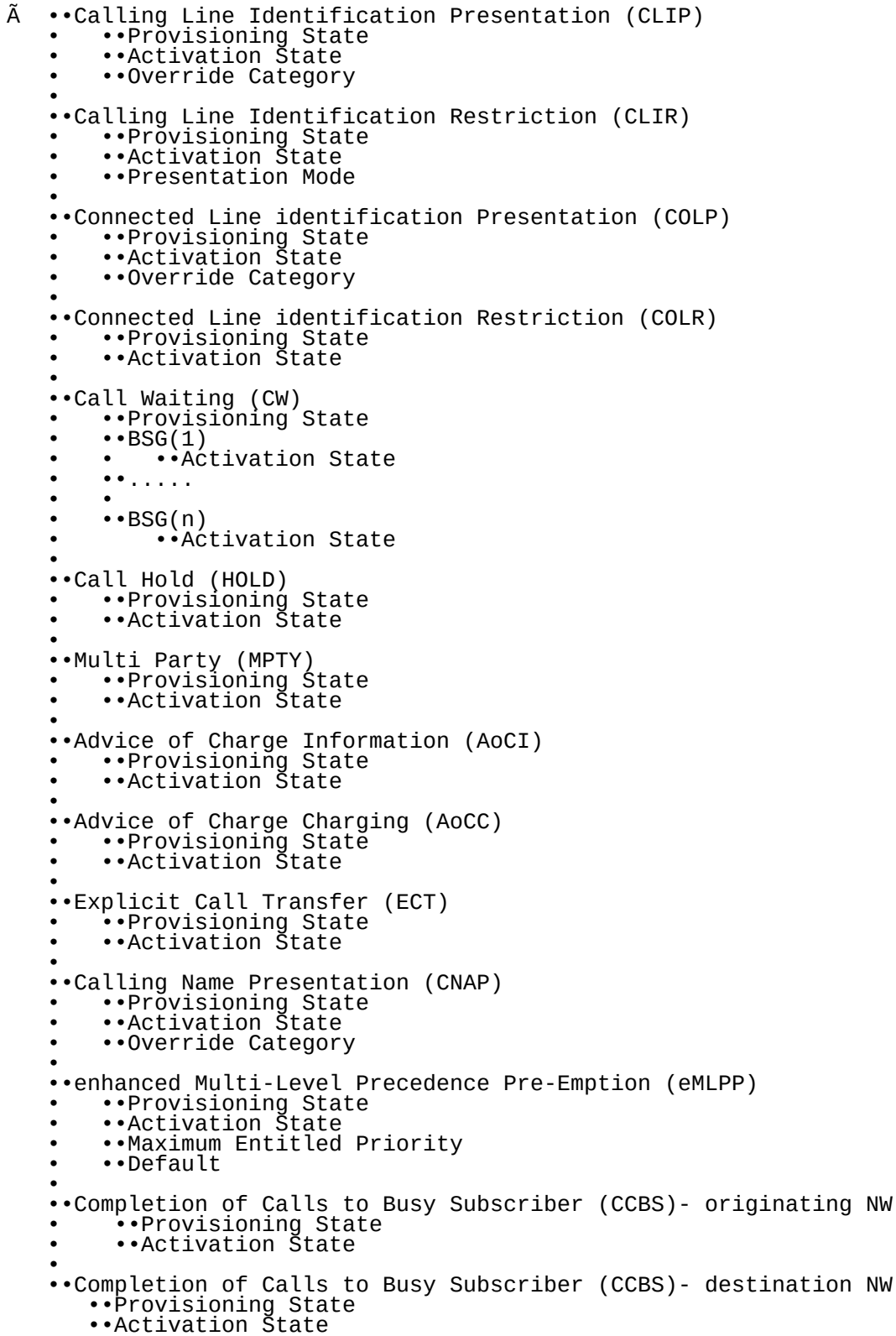
NOTE: For detailed information see GSM 03.88 and GSM 09.02.

Figure 4: Call Barring Info



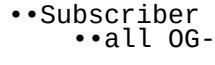
NOTE: For detailed information see GSM 03.85 and GSM 09.02.

Figure 5: CUG Info



NOTE: For detailed information see GSM 03.67, GSM 03.81, GSM 03.83, GSM 03.84, GSM 03.86, GSM 03.91, GSM 03.93, GSM 03.96 and GSM 09.02.

Figure 6: SS Data



```
    ••international OG-Calls Barred
    ••international OG-Calls Not To HPLMN Country Barred
    ••inter-zonal OG-Calls Barred
    ••inter-zonal OG-Calls Not To HPLMN Country Barred
    ••international OG-Calls Not To HPLMN Country AND
    •      inter-zonal OG-Calls Barred
    ••Premium Rate Information OG-Calls Barred
    ••Premium Rate Entertainment OG-Calls Barred
    ••SS Access Barred
    ••all call transfers Barred
    ••chargeable call transfers Barred
    ••international call transfers Barred
    ••inter-zonal call transfers Barred
    ••doubly chargeable call transfers Barred
    ••multiple call transfers Barred
    ••PLMN-Specific Barring Type 1
    ••PLMN-Specific Barring Type 2
    ••PLMN-Specific Barring Type 3
    ••PLMN-Specific Barring Type 4
```

NOTE: For detailed information see GSM 03.15 and GSM 09.02.

Figure 7: ODB Data for non-GPRS services

```
••Subscriber Status
    ••all OG-Calls Barred
    ••international OG-Calls Barred
    ••international OG-Calls Not To HPLMN Country Barred
    ••inter-zonal OG-Calls Barred
    ••inter-zonal OG-Calls Not To HPLMN Country Barred
    ••international OG-Calls Not To HPLMN Country AND
    •      inter-zonal OG-Calls Barred
    ••PLMN-Specific Barring Type 1
    ••PLMN-Specific Barring Type 2
    ••PLMN-Specific Barring Type 3
    ••PLMN-Specific Barring Type 4
```

NOTE: For detailed information see GSM 03.15 and GSM 09.02.

Figure 7a: ODB Data for GPRS services

```
••Roaming Restriction Due To Unsupported Feature
```

NOTE: For detailed information see GSM 09.02.

Figure 8: Roaming Restriction Data in the VLR

```
••Roaming Restricted in the SGSN Due To Unsupported Feature
```

NOTE: For detailed information see GSM 09.02.

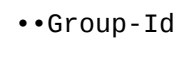
Figure 8a: Roaming Restriction Data in the SGSN

```
••ZoneCode(1)
•
••.....
•
••ZoneCode(k)
```

NOTE: For detailed information see GSM 09.02.

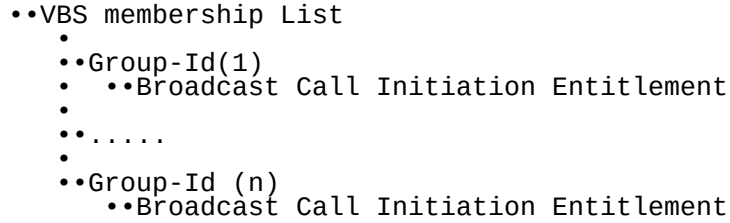
Figure 9: Regional Subscription Data

```
••VGCS membership List
   •
   ••Group-Id(1)
   •
   ••.....
   •
```



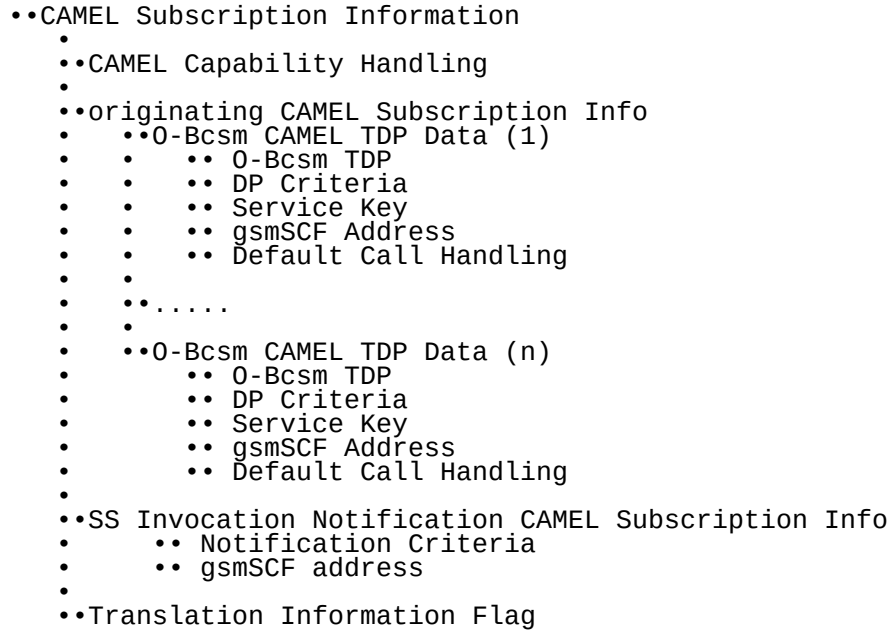
NOTE: For detailed information see GSM 03.68 and GSM 09.02.

Figure 10: Voice Group Call Data



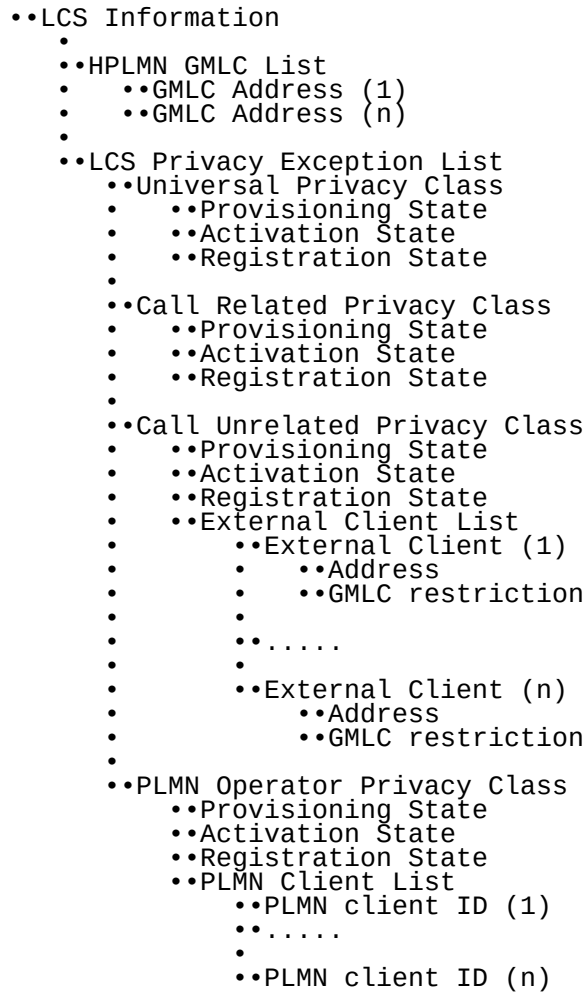
NOTE: For detailed information see GSM 03.69 and GSM 09.02.

Figure 11: Voice Broadcast Call Data



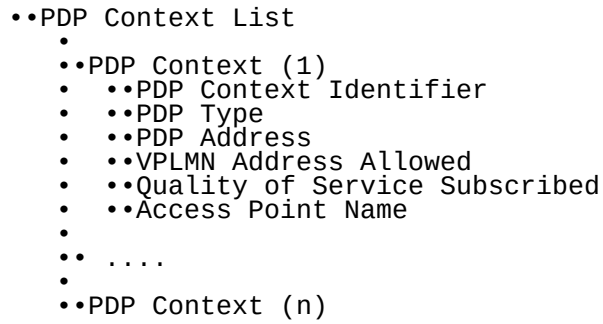
NOTE: For detailed information see GSM 03.72, GSM 03.78 and GSM 09.02.

Figure 12: CAMEL subscription info



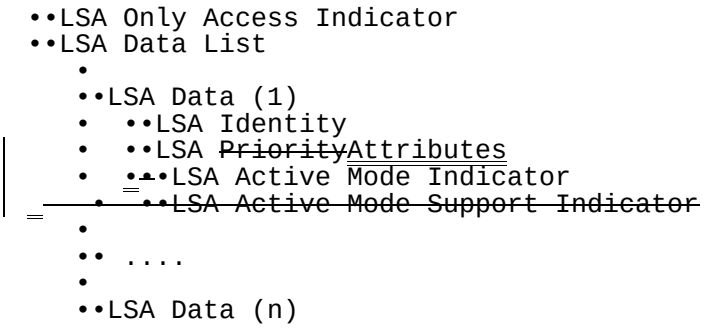
NOTE: For detailed information see GSM 03.71 and GSM 09.02.

Figure 13: LCS Information



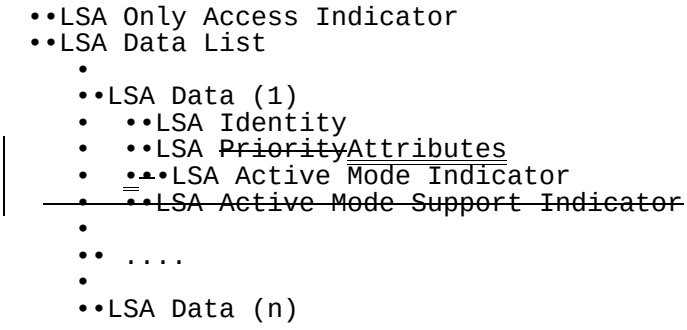
NOTE: The figure shows the information in the SGSN. For detailed information see GSM 03.60. For information about the GGSN information, see GSM 03.08.

Figure 14: GPRS subscription data



NOTE: For detailed information see GSM 03.73 and GSM 09.02.

Figure 15: LSA data in the VLR



NOTE: For detailed information see GSM 03.73 and GSM 09.02.

Figure 15a: LSA data in the SGSN

3GPP TSG-N WG2 #8
Kyoto, Japan, 17-21 Jan 2000

Document N2B000088
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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

09.02	CR	A281	Current Version:	7.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to: CN#07	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑	for information		non-strategic	X	

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 [X]
(at least one should be marked with an X)

Source: N2 **Date:** 12 Jan 2000

Subject: Correction of LSA information.

Work item: SoLSA

Category: *(only one category shall be marked with an X)*

F	Correction	X	**Release:**	Phase 2	
A	Corresponds to a correction in an earlier release			Release 96	
B	Addition of feature			Release 97	
C	Functional modification of feature			Release 98	X
D	Editorial modification			Release 99	
				Release 00	

Reason for change: According to GSM 03.73 the priority, a preferential access indicator and an active mode support indicator are defined for each subscribed LSA in the LSA Information. In GSM 08.08 they are defined as an octet string and are refered to as attributes to the LSA. An active mode indicator is also defined per each subscribed LSA but this is not forwarded on the A interface to the BSS.
In order to comply with these TS GSM 09.02 needs to be updated.

Clauses affected: 7.6.3.56, 8.8.1.3, 17.7.1

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.008, 23.016, 29.002
Other GSM core specifications	X	→ List of CRs:	03.08, 03.16
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments: Category C1: Essential Correction

help.doc

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

7.6.3.56 LSA Information

This parameter refers to one or more localised service areas a subscriber may be a member of, together with the priority, the preferential access indicator, the active mode support indicator and active mode indication of each localised service area. The access right outside these localised service areas is also indicated.

8.8.1.3 Parameter use

Network access mode

This parameter defines if the subscriber has access to MSC/VLR and/or to SGSN. This parameter is used by SGSN and MSC/VLR. In VLR, the parameter is used only as part of Restore Data Procedure and the parameter is not stored in the VLR.

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

IMSI

It is only included if the service is not used in an ongoing transaction (e.g. location updating). This parameter is used by the VLR and the SGSN.

MSISDN

It is included either at location updating or when it is changed. The MSISDN sent shall be the basic MSISDN. This parameter is used by the VLR and the SGSN.

Category

It is included either at location updating or when it is changed. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Subscriber Status

It is included either at location updating or when it is changed.

To apply, remove or update Operator Determined Barring Categories the Subscriber Status is set to Operator Determined Barring. In this case ODB General Data shall also be present. If the Operator Determined Barring applies and the subscriber is registered in the HPLMN and HPLMN specific Operator Determined Barring applies then ODB HPLMN Specific Data shall also be present.

To remove all Operator Determined Barring Categories the Subscriber Status shall be set to "Service Granted". This parameter is used by the VLR and the SGSN.

Bearer service List

A list of Extensible Bearer service parameters (Extensible Bearer service is defined in subclause 7.6). An Extensible Bearer service parameter must be the code for an individual Bearer service, except in the cases described below.

The codes for the Bearer service groups "allAlternateSpeech-DataCDA" and "allAlternateSpeech-DataCDS" shall, if applicable, be sent from the HLR to the VLR as a pair. The codes for the Bearer service groups "allSpeechFollowedByDataCDA" and "allSpeechFollowedByDataCDS" shall, if applicable, be sent from the HLR to the VLR as a pair.

If it is included in the Request/Indication, it includes either all Extensible Bearer services subscribed (at location updating or at restoration) or only the ones added (at subscriber data modification).

If the VLR receives an Indication containing any Extensible Bearer service parameters which it does not support/allocate it returns them in the response to the HLR and discards the unsupported Extensible Bearer services (no error is sent back), except in the cases described below.

If the VLR receives the codes for the Bearer service groups "allSpeechFollowedByDataCDA" and "allSpeechFollowedByDataCDS" and supports one or more of the circuit-switched synchronous or asynchronous data rates specified for simple data bearer services, it shall accept the bearer service codes, and not return them in the response to the HLR. If the VLR does not support any of the circuit-switched synchronous or asynchronous data rates

specified for simple data bearer services, and receives the pair of codes for "allAlternateSpeech-DataCDA" and "allAlternateSpeech-DataCDS" or the pair of codes for "allSpeechFollowedByDataCDA" and "allSpeechFollowedByDataCDS", it shall reject the pair of codes by returning them in the response to the HLR. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Teleservice List

A list of Extensible Teleservice parameters (Extensible Teleservice is defined in subclause 7.6). An Extensible Teleservice parameter must be the code for an individual Teleservice.

If it is included in the Request/Indication, it contains either all Extensible Teleservices subscribed (at location updating or at restoration) or the ones added (at subscriber data modification). Only the Extensible Teleservices that are relevant to the node at which the message is received should be included in the Teleservice List.

If the VLR or the SGSN receives an Indication containing any Extensible Teleservice parameters which it does not support/allocate it returns them in the response to the HLR and discards the unsupported Extensible Teleservices (no error is sent back). This parameter is used by the VLR and the SGSN.

Forwarding information List

A list of Extensible Forwarding information parameters (Extensible Forwarding information is defined in subclause 7.6). It includes Call Forwarding services either at location updating or at restoration or when they are changed. Each Extensible Forwarding information parameter shall be treated independently of all other parameters in the primitive.

The Extensible Forwarding information shall include the SS-Code for an individual call forwarding supplementary service. The Extensible Forwarding information shall contain one or more Extensible Forwarding Features (Extensible Forwarding Feature is defined in subclause 7.6).

The Extensible Forwarding Feature may include an Extensible Basic Service Group. This shall be interpreted according to the rules in subclause 8.8.1.4.

The Extensible Forwarding Feature shall contain an Extensible SS-Status parameter.

If the Extensible SS-Status indicates that call forwarding is registered then (except for call forwarding unconditional) the Extensible Forwarding Feature shall contain a forwarded-to number and, if available, the forwarded-to subaddress. In other states the forwarded-to number and, if applicable, the forwarded-to subaddress shall not be included. For call forwarding unconditional the forwarded-to number and, if applicable, the forwarded-to subaddress shall not be included. If the VLR does not receive a forwarded-to subaddress then it shall assume that a forwarded-to subaddress has not been registered.

The Extensible Forwarding Feature shall contain the extensible forwarding options (except for call forwarding unconditional where the extensible forwarding options shall not be included). Bits 3 and 4 of the extensible forwarding options shall be ignored by the VLR, and may be set to any value by the HLR.

For call forwarding on no reply: If the extensible SS-Status indicates that call forwarding is registered then the Extensible Forwarding Feature shall contain an extensible no reply condition timer. In other states the no reply condition timer shall not be included.

For call forwarding services other than call forwarding on no reply: The Extensible Forwarding Feature shall not contain a no reply condition timer.

If the VLR receives an Indication containing any Call Forwarding service codes which it does not support/allocate it returns them to the HLR in the parameter SS-Code List and discards the unsupported Call Forwarding service codes (no error is sent back). This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Call barring information List

A list of Extensible Call barring information parameters (Extensible Call barring information is defined in subclause 7.6). It includes Call Barring services either at location updating or at restoration or when they are changed. Each Extensible Call barring information parameter shall be treated independently of all other parameters in the primitive.

The Extensible Call barring information shall include the SS-Code for an individual call barring supplementary service. The Extensible Call barring information shall contain one or more Extensible Call Barring Features (Extensible Call Barring Feature is defined in subclause 7.6).

The Extensible Call Barring Feature may include an Extensible Basic Service Group. This shall be interpreted according to the rules in subclause 8.8.1.4.

The Extensible Call Barring Feature shall contain an extensible SS-Status parameter.

If the VLR receives an Indication containing any Extensible Call Barring service codes which it does not support/allocate it returns them to the HLR in the parameter SS-Code List and discards the unsupported Extensible Call Barring service codes (no error is sent back). This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

CUG information List

A list of CUG information list parameters (CUG information is defined in subclause 7.6). It includes CUG information either at location updating or at restoration or when it is changed.

At location updating, restoration or when there is a change in CUG data, the HLR shall include the complete CUG-SubscriptionList and, if there are options per basic group, it shall also include the complete CUG-FeatureList. If there are not options per extensible basic service group the CUG-FeatureList shall not be included.

In any dialogue, the first insertSubscriberData message which contains CUG information shall include a non-empty CUG-SubscriptionList.

When the VLR receives CUG data it shall replace the stored CUG data with the received data set.

If CUG-FeatureList is omitted in the Insert Subscriber Data operation VLR shall interpret that no options per extensible basic service group exist, and then it shall apply the default values i.e. no outgoing access, no incoming access, no preferential CUG exists.

If CUG-Feature is received without preferential CUG, the VLR shall interpret that no preferential CUG applies.

If the VLR detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value.

Note that data consistency between CUG subscription data and CUG feature data is the responsibility of the HLR.

If the VLR does not support the CUG service it returns its code to the HLR in the parameter SS-Code List and discards the received information (no error is sent back). This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

SS-Data List

A list of Extensible SS-Data parameters (Extensible SS-Data is defined in subclause 7.6). It is sent for any other supplementary service than Call Forwarding, Call Barring, CUG and eMLPP either at location updating or at restoration or when they are changed. Each SS-Data parameter shall be treated independently of all other parameters in the primitive.

The Extensible SS-Data shall include the SS-Code for an individual supplementary service.

The Extensible SS-Data shall contain an Extensible SS-Status parameter and any subscription options that are applicable to the service defined by the SS-Code.

The SS-Data may include a Basic Service Group List. This shall be interpreted according to the rules in subclause 8.8.1.4.

If the VLR receives an Indication containing any supplementary service codes which it does not support/allocate it returns them to the HLR in the parameter SS-Code List and therefore discards the unsupported service codes received (no error is sent back). This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Operator Determined Barring General data

If it is included in a Request/Indication, it includes all the Operator Determined Barring categories that may be applied to a subscriber registered in any PLMN. This parameter is only included in a Request/Indication when the parameter Subscriber Status is set to the value Operator Determined Barring. Note that all General Operator Determined Barring Categories shall be set to their actual status.

If the VLR or the SGSN receives an Indication containing Operator Determined Barring General Data which shows that the subscriber is subject to barring not supported / not allocated by the VLR or by the SGSN, it returns Operator Determined Barring General Data in the response to the HLR to show the barring categories which are not supported / not allocated by the VLR or by the SGSN. This parameter is used by the VLR and the SGSN.

Operator Determined Barring HPLMN data

It includes all the Operator Determined Barring categories that may be applied only to a subscriber registered in the HPLMN. Therefore, it shall only be transferred to the VLR or to the SGSN when the subscriber is roaming into the HPLMN and when the parameter Subscriber Status is set to the value Operator Determined Barring. Note that all HPLMN Operator Determined Barring Categories shall be set to their actual status.

If Subscriber Status is set to the value Operator Determined Barring and no Operator Determined Barring HPLMN data is present then the VLR or the SGSN shall not apply any HPLMN specific ODB services to the subscriber. This parameter is used by the VLR and the SGSN.

eMLPP Subscription Data

If included in the Insert Subscriber Data request this parameter defines the priorities the subscriber might apply for a call (as defined in subclause 7.6). It contains both subparameters of eMLPP.

If the VLR does not support the eMLPP service it returns its code to the HLR in the parameter SS-Code List and therefore discards the received information (no error is sent back).

eMLPP subscription data that have been stored previously in a subscriber data record in the VLR are completely replaced by the new eMLPP subscription data received in a MAP_INSERT_SUBSCRIBER_DATA during either an Update Location or Restore Data procedure or a stand alone Insert Subscriber data procedure. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Roaming Restriction Due To Unsupported Feature

The HLR may decide to include this parameter in the request if certain services or features are indicated as not supported by the MSC/VLR (e.g. Advice of Charge Charging Level).

If this parameter is sent to the VLR the MSC area is restricted by the HLR and the VLR. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Regional Subscription Data

If included in the Insert Subscriber Data request this parameter defines the subscriber's subscription area for the addressed VLR or for the addressed SGSN (as defined in subclause 7.6). It contains the complete list of up to 10 Zone Codes that apply to a subscriber in the currently visited PLMN. The HLR shall send only those Zone Codes which are stored against the CC and NDC of the VLR or the CC and NDC of the SGSN to be updated.

NOTE: Support of this parameter is a network operator option and it will not be sent to networks which do not support Regional Subscription.

Regional subscription data that have been stored previously in a subscriber data record in the VLR or in the SGSN are completely replaced by the regional subscription data received in an Insert Subscriber Data indication during either an Update Location or Restore Data procedure or a stand alone Insert Subscriber data procedure.

After the regional subscription data are inserted the VLR or the SGSN shall derive whether its location areas are allowed or not. If the whole MSC or SGSN area is restricted it will be reported to HLR by returning the Regional Subscription Response.

The VLR or the SGSN returns a Regional Subscription Response indicating that a problem with the Zone Code has been detected in one of the following cases:

- Too Many Zone Codes: more than 10 Zone Codes are to be stored in the VLR or in the SGSN;
- Regional Subscription Not Supported by the VLR or the SGSN;
- Zone Codes Conflict: the VLR or the SGSN detects that the zone codes indicate conflicting service permission for a location area.

Zone codes which have no mapping to location areas shall be ignored.

If a sequence of MAP_INSERT_SUBSCRIBER_DATA services is used during a dialogue, Regional Subscription Data shall be accepted only in one service. Regional Subscription Data received in a subsequent service shall be rejected with the error Unexpected Data Value.

If Regional Subscription Data are not included in any MAP_INSERT_SUBSCRIBER_DATA service, there is no restriction of roaming due to Regional Subscription. This parameter is used by the VLR and the SGSN.

Voice Broadcast Data

This parameter contains a list of group id's a user might have subscribed to; (VBS-Data is defined in subclause 7.6). It includes VBS information either at location updating or at restoration or when it is changed.

At location updating, restoration or when there is a change in VBS data, the HLR shall include the complete VBS-Data.

When the VLR receives VBS-Data within a dialogue it shall replace the stored VBS-data with the received data set. All subsequent VBS-dta received within this dialogue shall be interpreted as add-on data.

If VBS-data is omitted in the Insert Subscriber Data operation the VLR shall keep the previously stored VBS data.

If the VLR detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value. . This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Voice Group Call Data

This parameter contains a list of group id's a user might have subscribed to; see subclause 7.6.

At location updating, restoration or when there is a change in VGCS data, the HLR shall include the complete VGCS-Data.

When the VLR receives VGCS-Data within a dialogue it shall replace the stored VGCS-Data with the received data set. All VGCS-Data received within this dialogue shall be interpreted as add-on data.

If VBCS-Data is omitted in the Insert Subsciber Data operation the VLR shall keep the previously stored VGCS-Data.

If the VLR detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

North American Equal Access preferred Carrier Id List

A list of the preferred carrier identity codes that are subscribed to.

When the VLR receives this parameter from the HLR, it shall replace the previously stored preferred carrier identity codes with the received ones. It is not possible to delete all the preferred carrier identity codes from the VLR using this service. To delete all the preferred carrier identity codes from the VLR, the HLR shall use the MAP_CANCEL_LOCATION service.

LSA Information

If included in the ISD request, this parameter contains a list of localised service area identities a user might have subscribed to together with the priority, the preferential access indicator, the active mode support indicator and active mode indication of each localised service area; see subclause 7.6. The access right outside these localised service areas is also indicated. In all cases mentioned below, the LSA information shall only include LSA Data applicable to the VPLMN where the Subscriber is located. The VLR number, received in the MAP-UPDATE_LOCATION primitive, or

the SGSN number, received in the MAP_UPDATE_GPRS_LOCATION primitive, can be used, alongside data stored in the HLR, to determine the LSA Data applicable to the VPLMN.

At restoration, location updating or GPRS location updating the HLR shall include the complete set of applicable LSA Information.

When there is a change in LSA data the HLR shall include at least the new and/or modified LSA data.

When there is a change in the access right outside the localised service areas the HLR shall include the LSA only access indicator.

When the SGSN or the VLR receives LSA information within a dialogue it shall check if the received data has to be considered as the entire LSA information. If so, it shall replace the stored LSA information with the received data set, otherwise it shall replace the data only for the modified LSA data (if any) and/or access right, and add the new LSA data (if any) to the stored LSA Information.

If the entire LSA information is received, it shall always include the LSA only access indicator value together with the LSA data applicable for the PLMN (if any).

If LSA Information is omitted in the Insert Subscriber Data operation the SGSN or the VLR shall keep the previously stored LSA Information.

If the SGSN or the VLR detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value. This parameter is used by the VLR and the SGSN.

LMU Identifier

This parameter indicates the presence of an LMU.

LCS Information

This parameter provides the following LCS related information for an MS subscriber:

- list of GMLCs in the HPLMN
- privacy exception list

SS-Code List

The list of SS-Code parameters that are provided to a subscriber but are not supported/allocated by the VLR (SS-Code is defined in subclause 7.6). The list can only include individual SS-Codes that were sent in the service request. This parameter is used only by the VLR.

Regional Subscription Response

If included in the response this parameter indicates one of:

- MSC Area Restricted entirely because of regional subscription;
- SGSN Area Restricted entirely because of regional subscription;
- Too Many Zone Codes to be inserted;
- Zone Codes Conflict;
- Regional Subscription not Supported by the VLR or by the SGSN.

If the VLR determines after insertion of Regional Subscription Data that the entire MSC area is restricted, the VLR shall respond with a Regional Subscription Response indicating MSC Area Restricted. Otherwise MSC Area Restricted is not sent. The HLR shall check whether the current MSC area is no longer restricted.

If the SGSN determines after insertion of Regional Subscription Data that the entire SGSN area is restricted, the SGSN shall respond with a Regional Subscription Response indicating SGSN Area Restricted. Otherwise SGSN Area Restricted is not sent. The HLR shall check whether the current SGSN area is no longer restricted. This parameter is used by the VLR and by the SGSN.

VLR CAMEL Subscription Info

This parameter is sent for subscribers who have CAMEL services which are invoked in the MSC. In CAMEL phase 1 this parameter contains only the O-CSI. If an O-CSI is contained, TDP-Criteria may also be present in CAMEL Phase 2. In CAMEL Phase 2 this parameter contains the SS-CSI and/or the O-CSI. The VLR CAMEL Subscription Info is sent at location updating or when any information in the applicable CAMEL Subscription Info in the HLR has been changed. The entire set of CAMEL Subscription Info is sent within one dialogue. If a set of CAMEL Subscription Info is already stored in the VLR, i.e received within a previous dialogue, it is replaced by the received data. If the VLR CAMEL Subscription Info is ommitted in the Insert Subscriber Data operation the VLR shall keep the previously stored VLR CAMEL Subscription Info. Within one dialogue subsequent received data are interpreted as add-on data. If the VLR detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

The VLR CAMEL Subscription Info may contain the TIF-CSI (Translation Information Flag). See GSM 03.72 for the use of this parameter and the conditions for its presence.

Supported CAMEL Phases

The use of this parameter and the requirements for its presence are specified in GSM 03.78. This parameter is used only by the VLR.

A VLR not supporting any CAMEL-Phase may omit this parameter.

GPRS Subscription Data

This parameter contains a list of PDP-contexts a user has subscribed to; see subclause 7.6.

At GPRS location updating the HLR shall include the complete GPRS Subscription Data.

When there is a change in GPRS subscriber data the HLR shall include only the new and/or modified PDP contexts.

When the SGSN receives GPRS Subscription Data within a dialogue it shall check if the received data has to be considered as the entire GPRS subscription data. If so, it shall replace the stored GPRS Subscription Data with the received data set, otherwise it shall replace the data only for the modified PDP contexts (if any) and add the new PDP contexts (if any) to the stored GPRS Subscription Data.

If GPRS Subscription Data is omitted in the Insert Subscriber Data operation the SGSN shall keep the previously stored GPRS Subscription Data.

If the SGSN detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value. This parameter is used only by the SGSN and if the VLR receives this parameter it shall ignore it.

Roaming Restricted In SGSN Due To Unsupported Feature

The HLR may decide to include this parameter in the request if certain services or features are indicated as not supported by the SGSN. This parameter is used only by the SGSN and if the VLR receives this parameter it shall ignore it.

User error

Only one of the following values is applicable:

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

17.7.1 Mobile Service data types

```
MAP-MS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-MS-DataTypes (11) version5 (5)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS

      -- location registration types
      UpdateLocationArg,
      UpdateLocationRes,
      CancelLocationArg,
      CancelLocationRes,
      PurgeMS-Arg,
      PurgeMS-Res,
      SendIdentificationRes,
      UpdateGprsLocationArg,
      UpdateGprsLocationRes,



      -- handover types
      PrepareHO-Arg,
      PrepareHO-Res,
      PrepareSubsequentHO-Arg,

      -- authentication management types
      SendAuthenticationInfoArg,
      SendAuthenticationInfoRes,

      -- security management types
      EquipmentStatus,
      Kc,

      -- subscriber management types
      InsertSubscriberDataArg,
      InsertSubscriberDataRes,
      DeleteSubscriberDataArg,
      DeleteSubscriberDataRes,
      SubscriberData,
      ODB-Data,
      SubscriberStatus,
      ZoneCodeList,
      maxNumOfZoneCodes,
      O-CSI,
      O-BcsmCamelTDPCriteriaList,
      SS-CSI,
      ServiceKey,
      DefaultCallHandling,
      CamelCapabilityHandling,
      BasicServiceCriteria,
      SupportedCamelPhases,
      maxNumOfCamelTDPData,
      CUG-Index,
      CUG-Interlock,
      InterCUG-Restrictions,
      IntraCUG-Options,

      -- fault recovery types
      ResetArg,
      RestoreDataArg,
      RestoreDataRes,

      -- subscriber information enquiry types
      ProvideSubscriberInfoArg,
      ProvideSubscriberInfoRes,
      SubscriberInfo,
      LocationInformation,
      SubscriberState,

      -- any time information enquiry types
      AnyTimeInterrogationArg,
```

```
      AnyTimeInterrogationRes,

      -- gprs location information retrieval types
      SendRoutingInfoForGprsArg,
      SendRoutingInfoForGprsRes,

      -- failure reporting types
      FailureReportArg,
      FailureReportRes,

      -- gprs notification types
      NoteMsPresentForGprsArg,
      NoteMsPresentForGprsRes


;

IMPORTS
      maxNumOfSS,
      SS-SubscriptionOption,
      SS-List
FROM MAP-SS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SS-DataTypes (14) version5 (5)}

      SS-Code
FROM MAP-SS-Code {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SS-Code (15) version5 (5)}

      Ext-BearerServiceCode
FROM MAP-BS-Code {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-BS-Code (20) version5 (5)}

      Ext-TeleserviceCode
FROM MAP-TS-Code {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-TS-Code (19) version5 (5)}


      ISDN-AddressString,
      maxISDN-AddressLength,
      ISDN-SubaddressString,
      ExternalSignalInfo,
      IMSI,
      HLR-List,
      LMSI,
      Identity,
      GlobalCellId,
      CellIdOrLAI,
      Ext-BasicServiceCode,
      NAEA-PreferredCI,
      EMLPP-Info,
      SubscriberIdentity,
      AgeOfLocationInformation,
      LCSClientExternalID,
      LCSClientInternalID



FROM MAP-CommonDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version5 (5)}

      ExtensionContainer
FROM MAP-ExtensionDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version5 (5)}

      AbsentSubscriberDiagnosticSM
FROM MAP-ER-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ER-DataTypes (17) version5 (5)}


;


-- location registration types
```

```
UpdateLocationArg ::= SEQUENCE {
    imsi                                IMSI,

    msc-Number                          [1] ISDN-AddressString,
    vlr-Number                          ISDN-AddressString,
    lmsi                                [10] LMSI OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ... ,
    vlr-Capability                      [6] VLR-Capability              OPTIONAL }
```

```
VLR-Capability ::= SEQUENCE{
    supportedCamelPhases                [0] SupportedCamelPhases        OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ... ,
    solsaSupportIndicator               [2]  NULL                       OPTIONAL }
```

```
UpdateLocationRes ::= SEQUENCE {
    hlr-Number                          ISDN-AddressString,

    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...  }
```

```
CancelLocationArg ::= [3] SEQUENCE {
    identity                            Identity,
    cancellationType                    CancellationType                OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...}
```

```
CancellationType ::= ENUMERATED {
    updateProcedure                     (0),
    subscriptionWithdraw                (1),
    ...}
    -- The HLR shall not send values other than listed above
```

```
CancelLocationRes ::= SEQUENCE {
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...}
```

```
PurgeMS-Arg ::= [3] SEQUENCE {
    imsi                                IMSI,
    vlr-Number                          [0] ISDN-AddressString          OPTIONAL,
    sgsn-Number                         [1]  ISDN-AddressString         OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...}
```

```
PurgeMS-Res ::= SEQUENCE {
    freezeTMSI                          [0]  NULL                       OPTIONAL,
    freezeP-TMSI                        [1]  NULL                       OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...}
```

```
SendIdentificationRes ::= SEQUENCE {
    imsi                                IMSI,
    authenticationSetList               AuthenticationSetList           OPTIONAL,
    ...}
```

```
AuthenticationSetList ::= SEQUENCE SIZE (1..5) OF
                                        AuthenticationSet
```

```
AuthenticationSet ::= SEQUENCE {
    rand                                RAND,
    sres                                SRES,
    kc                                  Kc,
    ...}
```

```
RAND ::= OCTET STRING (SIZE (16))
```

```
SRES ::= OCTET STRING (SIZE (4))
```

```
Kc ::= OCTET STRING (SIZE (8))
```

```
-- gprs location registration types
```

```
UpdateGprsLocationArg ::= SEQUENCE {
    imsi                                IMSI,
    sgsn-Number                         ISDN-AddressString,
    sgsn-Address                        GSN-Address,
    extensionContainer                  ExtensionContainer                  OPTIONAL,
    ... ,
    sgsn-Capability                     [0] SGSN-Capability                 OPTIONAL }
```

```
SGSN-Capability ::= SEQUENCE{
    solsaSupportIndicator               NULL                                OPTIONAL,
    extensionContainer                  [1] ExtensionContainer              OPTIONAL,
    ... }
```

```
GSN-Address ::= OCTET STRING (SIZE (5..17))
    -- Octets are coded according to TS GSM 03.03
```

```
UpdateGprsLocationRes ::= SEQUENCE {
    hlr-Number                          ISDN-AddressString,
    extensionContainer                  ExtensionContainer                  OPTIONAL,
    ...}
```

-- handover types

```
PrepareHO-Arg ::= SEQUENCE {
    targetCellId                        GlobalCellId                        OPTIONAL,
    ho-NumberNotRequired                NULL                                OPTIONAL,
    bss-APDU                            ExternalSignalInfo                  OPTIONAL,
    ...}
```

```
PrepareHO-Res ::= SEQUENCE {
    handoverNumber                      ISDN-AddressString                  OPTIONAL,
    bss-APDU                            ExternalSignalInfo                  OPTIONAL,
    ...}
```

```
PrepareSubsequentHO-Arg ::= SEQUENCE {
    targetCellId                        GlobalCellId,
    targetMSC-Number                    ISDN-AddressString,
    bss-APDU                            ExternalSignalInfo,
    ...}
```

-- authentication management types

```
SendAuthenticationInfoArg ::= IMSI
```

```
SendAuthenticationInfoRes ::= AuthenticationSetList
```

-- security management types

```
EquipmentStatus ::= ENUMERATED {
    whiteListed  (0),
    blackListed  (1),
    greyListed  (2)}
```

-- subscriber management types

```
InsertSubscriberDataArg ::= SEQUENCE {
    imsi                                [0] IMSI                            OPTIONAL,
    COMPONENTS OF                       SubscriberData,
    extensionContainer                  [14] ExtensionContainer             OPTIONAL,
    ... ,
    naea-PreferredCI                    [15] NAEA-PreferredCI               OPTIONAL,
    -- naea-PreferredCI is included at the discretion of the HLR operator.
    gprsSubscriptionData                [16] GPRSSubscriptionData           OPTIONAL,
    roamingRestrictedInSgsnDueToUnsupportedFeature [23]                     NULL
                                                                            OPTIONAL,
    networkAccessMode                   [24] NetworkAccessMode              OPTIONAL,
    lsaInformation                      [25] LSAInformation                 OPTIONAL,
    lmu-Indicator                       [21] NULL                           OPTIONAL,
    lcsInformation                      [22] LCSInformation                 OPTIONAL
     }
    -- If the Network Access Mode parameter is sent, it shall be present only in
    -- the first sequence if the segmentation is used
```

```
LCSInformation ::= SEQUENCE {
    hplmn-GMLC-List                     [0]  HPLMN-GMLC-List                OPTIONAL,
    lcs-PrivacyExceptionList            [1]  LCS-PrivacyExceptionList       OPTIONAL,
...}
```

```
HPLMN-GMLC-List ::= SEQUENCE SIZE (1..maxNumOfGMLC) OF
                                        ISDN-AddressString
```

```
maxNumOfGMLC  INTEGER ::= 5
```

```
NetworkAccessMode ::= ENUMERATED {
    bothMSCAndSGSN                  (0),
    onlyMSC                         (1),
    onlySGSN                        (2),
    ...}
    -- if unknown values are received in NetworkAccessMode
    -- they shall be discarded.
```

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

```
maxNumOfPDP-Contexts  INTEGER ::= 50
```

```
PDP-Context ::= SEQUENCE {
    pdp-ContextId                   ContextId,
    pdp-Type                        [16] PDP-Type,
    pdp-Address                     [17] PDP-Address                OPTIONAL,
    qos-Subscribed                  [18] QoS-Subscribed,
    vplmnAddressAllowed             [19] NULL OPTIONAL,
    apn                             [20] APN  ,
    extensionContainer              [21] ExtensionContainer         OPTIONAL,
    ...}
```

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

```
GPRSSubscriptionData ::= SEQUENCE {
    completeDataListIncluded            NULL                            OPTIONAL,

        -- If segmentation is used, completeDataListIncluded may only be present in the
        -- first segment.
    gprsDataList                    [1]  GPRSDataList,
    extensionContainer              [2] ExtensionContainer          OPTIONAL,
    ...}
```

```
APN ::=  OCTET STRING (SIZE (2..63))
         -- Octets are coded according to TS GSM 03.03
```

```
PDP-Type ::= OCTET STRING (SIZE (2))
-- Octets are coded according to TS GSM 09.60
```

```
PDP-Address ::= OCTET STRING (SIZE (1..16))
-- Octets are coded according to TS GSM 09.60

-- The possible size values are:
-- 1-7 octets  X.25 address type
--  4  octets  IPv4 address type
-- 16  octets  Ipv6 address type
```

```
QoS-Subscribed ::= OCTET STRING (SIZE (3))
    -- Octets are coded according to TS GSM 04.08.
```

```
LSAOnlyAccessIndicator ::= ENUMERATED {
    accessOutsideLSAsAllowed  (0),
    accessOutsideLSAsRestricted (1)}
```

```
LSADataList ::= SEQUENCE SIZE (1..maxNumOfLSAs) OF
                                        LSAData
```

```
maxNumOfLSAs  INTEGER ::= 20
```

```
LSAData ::= SEQUENCE {
    lsaIdentity                         [0] LSAIdentity,
    lsaPriorityAttributes               [1] LSAPriorityAttributes,
    lsaActiveModeIndicator              [2] NULL                        OPTIONAL,
    lsaActiveModeSupportIndicator       [3] NULL                        OPTIONAL,
    extensionContainer                  [43] ExtensionContainer         OPTIONAL,
    ...}
```

```
LSAInformation ::= SEQUENCE {
    completeDataListIncluded            NULL                            OPTIONAL,

        -- If segmentation is used, completeDataListIncluded may only be present in the
        -- first segment.
    lsaOnlyAccessIndicator              [1]  LSAOnlyAccessIndicator     OPTIONAL,
    lsaDataList                         [2]  LSADataList                OPTIONAL,
    extensionContainer                  [3] ExtensionContainer          OPTIONAL,
    ...}
```

```
LSAIdentity ::= OCTET STRING (SIZE (3))
-- Octets are coded according to TS GSM 03.03
```

```
LSAPriorityAttributes ::= OCTET STRING (SIZE (1))
-- Octets are coded according to TS GSM 08.08
```

```
SubscriberData ::= SEQUENCE {
    msisdn                              [1] ISDN-AddressString          OPTIONAL,
    category                            [2] Category                    OPTIONAL,
    subscriberStatus                    [3] SubscriberStatus            OPTIONAL,
    bearerServiceList                   [4] BearerServiceList           OPTIONAL,
    -- The exception handling for reception of unsupported / not allocated
    -- bearerServiceCodes is defined in section 6.8.1
    teleserviceList                     [6] TeleserviceList             OPTIONAL,
    -- The exception handling for reception of unsupported / not allocated
    -- teleserviceCodes is defined in section 6.8.1
    provisionedSS                       [7] Ext-SS-InfoList             OPTIONAL,
    odb-Data                            [8] ODB-Data                    OPTIONAL,
    roamingRestrictionDueToUnsupportedFeature  [9] NULL                 OPTIONAL,
    regionalSubscriptionData            [10] ZoneCodeList               OPTIONAL,
    vbsSubscriptionData                 [11] VBSDataList                OPTIONAL,
    vgcsSubscriptionData                [12] VGCSDataList               OPTIONAL,
    vlrCamelSubscriptionInfo            [13] VlrCamelSubscriptionInfo   OPTIONAL
    }
```

```
Category ::= OCTET STRING (SIZE (1))
    -- The internal structure is defined in CCITT Rec Q.763.
```

```
SubscriberStatus ::= ENUMERATED {
    serviceGranted  (0),
    operatorDeterminedBarring  (1)}
```

```
BearerServiceList ::= SEQUENCE SIZE (1..maxNumOfBearerServices) OF
                                    Ext-BearerServiceCode
```

```
maxNumOfBearerServices  INTEGER ::= 50
```

```
TeleserviceList ::= SEQUENCE SIZE (1..maxNumOfTeleservices) OF
                                    Ext-TeleserviceCode
```

```
maxNumOfTeleservices  INTEGER ::= 20
```

```
ODB-Data ::= SEQUENCE {
    odb-GeneralData                     ODB-GeneralData,
    odb-HPLMN-Data                      ODB-HPLMN-Data                  OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...}
```

```
ODB-GeneralData ::= BIT STRING {
     allOG-CallsBarred  (0),
     internationalOGCallsBarred  (1),
     internationalOGCallsNotToHPLMN-CountryBarred  (2),
     interzonalOGCallsBarred (6),
     interzonalOGCallsNotToHPLMN-CountryBarred (7),
     interzonalOGCallsAndInternationalOGCallsNotToHPLMN-CountryBarred (8),
     premiumRateInformationOGCallsBarred  (3),
     premiumRateEntertainementOGCallsBarred  (4),
     ss-AccessBarred  (5),
     allECT-Barred (9),
     chargeableECT-Barred (10),
     internationalECT-Barred (11),
     interzonalECT-Barred (12),
     doublyChargeableECT-Barred (13),
     multipleECT-Barred (14)} (SIZE (15..32))
     -- exception handling: reception of unknown bit assignments in the
     -- ODB-GeneralData type shall be treated like unsupported ODB-GeneralData
```

```
ODB-HPLMN-Data ::= BIT STRING {
     plmn-SpecificBarringType1  (0),
     plmn-SpecificBarringType2  (1),
     plmn-SpecificBarringType3  (2),
     plmn-SpecificBarringType4  (3)} (SIZE (4..32))
     -- exception handling: reception of unknown bit assignments in the
     -- ODB-HPLMN-Data type shall be treated like unsupported ODB-HPLMN-Data
```

```
Ext-SS-InfoList ::= SEQUENCE SIZE (1..maxNumOfSS) OF
                                    Ext-SS-Info
```

```
Ext-SS-Info ::= CHOICE {
     forwardingInfo                 [0] Ext-ForwInfo,
     callBarringInfo                [1] Ext-CallBarInfo,
     cug-Info                       [2] CUG-Info,
     ss-Data                        [3] Ext-SS-Data,
     emlpp-Info                     [4] EMLPP-Info}
```

```
Ext-ForwInfo ::= SEQUENCE {
     ss-Code                        SS-Code,
     forwardingFeatureList          Ext-ForwFeatureList,
     extensionContainer             [0] ExtensionContainer          OPTIONAL,
     ...}
```

```
Ext-ForwFeatureList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
                                    Ext-ForwFeature
```

```
Ext-ForwFeature ::= SEQUENCE {
     basicService                   Ext-BasicServiceCode            OPTIONAL,
     ss-Status [4] Ext-SS-Status,
     forwardedToNumber              [5] ISDN-AddressString          OPTIONAL,
     -- When this data type is sent from an HLR which supports CAMEL Phase 2
     -- to a VLR that supports CAMEL Phase 2 the VLR shall not check the
     -- format of the number
     forwardedToSubaddress          [8] ISDN-SubaddressString       OPTIONAL,
     forwardingOptions              [6] Ext-ForwOptions             OPTIONAL,
     noReplyConditionTime           [7] Ext-NoRepCondTime           OPTIONAL,
     extensionContainer             [9] ExtensionContainer          OPTIONAL,
     ...}
```

```
Ext-SS-Status ::= OCTET STRING (SIZE (1..5))

     -- OCTET 1:
     --
     -- bits 8765: 0000 (unused)
     -- bits 4321: Used to convey the "P bit","R bit","A bit" and "Q bit",
     --            representing supplementary service state information
     --            as defined in TS GSM 03.11

     -- bit 4: "Q bit"

     -- bit 3: "P bit"

     -- bit 2: "R bit"

     -- bit 1: "A bit"

     -- OCTETS 2-5: reserved for future use. They shall be discarded if
     -- received and not understood.
```

```
Ext-ForwOptions ::= OCTET STRING (SIZE (1..5))

    -- OCTET 1:

    --  bit 8: notification to forwarding party
    --   0  no notification
    --   1  notification

    --  bit 7: redirecting presentation
    --   0 no presentation
    --   1  presentation

    --  bit 6: notification to calling party
    --   0  no notification
    --   1  notification

    --  bit 5: 0 (unused)

    --  bits 43: forwarding reason
    --   00  ms not reachable
    --   01  ms busy
    --   10  no reply
    --   11  unconditional

    -- bits 21: 00 (unused)

    -- OCTETS 2-5: reserved for future use. They shall be discarded if
    -- received and not understood.
```

```
Ext-NoRepCondTime ::= INTEGER (1..100)
    -- Only values 5-30 are used.
    -- Values in the ranges 1-4 and 31-100 are reserved for future use
    -- If received:
    --       values 1-4 shall be mapped on to value 5
    --       values 31-100 shall be mapped on to value 30
```

```
Ext-CallBarInfo ::= SEQUENCE {
    ss-Code                         SS-Code,
    callBarringFeatureList          Ext-CallBarFeatureList,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
Ext-CallBarFeatureList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
                                    Ext-CallBarringFeature
```

```
Ext-CallBarringFeature ::= SEQUENCE {
    basicService                    Ext-BasicServiceCode            OPTIONAL,
    ss-Status [4] Ext-SS-Status,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
CUG-Info ::= SEQUENCE {
    cug-SubscriptionList            CUG-SubscriptionList,
    cug-FeatureList                 CUG-FeatureList                 OPTIONAL,
    extensionContainer              [0] ExtensionContainer          OPTIONAL,
    ...}
```

```
CUG-SubscriptionList ::= SEQUENCE SIZE (0..maxNumOfCUG) OF
                                    CUG-Subscription
```

```
CUG-Subscription ::= SEQUENCE {
    cug-Index CUG-Index,
    cug-Interlock                   CUG-Interlock,
    intraCUG-Options                IntraCUG-Options,
    basicServiceGroupList           Ext-BasicServiceGroupList       OPTIONAL,
    extensionContainer              [0] ExtensionContainer          OPTIONAL,
    ...}
```

```
CUG-Index ::= INTEGER (0..32767)
    -- The internal structure is defined in ETS 300 138.
```

```
CUG-Interlock ::= OCTET STRING (SIZE (4))
```

```
IntraCUG-Options ::= ENUMERATED {
    noCUG-Restrictions  (0),
    cugIC-CallBarred  (1),
    cugOG-CallBarred  (2)}
```

```
maxNumOfCUG  INTEGER ::= 10
```

```
CUG-FeatureList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
                                        CUG-Feature

Ext-BasicServiceGroupList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups)
        OF
                                        Ext-BasicServiceCode

maxNumOfExt-BasicServiceGroups  INTEGER ::= 32

CUG-Feature ::= SEQUENCE {
    basicService                    Ext-BasicServiceCode            OPTIONAL,
    preferentialCUG-Indicator       CUG-Index OPTIONAL,
    interCUG-Restrictions           InterCUG-Restrictions,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}

InterCUG-Restrictions ::= OCTET STRING (SIZE (1))

    -- bits 876543: 000000 (unused)
    -- Exception handling:
    -- bits 876543 shall be ignored if received and not understood

    -- bits 21
    --   00  CUG only facilities
    --   01  CUG with outgoing access
    --   10  CUG with incoming access
    --   11  CUG with both outgoing and incoming access

Ext-SS-Data ::= SEQUENCE {
    ss-Code                         SS-Code,
    ss-Status [4] Ext-SS-Status,
    ss-SubscriptionOption           SS-SubscriptionOption           OPTIONAL,
    basicServiceGroupList           Ext-BasicServiceGroupList       OPTIONAL,
    extensionContainer              [5] ExtensionContainer          OPTIONAL,
    ...}

LCS-PrivacyExceptionList ::= SEQUENCE SIZE (1..maxNumOfPrivacyClass) OF
                                        LCS-PrivacyClass

maxNumOfPrivacyClass  INTEGER ::= 4

LCS-PrivacyClass ::= SEQUENCE {
    ss-Code                         SS-Code,
    ss-Status                       Ext-SS-Status,
    externalClientList              [0] ExternalClientList          OPTIONAL,
    -- externalClientList is expected only for SS-code = callunrelated
    plmnClientList                  [1] PLMNClientList              OPTIONAL,
    -- plmnClientList is expected only for SS-code - plmn
    extensionContainer              [2] ExtensionContainer          OPTIONAL,
    ...}

ExternalClientList ::= SEQUENCE SIZE (1..maxNumOfExternalClient) OF
                                        ExternalClient

maxNumOfExternalClient  INTEGER ::= 5

PLMNClientList ::= SEQUENCE SIZE (1..maxNumOfPLMNClient) OF
                                        LCSClientInternalID

maxNumOfPLMNClient  INTEGER ::= 5

ExternalClient ::= SEQUENCE {
    clientIdentity                  LCSClientExternalID,
    gmlc-Restriction                [0] GMLC-Restriction            OPTIONAL,
    extensionContainer              [1] ExtensionContainer          OPTIONAL,
    ... }

GMLC-Restriction ::= ENUMERATED {
    hplmn                           (0),
    home-Country                    (1)}

ZoneCodeList ::= SEQUENCE SIZE (1..maxNumOfZoneCodes)
                                        OF ZoneCode

ZoneCode ::= OCTET STRING (SIZE (2))
    -- internal structure is defined in TS GSM 03.03

maxNumOfZoneCodes  INTEGER ::= 10
```

```
InsertSubscriberDataRes ::= SEQUENCE {
    teleserviceList                 [1] TeleserviceList             OPTIONAL,
    bearerServiceList               [2] BearerServiceList           OPTIONAL,
    ss-List                         [3] SS-List                     OPTIONAL,
    odb-GeneralData                 [4] ODB-GeneralData             OPTIONAL,
    regionalSubscriptionResponse    [5]
             RegionalSubscriptionResponse       OPTIONAL,
    supportedCamelPhases            [6] SupportedCamelPhases        OPTIONAL,
    extensionContainer              [7] ExtensionContainer          OPTIONAL,
    ...}
```

```
RegionalSubscriptionResponse ::= ENUMERATED {
    networkNode-AreaRestricted      (0),
    tooManyZoneCodes                (1),
    zoneCodesConflict               (2),
    regionalSubscNotSupported       (3)}
```

```
DeleteSubscriberDataArg ::= SEQUENCE {
    imsi                                [0] IMSI,
    basicServiceList                    [1] BasicServiceList            OPTIONAL,
    -- The exception handling for reception of unsupported/not allocated
    -- basicServiceCodes is defined in section 6.8.2
    ss-List                             [2] SS-List                     OPTIONAL,
    roamingRestrictionDueToUnsupportedFeature [4] NULL                  OPTIONAL,
    regionalSubscriptionIdentifier      [5] ZoneCode                    OPTIONAL,
    vbsGroupIndication                  [7] NULL                        OPTIONAL,
    vgcsGroupIndication                 [8] NULL   OPTIONAL,
    camelSubscriptionInfoWithdraw       [9] NULL   OPTIONAL,
    extensionContainer                  [6] ExtensionContainer OPTIONAL,
    ...,
    gprsSubscriptionDataWithdraw        [10] GPRSSubscriptionDataWithdraw OPTIONAL,
    roamingRestrictedInSgsnDueToUnsuppportedFeature [11] NULL           OPTIONAL,
    lsaInformationWithdraw              [12] LSAInformationWithdraw     OPTIONAL }
```

```
GPRSSubscriptionDataWithdraw ::= CHOICE {
    allGPRSData                     NULL,
    contextIdList                   ContextIdList}
```

```
ContextIdList ::= SEQUENCE SIZE (1..maxNumOfPDP-Contexts) OF
                                    ContextId
```

```
LSAInformationWithdraw ::= CHOICE {
    allLSAData                      NULL,
    lsaIdentityList                 LSAIdentityList }
```

```
LSAIdentityList ::= SEQUENCE SIZE (1..maxNumOfLSAs) OF
                                    LSAIdentity
```

```
BasicServiceList ::= SEQUENCE SIZE (1..maxNumOfBasicServices) OF
                                    Ext-BasicServiceCode
```

```
maxNumOfBasicServices  INTEGER ::= 70
```

```
DeleteSubscriberDataRes ::= SEQUENCE {
    regionalSubscriptionResponse    [0]
                                    RegionalSubscriptionResponse    OPTIONAL,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
VlrCamelSubscriptionInfo ::= SEQUENCE {
    o-CSI                           [0] O-CSI                       OPTIONAL,
    extensionContainer              [1] ExtensionContainer          OPTIONAL,
    ...,
    ss-CSI                          [2]  SS-CSI                     OPTIONAL,
    o-BcsmCamelTDP-CriteriaList     [4] O-BcsmCamelTDPCriteriaList  OPTIONAL,
    tif-CSI                         [3]  NULL                       OPTIONAL
    }
```

```
SS-CSI ::= SEQUENCE {
    ss-CamelData                    SS-CamelData,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
SS-CamelData  ::= SEQUENCE {
     ss-EventList                        SS-EventList,
     gsmSCF-Address                      ISDN-AddressString,
     extensionContainer                  [0] ExtensionContainer          OPTIONAL,
     ...
     }
```

```
SS-EventList  ::= SEQUENCE SIZE (1..maxNumOfCamelSSEvents) OF SS-Code
     -- Actions for the following SS-Code values are defined in CAMEL Phase 2:
     -- ect                              SS-Code ::= '00110001'B
     -- multiPTY                         SS-Code ::= '01010001'B
     -- cd                               SS-Code ::= '00100100'B
     -- all other SS codes shall be ignored
```

```
maxNumOfCamelSSEvents INTEGER ::= 10
```

```
O-CSI ::= SEQUENCE {
     o-BcsmCamelTDPDataList              O-BcsmCamelTDPDataList,
     extensionContainer                  ExtensionContainer              OPTIONAL,
     ...,
     camelCapabilityHandling             [0] CamelCapabilityHandling     OPTIONAL
     }
```

```
O-BcsmCamelTDPDataList ::= SEQUENCE SIZE (1..maxNumOfCamelTDPData) OF
     O-BcsmCamelTDPData
--- O-BcsmCamelTDPDataList shall not contain more than one instance of
--- O-BcsmCamelTDPData containing the same value for o-BcsmTriggerDetectionPoint.
--- For CAMEL Phase 2, this means that only one instance of O-BcsmCamelTDPData is allowed
--- with o-BcsmTriggerDetectionPoint being equal to DP2.
```

```
maxNumOfCamelTDPData  INTEGER ::= 10
```

```
O-BcsmCamelTDPData ::= SEQUENCE {
     o-BcsmTriggerDetectionPoint         O-BcsmTriggerDetectionPoint,
     serviceKey                          ServiceKey,
     gsmSCF-Address                      [0] ISDN-AddressString,
     defaultCallHandling                 [1] DefaultCallHandling,
     extensionContainer                  [2] ExtensionContainer          OPTIONAL,
     ...
     }
```

```
ServiceKey ::= INTEGER (0..2147483647)
```

```
O-BcsmTriggerDetectionPoint ::= ENUMERATED {
     collectedInfo (2),
     ... }
-- exception handling:
-- For O-BcsmCamelTDPData sequences containing this parameter with any
-- other value than the ones listed the receiver shall ignore the whole
-- O-BcsmCamelTDPDatasequence.
-- For O-BcsmCamelTDP-Criteria sequences containing this parameter with any
-- other value than the ones listed the receiver shall ignore the whole
-- O-BcsmCamelTDP-Criteria sequence.
```

```
O-BcsmCamelTDPCriteriaList ::= SEQUENCE SIZE (1..maxNumOfCamelTDPData) OF
     O-BcsmCamelTDP-Criteria
```

```
O-BcsmCamelTDP-Criteria ::= SEQUENCE {
     o-BcsmTriggerDetectionPoint         O-BcsmTriggerDetectionPoint,
     destinationNumberCriteria           [0] DestinationNumberCriteria   OPTIONAL,
     basicServiceCriteria                [1] BasicServiceCriteria        OPTIONAL,
     callTypeCriteria                    [2] CallTypeCriteria            OPTIONAL,
     ... }
```

```
DestinationNumberCriteria  ::= SEQUENCE {
     matchType                           [0] MatchType,
     destinationNumberList               [1] DestinationNumberList       OPTIONAL,
     destinationNumberLengthList         [2] DestinationNumberLengthList OPTIONAL,
     -- one or both of destinationNumberList and destinationNumberLengthList
     -- shall be present
     ... }
```

```
DestinationNumberList  ::= SEQUENCE SIZE   (1..maxNumOfCamelDestinationNumbers) OF
                                    ISDN-AddressString
-- The receiving entity shall not check the format of a number in
-- the dialled number list
```

```
DestinationNumberLengthList  ::= SEQUENCE SIZE (1..maxNumOfCamelDestinationNumberLengths)
OF
                                        INTEGER(1..maxNumOfISDN-AddressDigits)
```

```
BasicServiceCriteria   ::= SEQUENCE SIZE(1..maxNumOfCamelBasicServiceCriteria) OF
    Ext-BasicServiceCode
```

```
maxNumOfISDN-AddressDigits  INTEGER ::= 15
```

```
maxNumOfCamelDestinationNumbers  INTEGER ::= 10
```

```
maxNumOfCamelDestinationNumberLengths  INTEGER ::= 3
```

```
maxNumOfCamelBasicServiceCriteria  INTEGER ::= 5
```

```
CallTypeCriteria       ::= ENUMERATED {
    forwarded                          (0),
    notForwarded                       (1)}
```

```
MatchType       ::= ENUMERATED {
    inhibiting                         (0),
    enabling                           (1)}
```

```
DefaultCallHandling ::= ENUMERATED {
    continueCall (0) ,
    releaseCall (1) ,
    ...}
-- exception handling:
-- reception of values in range 2-31 shall be treated as "continueCall"
-- reception of values greater than 31 shall be treated as "releaseCall"
```

```
CamelCapabilityHandling ::= INTEGER(1..16)
-- value 1 = CAMEL phase 1,
-- value 2 = CAMEL phase 2:
-- reception of values greater than 2 shall be treated as CAMEL phase 2
```

```
SupportedCamelPhases ::= BIT STRING {
    phase1 (0),
    phase2 (1) } (SIZE (1..16))
```

-- gprs location information retrieval types

```
SendRoutingInfoForGprsArg ::= SEQUENCE {
    imsi                                [0] IMSI,
    ggsn-Address                        [1] GSN-Address             OPTIONAL,
    extensionContainer                  [2] ExtensionContainer      OPTIONAL,
    ...}
```

```
SendRoutingInfoForGprsRes ::= SEQUENCE {
    sgsn-Address                        [0] GSN-Address,
    ggsn-Address                        [1]  GSN-Address            OPTIONAL,
    mobileNotReachableReason            [2]  AbsentSubscriberDiagnosticSM
    OPTIONAL,
    extensionContainer                  [3] ExtensionContainer      OPTIONAL,
    ...}
```

-- failure report types

```
FailureReportArg ::= SEQUENCE {
    imsi                                [0] IMSI,
    ggsn-Number                         [1] ISDN-AddressString      ,
    ggsn-Address                        [2] GSN-Address             OPTIONAL,
    extensionContainer                  [3] ExtensionContainer      OPTIONAL,
    ...}
```

```
FailureReportRes ::= SEQUENCE {
    ggsn-Address                        [0] GSN-Address             OPTIONAL,
    extensionContainer                  [1] ExtensionContainer      OPTIONAL,
    ...}
```

-- gprs notification types

```
NoteMsPresentForGprsArg ::= SEQUENCE {
    imsi                                [0] IMSI,
    sgsn-Address                        [1] GSN-Address,
    ggsn-Address                        [2] GSN-Address             OPTIONAL,
    extensionContainer                  [3] ExtensionContainer      OPTIONAL,
    ...}
```

```
NoteMsPresentForGprsRes ::= SEQUENCE {
    extensionContainer                  [0] ExtensionContainer      OPTIONAL,
    ...}
```

-- fault recovery types

```
ResetArg ::= SEQUENCE {
    hlr-Number                      ISDN-AddressString,
    hlr-List                        HLR-List                        OPTIONAL,
    ...}
```

```
RestoreDataArg ::= SEQUENCE {
    imsi                            IMSI,
    lmsi                            LMSI                            OPTIONAL,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ... ,
    vlr-Capability                  [6] VLR-Capability              OPTIONAL }
```

```
RestoreDataRes ::= SEQUENCE {
    hlr-Number                      ISDN-AddressString,
    msNotReachable                  NULL                            OPTIONAL,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

-- VBS/VGCS types

```
VBSDataList ::= SEQUENCE SIZE (1..maxNumOfVBSGroupIds) OF
                                    VoiceBroadcastData
```

```
VGCSDataList ::= SEQUENCE SIZE (1..maxNumOfVGCSGroupIds) OF
                                    VoiceGroupCallData
```

```
maxNumOfVBSGroupIds  INTEGER ::= 50
```

```
maxNumOfVGCSGroupIds  INTEGER ::= 50
```

```
VoiceGroupCallData  ::= SEQUENCE {
    groupId                         GroupId,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
VoiceBroadcastData ::= SEQUENCE {
    groupid                         GroupId,
    broadcastInitEntitlement        NULL                            OPTIONAL,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
GroupId  ::= OCTET STRING (SIZE (3))
    -- Refers to the Group Identification as specified in GSM TS 03.03
    -- and 03.68/ 03.69
```

-- provide subscriber info types

```
ProvideSubscriberInfoArg ::= SEQUENCE {
    imsi     [0] IMSI,
    lmsi     [1] LMSI               OPTIONAL,
    requestedInfo                   [2] RequestedInfo,
    extensionContainer              [3] ExtensionContainer          OPTIONAL,
    ...}
```

```
ProvideSubscriberInfoRes ::= SEQUENCE {
    subscriberInfo                  SubscriberInfo,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
SubscriberInfo ::= SEQUENCE {
    locationInformation             [0] LocationInformation         OPTIONAL,
    subscriberState                 [1] SubscriberState             OPTIONAL,
    extensionContainer              [2] ExtensionContainer          OPTIONAL,
    ...}
```

```
RequestedInfo ::= SEQUENCE {
    locationInformation                 [0] NULL                            OPTIONAL,
    subscriberState                     [1] NULL                            OPTIONAL,
    extensionContainer                  [2] ExtensionContainer              OPTIONAL,
    ...}
```

```
LocationInformation ::= SEQUENCE {
    ageOfLocationInformation            AgeOfLocationInformation            OPTIONAL,
    geographicalInformation             [0] GeographicalInformation         OPTIONAL,
    vlr-number                          [1] ISDN-AddressString              OPTIONAL,
    locationNumber                      [2] LocationNumber                  OPTIONAL,
    cellIdOrLAI                         [3] CellIdOrLAI                     OPTIONAL,
    extensionContainer                  [4] ExtensionContainer              OPTIONAL,
    ...}
```

```
GeographicalInformation ::= OCTET STRING (SIZE (8))
-- Refers to geographical Information defined in GSM 03.32.
-- Only the description of an ellipsoid point with uncertainty circle
--as specified in GSM 03.32 is allowed to be used
-- The internal structure according to GSM 03.32 is as follows:
--       Type of shape (ellipsoid point with uncertainty circle)          1 octet
--       Degrees of Latitude                                              3 octets
--       Degrees of Longitude                                             3 octets
--       Uncertainty code                                                 1 octet
```

```
LocationNumber ::= OCTET STRING (SIZE (2..10))
    -- the internal structure is defined in CCITT Rec Q.763
```

```
SubscriberState ::= CHOICE {
    assumedIdle                         [0] NULL,
    camelBusy [1] NULL,
    netDetNotReachable                  NotReachableReason,
    notProvidedFromVLR                  [2] NULL}
```

```
NotReachableReason ::= ENUMERATED {
    msPurged (0),
    imsiDetached (1),
    restrictedArea (2),
    notRegistered (3)}
```

-- any time interrogation info types

```
AnyTimeInterrogationArg ::= SEQUENCE {
    subscriberIdentity                  [0] SubscriberIdentity,
    requestedInfo                       [1] RequestedInfo,
    gsmSCF-Address                      [3] ISDN-AddressString,
    extensionContainer                  [2] ExtensionContainer              OPTIONAL,
    ...}
```

```
AnyTimeInterrogationRes ::= SEQUENCE {
    subscriberInfo                      SubscriberInfo,
    extensionContainer                  ExtensionContainer                  OPTIONAL,
    ...}
```

```
END
```

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Kyoto, Japan, 17-21 Jan 2000

Document N2B000065
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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

23.008	**CR**	**013**	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	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑		for information		non-strategic	X	

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 [X]

Source: N2 **Date:** 12 Jan 2000

Subject: Correction of LSA Information.

Work item: SoLSA

Category: *(only one category shall be marked with an X)*

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

Release:

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

Reason for change: In GSM 03.73 and GSM 08.08 a preferential access indicator, an active mode support indicator and an active mode indication are defined for each subscribed LSA in the LSA Information. In order to comply with this requirement GSM 03.08 needs to be updated with these indicators.

Clauses affected: 2.4.17, 4

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.016, 29.002
Other GSM core specifications	X	→ List of CRs:	03.08, 03.16, 09.02
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

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

2.4.17 Localised Service Area Information

If a mobile subscriber has a localised service area subscription, the HLR shall store a list of up to 20 Localised Service Area Identities (LSA IDs) per PLMN. The structure of LSA ID is defined in GSM 03.03.

On updating the VLR or the SGSN, the HLR identifies the VPLMN given by the VLR or SGSN number and transfers the applicable LSA ID List to the VLR or SGSN. The VLR or SGSN derives from the LSA ID List the allowed LSA(s), priority of each LSA, the preferential access indicator, the active mode support indicator and active mode indication and the "LSA only access" indicator.

2.4.17.1 LSA Identity

LSA Identity (LSA ID) is defined in GSM 03.03. The element uniquely identifies a LSA.

2.4.17.2 LSA Priority

Localised Service Area Priority (LSA Priority) is defined in GSM 08.08. The LSA Priority is permanent subscriber data stored conditionally in the HLR.

2.4.17.3 LSA Preferential Access Indicator

The Localised Service Area Preferential Access Indicator defines if the subscriber shall be favoured in cells belonging to the LSA at resource allocation compared to other subscribers. The LSA Preferential Access Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.4 LSA Active Mode Support Indicator

The Localised Service Area Active Mode Support Indicator defines if cells belonging to the LSA shall be favoured for the subscriber compared to other cells at resource allocation. The LSA Active Mode Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.3~~5~~ LSA Only Access Indicator

The LSA Only Access Indicator defines if the subscriber is only allowed within its subscribed LSAs. The LSA Only Access Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.4~~6~~ LSA Active Mode Indicator

The Localised Service Area Active Mode Indicator defines if the LSA Identity of the cell in which the MS is currently in radio contact with shall be indicated to the subscriber in active mode. The LSA Active Mode Indicator is permanent subscriber data stored conditionally in the HLR.

2.4.17.5~~7~~ VPLMN Identifier

The VPLMN Identifier identifies the VPLMN in which an LSA Identity is applicable. This identifier is not applicable to Universal LSA IDs as defined in GSM 03.03. The VPLMN identifier is permanent subscriber data stored conditionally in the HLR.

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);

Table a 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 each of the following references:

Table a 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	
LMSI	2.1.8	C	C	T	Note
Mobile Station Category	2.2.1	M	M	P	
LMU Identifier	2.2.1	C	C	P	
RAND, SRES and Kc	2.3.1	M	M	T	
Ciphering Key Sequence Number	2.3.2	-	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	2.4.9	C	-	P	
RSZI lists	2.4.10.1	C	-	P	
Zone Code List	2.4.10.2	-	C	P	
MSC area restricted flag	2.4.11	M	-	T	
LA not allowed flag	2.4.12	-	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.~~X~~17.1	C	C	P	
LSA Priority	2.4.~~X~~17.2	C	C	P	
LSA Preferential Access Indicator	2.4.17.3	C	C	P	
LSA Active Mode Support Indicator	2.4.17.4	C	C	P	
LSA Only Access Indicator	2.4.~~X~~17.~~3~~5	C	C	P	
LSA Active Mode Indicator	2.4.~~X~~17.~~4~~6	C	C	P	
VPLMN Identifier	2.4.~~X~~17.~~5~~7	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	2.14.1.1	C	C	P	
Terminating CAMEL Subscription Information	2.14.1.2	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	
FTN translation information flag(TIF-CSI)	2.14.1.6	C	-	P	
USSD General CAMEL service information (UG-CSI)	2.14.2	C	-	P	
Negotiated CAMEL Capability Handling	2.14.2	C	-	T	
Privacy Exception List	2.15.1.1	C	C	P	
Home GMLC Numbers	2.15.1.2	C	C	P	

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
TLLI	2.1.6	-	-	C	-	T	
Random TLLI	2.1.7	-	-	C	-	T	Note
IMEI	2.1.9	-	-	C	-	T	
RAND/SRES and Kc	2.3.1	M	-	M	-	T	
Ciphering Key Sequence Number	2.3.2	-	-	M	-	T	
Selected Ciphering Algorithm	2.3.3	-	-	M	-	T	
Current Kc	2.3.4	-	-	M	-	T	
P-TMSI Signature	2.3.5	-	-	C	-	T	
Routing Area Identity	2.4.3	-	-	M	-	T	
Cell Global Identification	2.4.4	-	-	C	-	T	
SGSN Number	2.4.8.1	M	C (Gs)	-	-	T	Note
GGSN Number	2.4.8.2	©	-	-	-	P	Note
VLR Number	2.4.5	M	-	C (Gs)	-	T	
RSZI Lists	2.4.10.1	C	-	-	-	P	
Zone Code List	2.4.10.2	-	-	C	-	P	
LA not allowed flag	2.4.12	-	-	M	-	T	
SGSN area restricted flag	2.4.13	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.~~X~~17.1	C	C	C	-	P	
LSA Priority	2.4.~~X~~17.2	C	C	C	-	P	
LSA Preferential Access Indicator	2.4.17.3	C	C	C	-	P	
LSA Active Mode Support Indicator	2.4.17.4	C	C	C	-	P	
LSA Only Access Indicator	2.4.~~X~~17.~~3~~5	C	C	C	-	P	
LSA Active Mode Indicator	2.4.~~X~~17.~~4~~6	C	C	C	-	P	
VPLMN Identifier	2.4.~~X~~17.~~5~~7	C	-	-	-	P	
Provision of teleservice	2.5.2	C	-	C	-	P	
Transfer of SM option	2.5.4	M	-	-	-	P	
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	
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	
MNRG	2.7.2	M	-	M	M	T	
MNRR	2.7.7	C	-	-	-	T	
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

NOTE 1: 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 2: 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.

3GPP TSG-N WG2 #8
Kyoto, Japan, 17-21 Jan 2000

Document N2B000066
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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

23.016	**CR**	**010**	Current Version:	3.2.0

GSM (AA.BB) or 3G (AA.BBB) specification number ↑ *↑ CR number as allocated by MCC support team*

For submission to:	CN#07	for approval	X	strategic		*(for SMG use only)*
list expected approval meeting # here ↑		for information		non-strategic	X	

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 [X]

Source: N2 **Date:** 12 Jan 2000

Subject: Correction of LSA Information.

Work item: SoLSA

Category: *(only one category shall be marked with an X)*

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

Release:

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

Reason for change: According to GSM 03.73 the priority, a preferential access indicator and an active mode support indicator are defined for each subscribed LSA in the LSA Information. In GSM 08.08 they are defined as an octet string and are refered to as attributes to the LSA. An active mode indicator is also defined per each subscribed LSA but this is not forwarded on the A interface to the BSS.
In order to comply with these TS GSM 03.16 needs to be updated.

Clauses affected: 4.5.4

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.008, 29.002
Other GSM core specifications	X	→ List of CRs:	03.08, 03.16, 09.02
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

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

4.5.4 Consistency of supplementary service data

In some cases, the protocol used between the HLR and VLR encodes some data that is not EBSG-related SS data with an EBSG qualifier. In this case, the HLR shall ensure that when this data is sent it is always the same for all EBSGs. If this data is modified, the HLR must send the supplementary service data to the VLR for all EBSGs which meet all the following criteria:

- at least one basic service in the EBSG is supported; and
- the supplementary service is applicable to at least one (possibly different) basic service in the EBSG; and
- the subscriber has a subscription to at least one (possibly different) basic service in the EBSG.

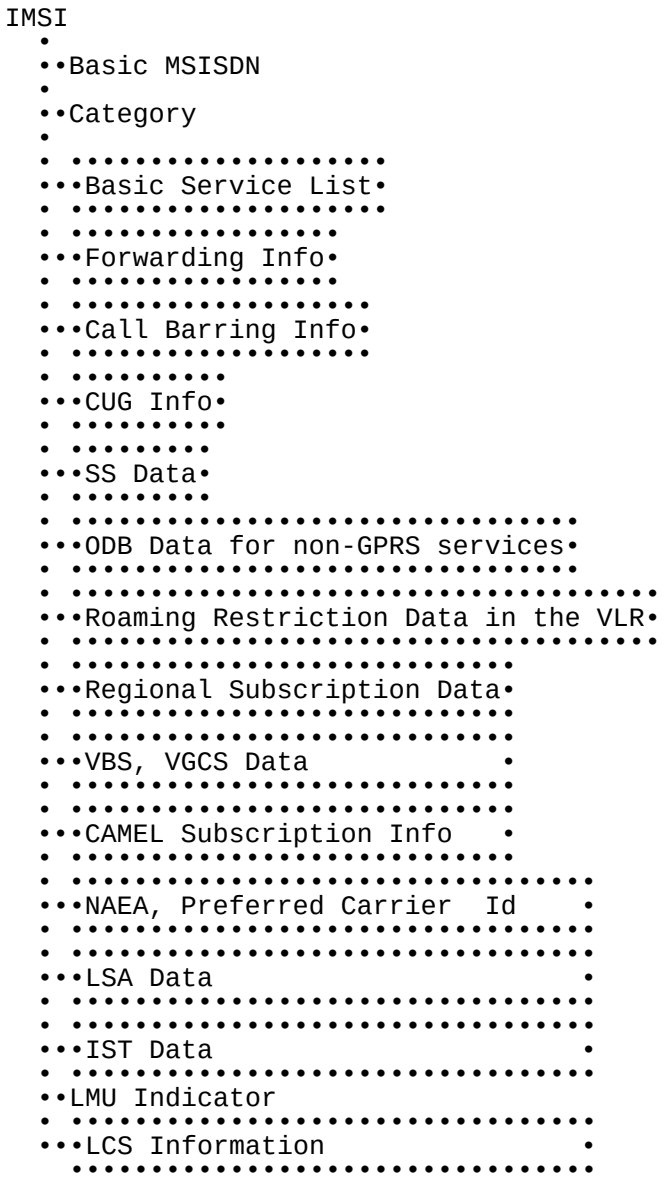


Figure 1: Abstract data structure of non-GPRS Subscriber Data (Data sent to the VLR)

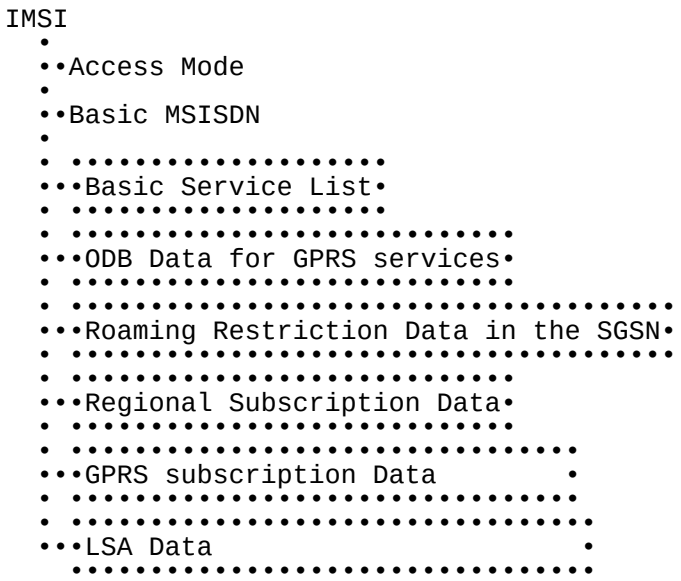
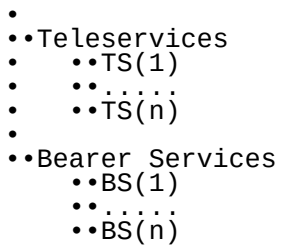
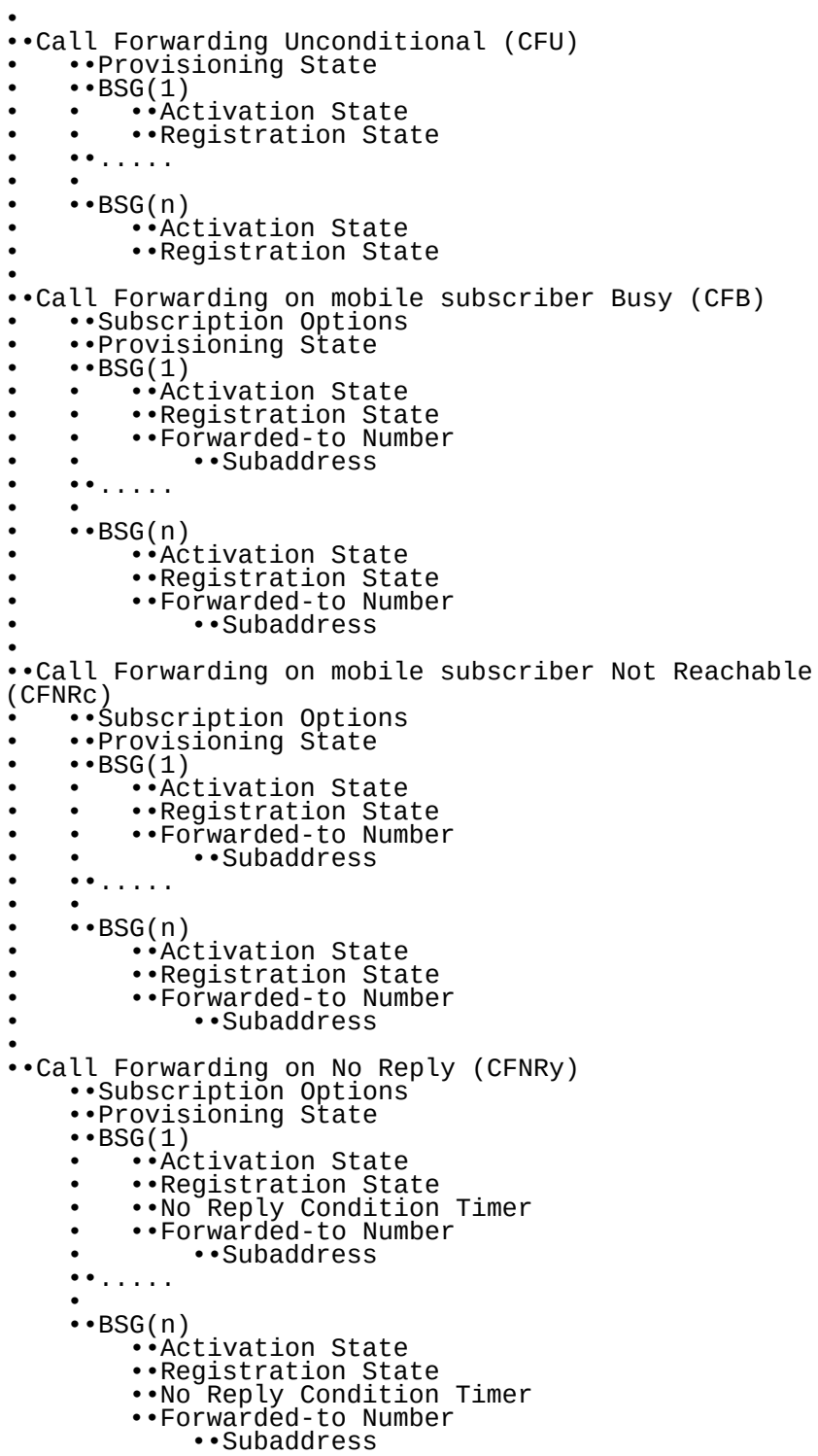


Figure 2: Abstract data structure of GPRS Subscriber Data (Data sent to the SGSN)



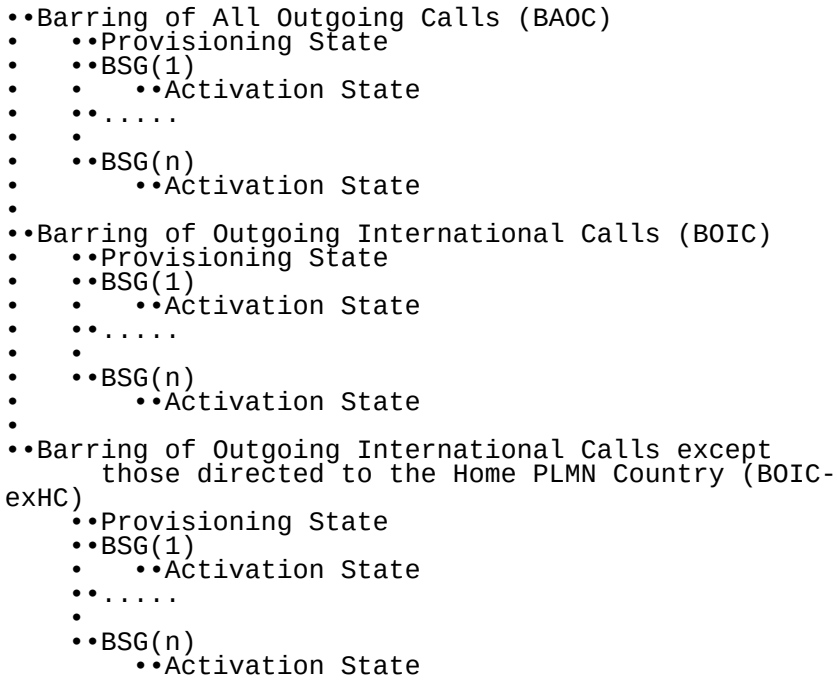
NOTE: For detailed information see GSM 02.01, GSM 02.02, GSM 02.03 and GSM 09.02.

Figure 3: Basic Service List



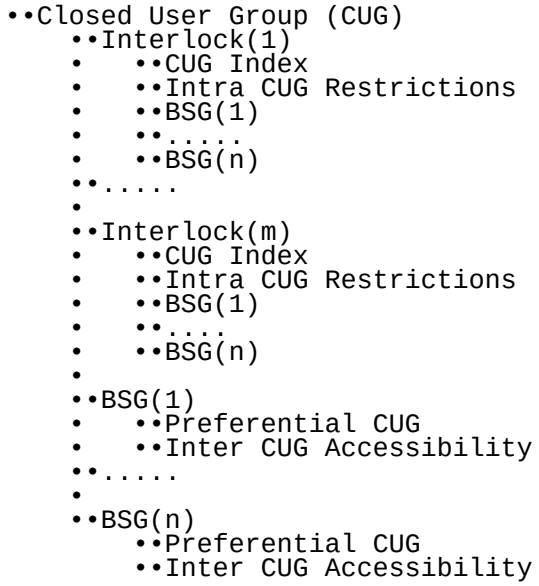
NOTE: For detailed information see GSM 03.82 and GSM 09.02.

Figure 4: Forwarding Info



NOTE: For detailed information see GSM 03.88 and GSM 09.02.

Figure 5: Call Barring Info



NOTE: For detailed information see GSM 03.85 and GSM 09.02.

Figure 6: CUG Info

NOTE: For detailed information see GSM 03.67, GSM 03.81, GSM 03.83, GSM 03.84, GSM 03.86, GSM 03.91, GSM 03.93, GSM 03.96 and GSM 09.02.

Figure 7: SS Data

```
••Subscriber Status
    ••all OG-Calls Barred
    ••international OG-Calls Barred
    ••international OG-Calls Not To HPLMN Country Barred
    ••inter-zonal OG-Calls Barred
    ••inter-zonal OG-Calls Not To HPLMN Country Barred
    ••international OG-Calls Not To HPLMN Country AND
    •      inter-zonal OG-Calls Barred
    ••Premium Rate Information OG-Calls Barred
    ••Premium Rate Entertainment OG-Calls Barred
    ••SS Access Barred
    ••all call transfers Barred
    ••chargeable call transfers Barred
    ••international call transfers Barred
    ••inter-zonal call transfers Barred
    ••doubly chargeable call transfers Barred
    ••multiple call transfers Barred
    ••PLMN-Specific Barring Type 1
    ••PLMN-Specific Barring Type 2
    ••PLMN-Specific Barring Type 3
    ••PLMN-Specific Barring Type 4
```

NOTE: For detailed information see GSM 03.15 and GSM 09.02.

Figure 8: ODB Data for non-GPRS services

```
••Subscriber Status
    ••all OG-Calls Barred
    ••international OG-Calls Barred
    ••international OG-Calls Not To HPLMN Country Barred
    ••inter-zonal OG-Calls Barred
    ••inter-zonal OG-Calls Not To HPLMN Country Barred
    ••international OG-Calls Not To HPLMN Country AND
    •      inter-zonal OG-Calls Barred
    ••PLMN-Specific Barring Type 1
    ••PLMN-Specific Barring Type 2
    ••PLMN-Specific Barring Type 3
    ••PLMN-Specific Barring Type 4
```

NOTE: For detailed information see GSM 03.15 and GSM 09.02.

Figure 9: ODB Data for GPRS services

```
••Roaming Restriction Due To Unsupported Feature
```

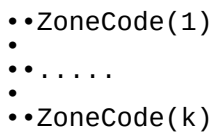
NOTE: For detailed information see GSM 09.02.

Figure 10: Roaming Restriction Data in the VLR

```
••Roaming Restricted in the SGSN Due To Unsupported Feature
```

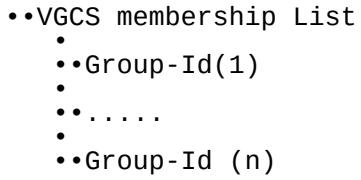
NOTE: For detailed information see GSM 09.02.

Figure 11: Roaming Restriction Data in the SGSN



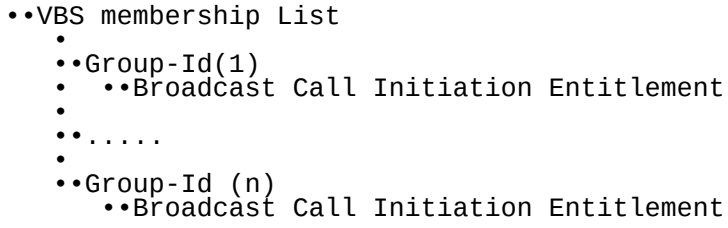
NOTE: For detailed information see GSM 09.02.

Figure 12: Regional Subscription Data



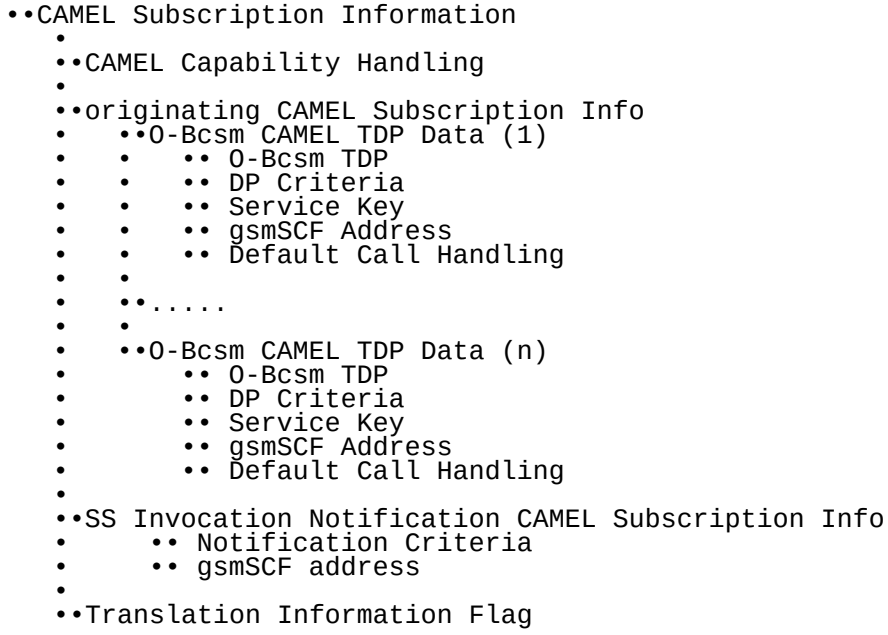
NOTE: For detailed information see GSM 03.68 and GSM 09.02.

Figure 13: Voice Group Call Data



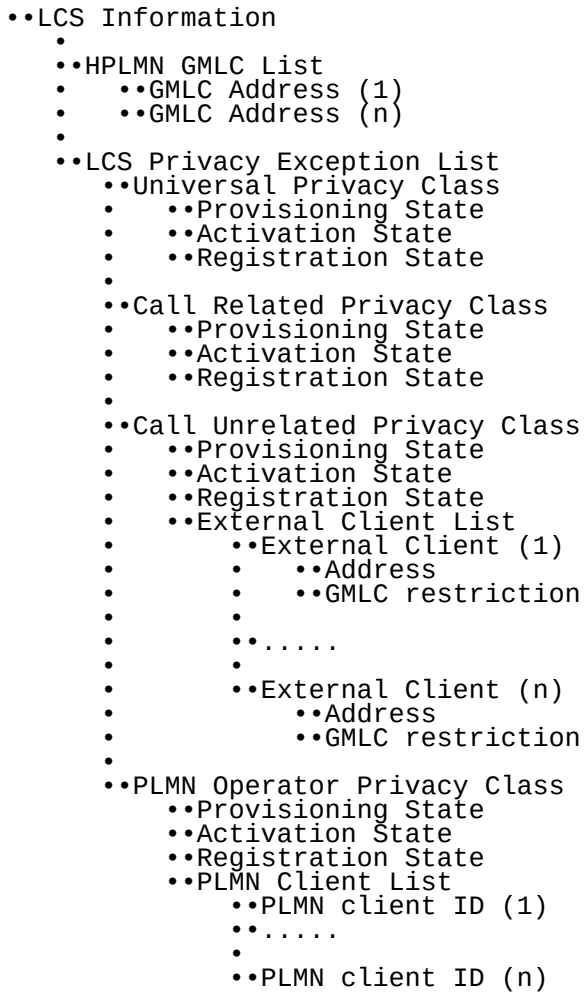
NOTE: For detailed information see GSM 03.69 and GSM 09.02.

Figure 14: Voice Broadcast Call Data



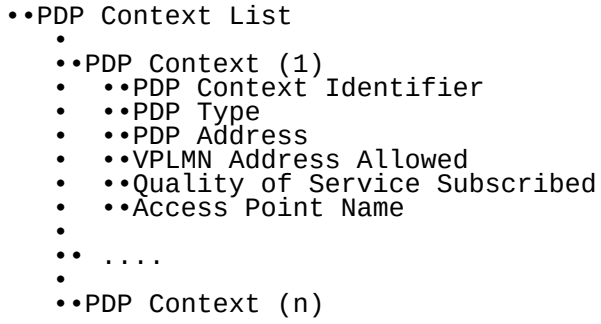
NOTE: For detailed information see GSM 03.72, GSM 03.78 and GSM 09.02.

Figure 15: CAMEL subscription info



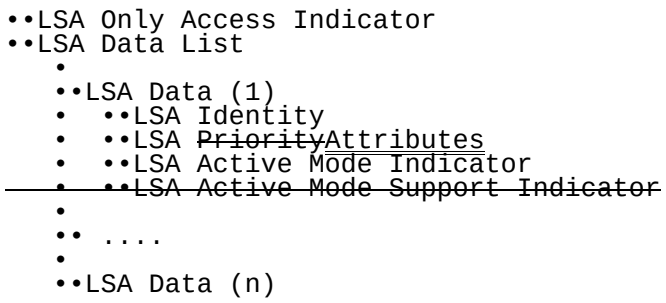
NOTE: For detailed information see GSM 03.71 and GSM 09.02.

Figure 16: LCS Information



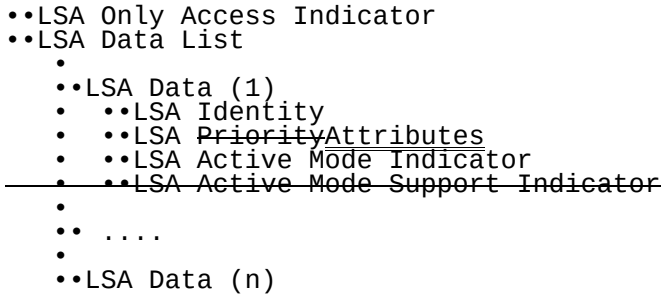
NOTE: The figure shows the information in the SGSN. For detailed information see GSM 03.60. For information about the GGSN information, see GSM 03.08.

Figure 17: GPRS subscription data



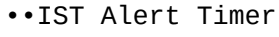
NOTE: For detailed information see GSM 03.73 and GSM 09.02.

Figure 18: LSA data in the VLR



NOTE: For detailed information see GSM 03.73 and GSM 09.02.

Figure 19: LSA data in the SGSN



NOTE: For detailed information see GSM 03.35 and GSM 09.02.

Figure 20: IST data in the VLR

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Kyoto, Japan, 17-21 Jan 2000

Document N2B000100
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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29.002	**CR**	**087**	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	for approval	X	strategic		(for SMG use only)
list expected approval meeting # here ↑		for information		non-strategic	X	

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 [X]

Source: N2 **Date:** 12 Jan 2000

Subject: Correction of LSA information.

Work item: SoLSA

Category: *(only one category shall be marked with an X)*

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

Release:

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

Reason for change: According to GSM 03.73 the priority, a preferential access indicator and an active mode support indicator are defined for each subscribed LSA in the LSA Information. In GSM 08.08 they are defined as an octet string and are refered to as attributes to the LSA. An active mode indicator is also defined per each subscribed LSA but this is not forwarded on the A interface to the BSS.
In order to comply with these TS GSM 09.02 needs to be updated.

Clauses affected: 7.6.3.56, 8.8.1.3, 17.7.1

Other specs affected:

Other 3G core specifications	X	→ List of CRs:	23.008, 23.016
Other GSM core specifications	X	→ List of CRs:	03.08, 03.16, 09.02
MS test specifications		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

help.doc

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

7.6.3.56 LSA Information

This parameter refers to one or more localised service areas a subscriber may be a member of, together with the priority, the preferential access indicator, the active mode support indicator and active mode indication of each localised service area. The access right outside these localised service areas is also indicated.

8.8.1.3 Parameter use

Network access mode

This parameter defines if the subscriber has access to MSC/VLR and/or to SGSN. This parameter is used by SGSN and MSC/VLR. In VLR, the parameter is used only as part of Restore Data Procedure and the parameter is not stored in the VLR.

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

IMSI

It is only included if the service is not used in an ongoing transaction (e.g. location updating). This parameter is used by the VLR and the SGSN.

MSISDN

It is included either at location updating or when it is changed. The MSISDN sent shall be the basic MSISDN. This parameter is used by the VLR and the SGSN.

Category

It is included either at location updating or when it is changed. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Subscriber Status

It is included either at location updating or when it is changed.

To apply, remove or update Operator Determined Barring Categories the Subscriber Status is set to Operator Determined Barring. In this case ODB General Data shall also be present. If the Operator Determined Barring applies and the subscriber is registered in the HPLMN and HPLMN specific Operator Determined Barring applies then ODB HPLMN Specific Data shall also be present.

To remove all Operator Determined Barring Categories the Subscriber Status shall be set to "Service Granted". This parameter is used by the VLR and the SGSN.

Bearer service List

A list of Extensible Bearer service parameters (Extensible Bearer service is defined in subclause 7.6). An Extensible Bearer service parameter must be the code for an individual Bearer service, except in the cases described below.

The codes for the Bearer service groups "allAlternateSpeech-DataCDA" and "allAlternateSpeech-DataCDS" shall, if applicable, be sent from the HLR to the VLR as a pair. The codes for the Bearer service groups "allSpeechFollowedByDataCDA" and "allSpeechFollowedByDataCDS" shall, if applicable, be sent from the HLR to the VLR as a pair.

If it is included in the Request/Indication, it includes either all Extensible Bearer services subscribed (at location updating or at restoration) or only the ones added (at subscriber data modification).

If the VLR receives an Indication containing any Extensible Bearer service parameters which it does not support/allocate it returns them in the response to the HLR and discards the unsupported Extensible Bearer services (no error is sent back), except in the cases described below.

If the VLR receives the codes for the Bearer service groups "allSpeechFollowedByDataCDA" and "allSpeechFollowedByDataCDS" and supports one or more of the circuit-switched synchronous or asynchronous data rates specified for simple data bearer services, it shall accept the bearer service codes, and not return them in the response to the HLR. If the VLR does not support any of the circuit-switched synchronous or asynchronous data rates

specified for simple data bearer services, and receives the pair of codes for "allAlternateSpeech-DataCDA" and "allAlternateSpeech-DataCDS" or the pair of codes for "allSpeechFollowedByDataCDA" and "allSpeechFollowedByDataCDS", it shall reject the pair of codes by returning them in the response to the HLR. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Teleservice List

A list of Extensible Teleservice parameters (Extensible Teleservice is defined in subclause 7.6). An Extensible Teleservice parameter must be the code for an individual Teleservice.

If it is included in the Request/Indication, it contains either all Extensible Teleservices subscribed (at location updating or at restoration) or the ones added (at subscriber data modification). Only the Extensible Teleservices that are relevant to the node at which the message is received should be included in the Teleservice List.

If the VLR or the SGSN receives an Indication containing any Extensible Teleservice parameters which it does not support/allocate it returns them in the response to the HLR and discards the unsupported Extensible Teleservices (no error is sent back). This parameter is used by the VLR and the SGSN.

Forwarding information List

A list of Extensible Forwarding information parameters (Extensible Forwarding information is defined in subclause 7.6). It includes Call Forwarding services either at location updating or at restoration or when they are changed. Each Extensible Forwarding information parameter shall be treated independently of all other parameters in the primitive.

The Extensible Forwarding information shall include the SS-Code for an individual call forwarding supplementary service. The Extensible Forwarding information shall contain one or more Extensible Forwarding Features (Extensible Forwarding Feature is defined in subclause 7.6).

The Extensible Forwarding Feature may include an Extensible Basic Service Group. This shall be interpreted according to the rules in subclause 8.8.1.4.

The Extensible Forwarding Feature shall contain an Extensible SS-Status parameter.

If the Extensible SS-Status indicates that call forwarding is registered then (except for call forwarding unconditional) the Extensible Forwarding Feature shall contain a forwarded-to number and, if available, the forwarded-to subaddress. In other states the forwarded-to number and, if applicable, the forwarded-to subaddress shall not be included. For call forwarding unconditional the forwarded-to number and, if applicable, the forwarded-to subaddress shall not be included. If the VLR does not receive a forwarded-to subaddress then it shall assume that a forwarded-to subaddress has not been registered.

The Extensible Forwarding Feature shall contain the extensible forwarding options (except for call forwarding unconditional where the extensible forwarding options shall not be included). Bits 3 and 4 of the extensible forwarding options shall be ignored by the VLR, and may be set to any value by the HLR.

For call forwarding on no reply: If the extensible SS-Status indicates that call forwarding is registered then the Extensible Forwarding Feature shall contain an extensible no reply condition timer. In other states the no reply condition timer shall not be included.

For call forwarding services other than call forwarding on no reply: The Extensible Forwarding Feature shall not contain a no reply condition timer.

If the VLR receives an Indication containing any Call Forwarding service codes which it does not support/allocate it returns them to the HLR in the parameter SS-Code List and discards the unsupported Call Forwarding service codes (no error is sent back). This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Call barring information List

A list of Extensible Call barring information parameters (Extensible Call barring information is defined in subclause 7.6). It includes Call Barring services either at location updating or at restoration or when they are changed. Each Extensible Call barring information parameter shall be treated independently of all other parameters in the primitive.

The Extensible Call barring information shall include the SS-Code for an individual call barring supplementary service. The Extensible Call barring information shall contain one or more Extensible Call Barring Features (Extensible Call Barring Feature is defined in subclause 7.6).

The Extensible Call Barring Feature may include an Extensible Basic Service Group. This shall be interpreted according to the rules in subclause 8.8.1.4.

The Extensible Call Barring Feature shall contain an extensible SS-Status parameter.

If the VLR receives an Indication containing any Extensible Call Barring service codes which it does not support/allocate it returns them to the HLR in the parameter SS-Code List and discards the unsupported Extensible Call Barring service codes (no error is sent back). This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

CUG information List

A list of CUG information list parameters (CUG information is defined in subclause 7.6). It includes CUG information either at location updating or at restoration or when it is changed.

At location updating, restoration or when there is a change in CUG data, the HLR shall include the complete CUG-SubscriptionList and, if there are options per basic group, it shall also include the complete CUG-FeatureList. If there are not options per extensible basic service group the CUG-FeatureList shall not be included.

In any dialogue, the first insertSubscriberData message which contains CUG information shall include a non-empty CUG-SubscriptionList.

When the VLR receives CUG data it shall replace the stored CUG data with the received data set.

If CUG-FeatureList is omitted in the Insert Subscriber Data operation VLR shall interpret that no options per extensible basic service group exist, and then it shall apply the default values i.e. no outgoing access, no incoming access, no preferential CUG exists.

If CUG-Feature is received without preferential CUG, the VLR shall interpret that no preferential CUG applies.

If the VLR detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value.

Note that data consistency between CUG subscription data and CUG feature data is the responsibility of the HLR.

If the VLR does not support the CUG service it returns its code to the HLR in the parameter SS-Code List and discards the received information (no error is sent back). This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

SS-Data List

A list of Extensible SS-Data parameters (Extensible SS-Data is defined in subclause 7.6). It is sent for any other supplementary service than Call Forwarding, Call Barring, CUG and eMLPP either at location updating or at restoration or when they are changed. Each SS-Data parameter shall be treated independently of all other parameters in the primitive.

The Extensible SS-Data shall include the SS-Code for an individual supplementary service.

The Extensible SS-Data shall contain an Extensible SS-Status parameter and any subscription options that are applicable to the service defined by the SS-Code.

The SS-Data may include a Basic Service Group List. This shall be interpreted according to the rules in subclause 8.8.1.4.

If the VLR receives an Indication containing any supplementary service codes which it does not support/allocate it returns them to the HLR in the parameter SS-Code List and therefore discards the unsupported service codes received (no error is sent back). This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Operator Determined Barring General data

If it is included in a Request/Indication, it includes all the Operator Determined Barring categories that may be applied to a subscriber registered in any PLMN. This parameter is only included in a Request/Indication when the parameter Subscriber Status is set to the value Operator Determined Barring. Note that all General Operator Determined Barring Categories shall be set to their actual status.

If the VLR or the SGSN receives an Indication containing Operator Determined Barring General Data which shows that the subscriber is subject to barring not supported / not allocated by the VLR or by the SGSN, it returns Operator Determined Barring General Data in the response to the HLR to show the barring categories which are not supported / not allocated by the VLR or by the SGSN. This parameter is used by the VLR and the SGSN.

Operator Determined Barring HPLMN data

It includes all the Operator Determined Barring categories that may be applied only to a subscriber registered in the HPLMN. Therefore, it shall only be transferred to the VLR or to the SGSN when the subscriber is roaming into the HPLMN and when the parameter Subscriber Status is set to the value Operator Determined Barring. Note that all HPLMN Operator Determined Barring Categories shall be set to their actual status.

If Subscriber Status is set to the value Operator Determined Barring and no Operator Determined Barring HPLMN data is present then the VLR or the SGSN shall not apply any HPLMN specific ODB services to the subscriber. This parameter is used by the VLR and the SGSN.

eMLPP Subscription Data

If included in the Insert Subscriber Data request this parameter defines the priorities the subscriber might apply for a call (as defined in subclause 7.6). It contains both subparameters of eMLPP.

If the VLR does not support the eMLPP service it returns its code to the HLR in the parameter SS-Code List and therefore discards the received information (no error is sent back).

eMLPP subscription data that have been stored previously in a subscriber data record in the VLR are completely replaced by the new eMLPP subscription data received in a MAP_INSERT_SUBSCRIBER_DATA during either an Update Location or Restore Data procedure or a stand alone Insert Subscriber data procedure. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Roaming Restriction Due To Unsupported Feature

The HLR may decide to include this parameter in the request if certain services or features are indicated as not supported by the MSC/VLR (e.g. Advice of Charge Charging Level).

If this parameter is sent to the VLR the MSC area is restricted by the HLR and the VLR. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Regional Subscription Data

If included in the Insert Subscriber Data request this parameter defines the subscriber's subscription area for the addressed VLR or for the addressed SGSN (as defined in subclause 7.6). It contains the complete list of up to 10 Zone Codes that apply to a subscriber in the currently visited PLMN. The HLR shall send only those Zone Codes which are stored against the CC and NDC of the VLR or the CC and NDC of the SGSN to be updated.

NOTE: Support of this parameter is a network operator option and it will not be sent to networks which do not support Regional Subscription.

Regional subscription data that have been stored previously in a subscriber data record in the VLR or in the SGSN are completely replaced by the regional subscription data received in an Insert Subscriber Data indication during either an Update Location or Restore Data procedure or a stand alone Insert Subscriber data procedure.

After the regional subscription data are inserted the VLR or the SGSN shall derive whether its location areas are allowed or not. If the whole MSC or SGSN area is restricted it will be reported to HLR by returning the Regional Subscription Response.

The VLR or the SGSN returns a Regional Subscription Response indicating that a problem with the Zone Code has been detected in one of the following cases:

- Too Many Zone Codes: more than 10 Zone Codes are to be stored in the VLR or in the SGSN;
- Regional Subscription Not Supported by the VLR or the SGSN;
- Zone Codes Conflict: the VLR or the SGSN detects that the zone codes indicate conflicting service permission for a location area.

Zone codes which have no mapping to location areas shall be ignored.

If a sequence of MAP_INSERT_SUBSCRIBER_DATA services is used during a dialogue, Regional Subscription Data shall be accepted only in one service. Regional Subscription Data received in a subsequent service shall be rejected with the error Unexpected Data Value.

If Regional Subscription Data are not included in any MAP_INSERT_SUBSCRIBER_DATA service, there is no restriction of roaming due to Regional Subscription. This parameter is used by the VLR and the SGSN.

Voice Broadcast Data

This parameter contains a list of group id's a user might have subscribed to; (VBS-Data is defined in subclause 7.6). It includes VBS information either at location updating or at restoration or when it is changed.

At location updating, restoration or when there is a change in VBS data, the HLR shall include the complete VBS-Data.

When the VLR receives VBS-Data within a dialogue it shall replace the stored VBS-data with the received data set. All subsequent VBS-dta received within this dialogue shall be interpreted as add-on data.

If VBS-data is omitted in the Insert Subscriber Data operation the VLR shall keep the previously stored VBS data.

If the VLR detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value. . This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Voice Group Call Data

This parameter contains a list of group id's a user might have subscribed to; see subclause 7.6.

At location updating, restoration or when there is a change in VGCS data, the HLR shall include the complete VGCS-Data.

When the VLR receives VGCS-Data within a dialogue it shall replace the stored VGCS-Data with the received data set. All VGCS-Data received within this dialogue shall be interpreted as add-on data.

If VBCS-Data is omitted in the Insert Subsciber Data operation the VLR shall keep the previously stored VGCS-Data.

If the VLR detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

North American Equal Access preferred Carrier Id List

A list of the preferred carrier identity codes that are subscribed to.

When the VLR receives this parameter from the HLR, it shall replace the previously stored preferred carrier identity codes with the received ones. It is not possible to delete all the preferred carrier identity codes from the VLR using this service. To delete all the preferred carrier identity codes from the VLR, the HLR shall use the MAP_CANCEL_LOCATION service.

LSA Information

If included in the ISD request, this parameter contains a list of localised service area identities a user might have subscribed to together with the priority, the preferential access indicator, the active mode support indicator and active mode indication of each localised service area; see subclause 7.6. The access right outside these localised service areas is also indicated. In all cases mentioned below, the LSA information shall only include LSA Data applicable to the VPLMN where the Subscriber is located. The VLR number, received in the MAP-UPDATE_LOCATION primitive, or

the SGSN number, received in the MAP_UPDATE_GPRS_LOCATION primitive, can be used, alongside data stored in the HLR, to determine the LSA Data applicable to the VPLMN.

At restoration, location updating or GPRS location updating the HLR shall include the complete set of applicable LSA Information.

When there is a change in LSA data the HLR shall include at least the new and/or modified LSA data.

When there is a change in the access right outside the localised service areas the HLR shall include the LSA only access indicator.

When the SGSN or the VLR receives LSA information within a dialogue it shall check if the received data has to be considered as the entire LSA information. If so, it shall replace the stored LSA information with the received data set, otherwise it shall replace the data only for the modified LSA data (if any) and/or access right, and add the new LSA data (if any) to the stored LSA Information.

If the entire LSA information is received, it shall always include the LSA only access indicator value together with the LSA data applicable for the PLMN (if any).

If LSA Information is omitted in the Insert Subscriber Data operation the SGSN or the VLR shall keep the previously stored LSA Information.

If the SGSN or the VLR detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value. This parameter is used by the VLR and the SGSN.

LMU Identifier

This parameter indicates the presence of an LMU.

LCS Information

This parameter provides the following LCS related information for an MS subscriber:

- list of GMLCs in the HPLMN
- privacy exception list

SS-Code List

The list of SS-Code parameters that are provided to a subscriber but are not supported/allocated by the VLR (SS-Code is defined in subclause 7.6). The list can only include individual SS-Codes that were sent in the service request. This parameter is used only by the VLR.

Regional Subscription Response

If included in the response this parameter indicates one of:

- MSC Area Restricted entirely because of regional subscription;
- SGSN Area Restricted entirely because of regional subscription;
- Too Many Zone Codes to be inserted;
- Zone Codes Conflict;
- Regional Subscription not Supported by the VLR or by the SGSN.

If the VLR determines after insertion of Regional Subscription Data that the entire MSC area is restricted, the VLR shall respond with a Regional Subscription Response indicating MSC Area Restricted. Otherwise MSC Area Restricted is not sent. The HLR shall check whether the current MSC area is no longer restricted.

If the SGSN determines after insertion of Regional Subscription Data that the entire SGSN area is restricted, the SGSN shall respond with a Regional Subscription Response indicating SGSN Area Restricted. Otherwise SGSN Area Restricted is not sent. The HLR shall check whether the current SGSN area is no longer restricted. This parameter is used by the VLR and by the SGSN.

VLR CAMEL Subscription Info

This parameter is sent for subscribers who have CAMEL services which are invoked in the MSC. In CAMEL phase 1 this parameter contains only the O-CSI. If an O-CSI is contained, TDP-Criteria may also be present in CAMEL Phase 2. In CAMEL Phase 2 this parameter contains the SS-CSI and/or the O-CSI. The VLR CAMEL Subscription Info is sent at location updating or when any information in the applicable CAMEL Subscription Info in the HLR has been changed. The entire set of CAMEL Subscription Info is sent within one dialogue. If a set of CAMEL Subscription Info is already stored in the VLR, i.e received within a previous dialogue, it is replaced by the received data. If the VLR CAMEL Subscription Info is ommitted in the Insert Subscriber Data operation the VLR shall keep the previously stored VLR CAMEL Subscription Info. Within one dialogue subsequent received data are interpreted as add-on data. If the VLR detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

The VLR CAMEL Subscription Info may contain the TIF-CSI (Translation Information Flag). See GSM 03.72 for the use of this parameter and the conditions for its presence.

Supported CAMEL Phases

The use of this parameter and the requirements for its presence are specified in GSM 03.78. This parameter is used only by the VLR.

A VLR not supporting any CAMEL-Phase may omit this parameter.

GPRS Subscription Data

This parameter contains a list of PDP-contexts a user has subscribed to; see subclause 7.6.

At GPRS location updating the HLR shall include the complete GPRS Subscription Data.

When there is a change in GPRS subscriber data the HLR shall include only the new and/or modified PDP contexts.

When the SGSN receives GPRS Subscription Data within a dialogue it shall check if the received data has to be considered as the entire GPRS subscription data. If so, it shall replace the stored GPRS Subscription Data with the received data set, otherwise it shall replace the data only for the modified PDP contexts (if any) and add the new PDP contexts (if any) to the stored GPRS Subscription Data.

If GPRS Subscription Data is omitted in the Insert Subscriber Data operation the SGSN shall keep the previously stored GPRS Subscription Data.

If the SGSN detects that there is overlapping in the information received within a dialogue, it shall send the error Unexpected Data Value. This parameter is used only by the SGSN and if the VLR receives this parameter it shall ignore it.

Roaming Restricted In SGSN Due To Unsupported Feature

The HLR may decide to include this parameter in the request if certain services or features are indicated as not supported by the SGSN. This parameter is used only by the SGSN and if the VLR receives this parameter it shall ignore it.

User error

Only one of the following values is applicable:

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

17.7.1 Mobile Service data types

```
MAP-MS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-MS-DataTypes (11) version5 (5)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS

      -- location registration types
      UpdateLocationArg,
      UpdateLocationRes,
      CancelLocationArg,
      CancelLocationRes,
      PurgeMS-Arg,
      PurgeMS-Res,
      SendIdentificationRes,
      UpdateGprsLocationArg,
      UpdateGprsLocationRes,



      -- handover types
      PrepareHO-Arg,
      PrepareHO-Res,
      PrepareSubsequentHO-Arg,

      -- authentication management types
      SendAuthenticationInfoArg,
      SendAuthenticationInfoRes,

      -- security management types
      EquipmentStatus,
      Kc,

      -- subscriber management types
      InsertSubscriberDataArg,
      InsertSubscriberDataRes,
      DeleteSubscriberDataArg,
      DeleteSubscriberDataRes,
      SubscriberData,
      ODB-Data,
      SubscriberStatus,
      ZoneCodeList,
      maxNumOfZoneCodes,
      O-CSI,
      O-BcsmCamelTDPCriteriaList,
      SS-CSI,
      ServiceKey,
      DefaultCallHandling,
      CamelCapabilityHandling,
      BasicServiceCriteria,
      SupportedCamelPhases,
      maxNumOfCamelTDPData,
      CUG-Index,
      CUG-Interlock,
      InterCUG-Restrictions,
      IntraCUG-Options,

      -- fault recovery types
      ResetArg,
      RestoreDataArg,
      RestoreDataRes,

      -- subscriber information enquiry types
      ProvideSubscriberInfoArg,
      ProvideSubscriberInfoRes,
      SubscriberInfo,
      LocationInformation,
      SubscriberState,

      -- any time information enquiry types
      AnyTimeInterrogationArg,
```

```
      AnyTimeInterrogationRes,

      -- gprs location information retrieval types
      SendRoutingInfoForGprsArg,
      SendRoutingInfoForGprsRes,

      -- failure reporting types
      FailureReportArg,
      FailureReportRes,

      -- gprs notification types
      NoteMsPresentForGprsArg,
      NoteMsPresentForGprsRes


;

IMPORTS
      maxNumOfSS,
      SS-SubscriptionOption,
      SS-List
FROM MAP-SS-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SS-DataTypes (14) version5 (5)}

      SS-Code
FROM MAP-SS-Code {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SS-Code (15) version5 (5)}

      Ext-BearerServiceCode
FROM MAP-BS-Code {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-BS-Code (20) version5 (5)}

      Ext-TeleserviceCode
FROM MAP-TS-Code {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-TS-Code (19) version5 (5)}


      ISDN-AddressString,
      maxISDN-AddressLength,
      ISDN-SubaddressString,
      ExternalSignalInfo,
      IMSI,
      HLR-List,
      LMSI,
      Identity,
      GlobalCellId,
      CellIdOrLAI,
      Ext-BasicServiceCode,
      NAEA-PreferredCI,
      EMLPP-Info,
      SubscriberIdentity,
      AgeOfLocationInformation,
      LCSClientExternalID,
      LCSClientInternalID



FROM MAP-CommonDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version5 (5)}

      ExtensionContainer
FROM MAP-ExtensionDataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version5 (5)}

      AbsentSubscriberDiagnosticSM
FROM MAP-ER-DataTypes {
   ccitt identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ER-DataTypes (17) version5 (5)}


;


-- location registration types
```

```
UpdateLocationArg ::= SEQUENCE {
    imsi                                IMSI,

    msc-Number                          [1] ISDN-AddressString,
    vlr-Number                          ISDN-AddressString,
    lmsi                                [10] LMSI OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ... ,
    vlr-Capability                      [6] VLR-Capability              OPTIONAL }
```

```
VLR-Capability ::= SEQUENCE{
    supportedCamelPhases                [0] SupportedCamelPhases        OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ... ,
    solsaSupportIndicator               [2]  NULL                       OPTIONAL }
```

```
UpdateLocationRes ::= SEQUENCE {
    hlr-Number                          ISDN-AddressString,

    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...  }
```

```
CancelLocationArg ::= [3] SEQUENCE {
    identity                            Identity,
    cancellationType                    CancellationType                OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...}
```

```
CancellationType ::= ENUMERATED {
    updateProcedure                     (0),
    subscriptionWithdraw                (1),
    ...}
    -- The HLR shall not send values other than listed above
```

```
CancelLocationRes ::= SEQUENCE {
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...}
```

```
PurgeMS-Arg ::= [3] SEQUENCE {
    imsi                                IMSI,
    vlr-Number                          [0] ISDN-AddressString          OPTIONAL,
    sgsn-Number                         [1]  ISDN-AddressString         OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...}
```

```
PurgeMS-Res ::= SEQUENCE {
    freezeTMSI                          [0]  NULL                       OPTIONAL,
    freezeP-TMSI                        [1]  NULL                       OPTIONAL,
    extensionContainer                  ExtensionContainer              OPTIONAL,
    ...}
```

```
SendIdentificationRes ::= SEQUENCE {
    imsi                                IMSI,
    authenticationSetList               AuthenticationSetList           OPTIONAL,
    ...}
```

```
AuthenticationSetList ::= SEQUENCE SIZE (1..5) OF
                                        AuthenticationSet
```

```
AuthenticationSet ::= SEQUENCE {
    rand                                RAND,
    sres                                SRES,
    kc                                  Kc,
    ...}
```

```
RAND ::= OCTET STRING (SIZE (16))
```

```
SRES ::= OCTET STRING (SIZE (4))
```

```
Kc ::= OCTET STRING (SIZE (8))
```

```
-- gprs location registration types
```

```
UpdateGprsLocationArg ::= SEQUENCE {
    imsi                                IMSI,
    sgsn-Number                         ISDN-AddressString,
    sgsn-Address                        GSN-Address,
    extensionContainer                  ExtensionContainer                  OPTIONAL,
    ... ,
    sgsn-Capability                     [0] SGSN-Capability                 OPTIONAL }
```

```
SGSN-Capability ::= SEQUENCE{
    solsaSupportIndicator               NULL                                OPTIONAL,
    extensionContainer                  [1] ExtensionContainer              OPTIONAL,
    ... }
```

```
GSN-Address ::= OCTET STRING (SIZE (5..17))
    -- Octets are coded according to TS GSM 03.03
```

```
UpdateGprsLocationRes ::= SEQUENCE {
    hlr-Number                          ISDN-AddressString,
    extensionContainer                  ExtensionContainer                  OPTIONAL,
    ...}
```

-- handover types

```
PrepareHO-Arg ::= SEQUENCE {
    targetCellId                        GlobalCellId                        OPTIONAL,
    ho-NumberNotRequired                NULL                                OPTIONAL,
    bss-APDU                            ExternalSignalInfo                  OPTIONAL,
    ...}
```

```
PrepareHO-Res ::= SEQUENCE {
    handoverNumber                      ISDN-AddressString                  OPTIONAL,
    bss-APDU                            ExternalSignalInfo                  OPTIONAL,
    ...}
```

```
PrepareSubsequentHO-Arg ::= SEQUENCE {
    targetCellId                        GlobalCellId,
    targetMSC-Number                    ISDN-AddressString,
    bss-APDU                            ExternalSignalInfo,
    ...}
```

-- authentication management types

```
SendAuthenticationInfoArg ::= IMSI
```

```
SendAuthenticationInfoRes ::= AuthenticationSetList
```

-- security management types

```
EquipmentStatus ::= ENUMERATED {
    whiteListed  (0),
    blackListed  (1),
    greyListed  (2)}
```

-- subscriber management types

```
InsertSubscriberDataArg ::= SEQUENCE {
    imsi                                [0] IMSI                            OPTIONAL,
    COMPONENTS OF                       SubscriberData,
    extensionContainer                  [14] ExtensionContainer             OPTIONAL,
    ... ,
    naea-PreferredCI                    [15] NAEA-PreferredCI               OPTIONAL,
    -- naea-PreferredCI is included at the discretion of the HLR operator.
    gprsSubscriptionData                [16] GPRSSubscriptionData           OPTIONAL,
    roamingRestrictedInSgsnDueToUnsupportedFeature [23]                     NULL
                                                                            OPTIONAL,
    networkAccessMode                   [24] NetworkAccessMode              OPTIONAL,
    lsaInformation                      [25] LSAInformation                 OPTIONAL,
    lmu-Indicator                       [21] NULL                           OPTIONAL,
    lcsInformation                      [22] LCSInformation                 OPTIONAL
     }
    -- If the Network Access Mode parameter is sent, it shall be present only in
    -- the first sequence if the segmentation is used
```

```
LCSInformation ::= SEQUENCE {
    hplmn-GMLC-List                     [0]  HPLMN-GMLC-List                OPTIONAL,
    lcs-PrivacyExceptionList            [1]  LCS-PrivacyExceptionList       OPTIONAL,
...}
```

```
HPLMN-GMLC-List ::= SEQUENCE SIZE (1..maxNumOfGMLC) OF
                                        ISDN-AddressString
```

```
maxNumOfGMLC  INTEGER ::= 5
```

```
NetworkAccessMode ::= ENUMERATED {
    bothMSCAndSGSN                  (0),
    onlyMSC                         (1),
    onlySGSN                        (2),
    ...}
    -- if unknown values are received in NetworkAccessMode
    -- they shall be discarded.
```

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

```
maxNumOfPDP-Contexts  INTEGER ::= 50
```

```
PDP-Context ::= SEQUENCE {
    pdp-ContextId                   ContextId,
    pdp-Type                        [16] PDP-Type,
    pdp-Address                     [17] PDP-Address                OPTIONAL,
    qos-Subscribed                  [18] QoS-Subscribed,
    vplmnAddressAllowed             [19] NULL OPTIONAL,
    apn                             [20] APN  ,
    extensionContainer              [21] ExtensionContainer         OPTIONAL,
    ...}
```

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

```
GPRSSubscriptionData ::= SEQUENCE {
    completeDataListIncluded            NULL                            OPTIONAL,

        -- If segmentation is used, completeDataListIncluded may only be present in the
        -- first segment.
    gprsDataList                    [1]  GPRSDataList,
    extensionContainer              [2] ExtensionContainer          OPTIONAL,
    ...}
```

```
APN ::=  OCTET STRING (SIZE (2..63))
         -- Octets are coded according to TS GSM 03.03
```

```
PDP-Type ::= OCTET STRING (SIZE (2))
-- Octets are coded according to TS GSM 09.60
```

```
PDP-Address ::= OCTET STRING (SIZE (1..16))
-- Octets are coded according to TS GSM 09.60

-- The possible size values are:
-- 1-7 octets  X.25 address type
--  4  octets  IPv4 address type
-- 16  octets  Ipv6 address type
```

```
QoS-Subscribed ::= OCTET STRING (SIZE (3))
    -- Octets are coded according to TS GSM 04.08.
```

```
LSAOnlyAccessIndicator ::= ENUMERATED {
    accessOutsideLSAsAllowed  (0),
    accessOutsideLSAsRestricted (1)}
```

```
LSADataList ::= SEQUENCE SIZE (1..maxNumOfLSAs) OF
                                        LSAData
```

```
maxNumOfLSAs  INTEGER ::= 20
```

```
LSAData ::= SEQUENCE {
    lsaIdentity                     [0] LSAIdentity,
    lsaPriorityAttributes           [1] LSAPriorityAttributes,
    lsaActiveModeIndicator          [2] NULL                        OPTIONAL,
    lsaActiveModeSupportIndicator   [3] NULL                        OPTIONAL,
    extensionContainer              [43] ExtensionContainer         OPTIONAL,
    ...}
```

```
LSAInformation ::= SEQUENCE {
    completeDataListIncluded            NULL                        OPTIONAL,

        -- If segmentation is used, completeDataListIncluded may only be present in the
        -- first segment.
    lsaOnlyAccessIndicator              [1]  LSAOnlyAccessIndicator     OPTIONAL,
    lsaDataList                         [2]  LSADataList                OPTIONAL,
    extensionContainer                  [3] ExtensionContainer          OPTIONAL,
    ...}
```

```
LSAIdentity ::= OCTET STRING (SIZE (3))
-- Octets are coded according to TS GSM 03.03
```

```
LSAPriorityAttributes ::= OCTET STRING (SIZE (1))
-- Octets are coded according to TS GSM 08.08
```

```
SubscriberData ::= SEQUENCE {
    msisdn                              [1] ISDN-AddressString          OPTIONAL,
    category                            [2] Category                    OPTIONAL,
    subscriberStatus                    [3] SubscriberStatus            OPTIONAL,
    bearerServiceList                   [4] BearerServiceList           OPTIONAL,
    -- The exception handling for reception of unsupported / not allocated
    -- bearerServiceCodes is defined in section 6.8.1
    teleserviceList                     [6] TeleserviceList             OPTIONAL,
    -- The exception handling for reception of unsupported / not allocated
    -- teleserviceCodes is defined in section 6.8.1
    provisionedSS                       [7] Ext-SS-InfoList             OPTIONAL,
    odb-Data                            [8] ODB-Data                    OPTIONAL,
    roamingRestrictionDueToUnsupportedFeature  [9] NULL                 OPTIONAL,
    regionalSubscriptionData            [10] ZoneCodeList               OPTIONAL,
    vbsSubscriptionData                 [11] VBSDataList                OPTIONAL,
    vgcsSubscriptionData                [12] VGCSDataList               OPTIONAL,
    vlrCamelSubscriptionInfo            [13] VlrCamelSubscriptionInfo   OPTIONAL
    }
```

```
Category ::= OCTET STRING (SIZE (1))
    -- The internal structure is defined in CCITT Rec Q.763.
```

```
SubscriberStatus ::= ENUMERATED {
    serviceGranted  (0),
    operatorDeterminedBarring  (1)}
```

```
BearerServiceList ::= SEQUENCE SIZE (1..maxNumOfBearerServices) OF
                                    Ext-BearerServiceCode
```

```
maxNumOfBearerServices  INTEGER ::= 50
```

```
TeleserviceList ::= SEQUENCE SIZE (1..maxNumOfTeleservices) OF
                                    Ext-TeleserviceCode
```

```
maxNumOfTeleservices  INTEGER ::= 20
```

```
ODB-Data ::= SEQUENCE {
    odb-GeneralData                 ODB-GeneralData,
    odb-HPLMN-Data                  ODB-HPLMN-Data                  OPTIONAL,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
ODB-GeneralData ::= BIT STRING {
     allOG-CallsBarred  (0),
     internationalOGCallsBarred  (1),
     internationalOGCallsNotToHPLMN-CountryBarred  (2),
     interzonalOGCallsBarred (6),
     interzonalOGCallsNotToHPLMN-CountryBarred (7),
     interzonalOGCallsAndInternationalOGCallsNotToHPLMN-CountryBarred (8),
     premiumRateInformationOGCallsBarred  (3),
     premiumRateEntertainementOGCallsBarred  (4),
     ss-AccessBarred  (5),
     allECT-Barred (9),
     chargeableECT-Barred (10),
     internationalECT-Barred (11),
     interzonalECT-Barred (12),
     doublyChargeableECT-Barred (13),
     multipleECT-Barred (14)} (SIZE (15..32))
     -- exception handling: reception of unknown bit assignments in the
     -- ODB-GeneralData type shall be treated like unsupported ODB-GeneralData
```

```
ODB-HPLMN-Data ::= BIT STRING {
     plmn-SpecificBarringType1  (0),
     plmn-SpecificBarringType2  (1),
     plmn-SpecificBarringType3  (2),
     plmn-SpecificBarringType4  (3)} (SIZE (4..32))
     -- exception handling: reception of unknown bit assignments in the
     -- ODB-HPLMN-Data type shall be treated like unsupported ODB-HPLMN-Data
```

```
Ext-SS-InfoList ::= SEQUENCE SIZE (1..maxNumOfSS) OF
                                    Ext-SS-Info
```

```
Ext-SS-Info ::= CHOICE {
     forwardingInfo                 [0] Ext-ForwInfo,
     callBarringInfo                [1] Ext-CallBarInfo,
     cug-Info                       [2] CUG-Info,
     ss-Data                        [3] Ext-SS-Data,
     emlpp-Info                     [4] EMLPP-Info}
```

```
Ext-ForwInfo ::= SEQUENCE {
     ss-Code                        SS-Code,
     forwardingFeatureList          Ext-ForwFeatureList,
     extensionContainer             [0] ExtensionContainer          OPTIONAL,
     ...}
```

```
Ext-ForwFeatureList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
                                    Ext-ForwFeature
```

```
Ext-ForwFeature ::= SEQUENCE {
     basicService                   Ext-BasicServiceCode            OPTIONAL,
     ss-Status [4] Ext-SS-Status,
     forwardedToNumber              [5] ISDN-AddressString          OPTIONAL,
     -- When this data type is sent from an HLR which supports CAMEL Phase 2
     -- to a VLR that supports CAMEL Phase 2 the VLR shall not check the
     -- format of the number
     forwardedToSubaddress          [8] ISDN-SubaddressString       OPTIONAL,
     forwardingOptions              [6] Ext-ForwOptions             OPTIONAL,
     noReplyConditionTime           [7] Ext-NoRepCondTime           OPTIONAL,
     extensionContainer             [9] ExtensionContainer          OPTIONAL,
     ...}
```

```
Ext-SS-Status ::= OCTET STRING (SIZE (1..5))

     -- OCTET 1:
     --
     -- bits 8765: 0000 (unused)
     -- bits 4321: Used to convey the "P bit","R bit","A bit" and "Q bit",
     --            representing supplementary service state information
     --            as defined in TS GSM 03.11

     -- bit 4: "Q bit"

     -- bit 3: "P bit"

     -- bit 2: "R bit"

     -- bit 1: "A bit"

     -- OCTETS 2-5: reserved for future use. They shall be discarded if
     -- received and not understood.
```

```
Ext-ForwOptions ::= OCTET STRING (SIZE (1..5))

    -- OCTET 1:

    --  bit 8: notification to forwarding party
    --   0  no notification
    --   1  notification

    --  bit 7: redirecting presentation
    --   0 no presentation
    --   1  presentation

    --  bit 6: notification to calling party
    --   0  no notification
    --   1  notification

    --  bit 5: 0 (unused)

    --  bits 43: forwarding reason
    --   00  ms not reachable
    --   01  ms busy
    --   10  no reply
    --   11  unconditional

    -- bits 21: 00 (unused)

    -- OCTETS 2-5: reserved for future use. They shall be discarded if
    -- received and not understood.
```

```
Ext-NoRepCondTime ::= INTEGER (1..100)
    -- Only values 5-30 are used.
    -- Values in the ranges 1-4 and 31-100 are reserved for future use
    -- If received:
    --       values 1-4 shall be mapped on to value 5
    --       values 31-100 shall be mapped on to value 30
```

```
Ext-CallBarInfo ::= SEQUENCE {
    ss-Code                         SS-Code,
    callBarringFeatureList          Ext-CallBarFeatureList,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
Ext-CallBarFeatureList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
                                    Ext-CallBarringFeature
```

```
Ext-CallBarringFeature ::= SEQUENCE {
    basicService                    Ext-BasicServiceCode            OPTIONAL,
    ss-Status [4] Ext-SS-Status,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
CUG-Info ::= SEQUENCE {
    cug-SubscriptionList            CUG-SubscriptionList,
    cug-FeatureList                 CUG-FeatureList                 OPTIONAL,
    extensionContainer              [0] ExtensionContainer          OPTIONAL,
    ...}
```

```
CUG-SubscriptionList ::= SEQUENCE SIZE (0..maxNumOfCUG) OF
                                    CUG-Subscription
```

```
CUG-Subscription ::= SEQUENCE {
    cug-Index CUG-Index,
    cug-Interlock                   CUG-Interlock,
    intraCUG-Options                IntraCUG-Options,
    basicServiceGroupList           Ext-BasicServiceGroupList       OPTIONAL,
    extensionContainer              [0] ExtensionContainer          OPTIONAL,
    ...}
```

```
CUG-Index ::= INTEGER (0..32767)
    -- The internal structure is defined in ETS 300 138.
```

```
CUG-Interlock ::= OCTET STRING (SIZE (4))
```

```
IntraCUG-Options ::= ENUMERATED {
    noCUG-Restrictions  (0),
    cugIC-CallBarred  (1),
    cugOG-CallBarred  (2)}
```

```
maxNumOfCUG  INTEGER ::= 10
```

```
CUG-FeatureList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups) OF
                                        CUG-Feature

Ext-BasicServiceGroupList ::= SEQUENCE SIZE (1..maxNumOfExt-BasicServiceGroups)
        OF
                                        Ext-BasicServiceCode

maxNumOfExt-BasicServiceGroups  INTEGER ::= 32

CUG-Feature ::= SEQUENCE {
    basicService                    Ext-BasicServiceCode            OPTIONAL,
    preferentialCUG-Indicator       CUG-Index OPTIONAL,
    interCUG-Restrictions           InterCUG-Restrictions,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}

InterCUG-Restrictions ::= OCTET STRING (SIZE (1))

    -- bits 876543: 000000 (unused)
    -- Exception handling:
    -- bits 876543 shall be ignored if received and not understood

    -- bits 21
    --   00  CUG only facilities
    --   01  CUG with outgoing access
    --   10  CUG with incoming access
    --   11  CUG with both outgoing and incoming access

Ext-SS-Data ::= SEQUENCE {
    ss-Code                         SS-Code,
    ss-Status [4] Ext-SS-Status,
    ss-SubscriptionOption           SS-SubscriptionOption           OPTIONAL,
    basicServiceGroupList           Ext-BasicServiceGroupList       OPTIONAL,
    extensionContainer              [5] ExtensionContainer          OPTIONAL,
    ...}

LCS-PrivacyExceptionList ::= SEQUENCE SIZE (1..maxNumOfPrivacyClass) OF
                                        LCS-PrivacyClass

maxNumOfPrivacyClass  INTEGER ::= 4

LCS-PrivacyClass ::= SEQUENCE {
    ss-Code                         SS-Code,
    ss-Status                       Ext-SS-Status,
    externalClientList              [0] ExternalClientList          OPTIONAL,
    -- externalClientList is expected only for SS-code = callunrelated
    plmnClientList                  [1] PLMNClientList              OPTIONAL,
    -- plmnClientList is expected only for SS-code - plmn
    extensionContainer              [2] ExtensionContainer          OPTIONAL,
    ...}

ExternalClientList ::= SEQUENCE SIZE (1..maxNumOfExternalClient) OF
                                        ExternalClient

maxNumOfExternalClient  INTEGER ::= 5

PLMNClientList ::= SEQUENCE SIZE (1..maxNumOfPLMNClient) OF
                                        LCSClientInternalID

maxNumOfPLMNClient  INTEGER ::= 5

ExternalClient ::= SEQUENCE {
    clientIdentity                  LCSClientExternalID,
    gmlc-Restriction                [0] GMLC-Restriction            OPTIONAL,
    extensionContainer              [1] ExtensionContainer          OPTIONAL,
    ... }

GMLC-Restriction ::= ENUMERATED {
    hplmn                           (0),
    home-Country                    (1)}

ZoneCodeList ::= SEQUENCE SIZE (1..maxNumOfZoneCodes)
                                        OF ZoneCode

ZoneCode ::= OCTET STRING (SIZE (2))
    -- internal structure is defined in TS GSM 03.03

maxNumOfZoneCodes  INTEGER ::= 10
```

```
InsertSubscriberDataRes ::= SEQUENCE {
    teleserviceList                 [1] TeleserviceList             OPTIONAL,
    bearerServiceList               [2] BearerServiceList           OPTIONAL,
    ss-List                         [3] SS-List                     OPTIONAL,
    odb-GeneralData                 [4] ODB-GeneralData             OPTIONAL,
    regionalSubscriptionResponse    [5]
             RegionalSubscriptionResponse       OPTIONAL,
    supportedCamelPhases            [6] SupportedCamelPhases        OPTIONAL,
    extensionContainer              [7] ExtensionContainer          OPTIONAL,
    ...}
```

```
RegionalSubscriptionResponse ::= ENUMERATED {
    networkNode-AreaRestricted      (0),
    tooManyZoneCodes                (1),
    zoneCodesConflict               (2),
    regionalSubscNotSupported       (3)}
```

```
DeleteSubscriberDataArg ::= SEQUENCE {
    imsi                                [0] IMSI,
    basicServiceList                    [1] BasicServiceList            OPTIONAL,
    -- The exception handling for reception of unsupported/not allocated
    -- basicServiceCodes is defined in section 6.8.2
    ss-List                             [2] SS-List                     OPTIONAL,
    roamingRestrictionDueToUnsupportedFeature [4] NULL                  OPTIONAL,
    regionalSubscriptionIdentifier      [5] ZoneCode                    OPTIONAL,
    vbsGroupIndication                  [7] NULL                        OPTIONAL,
    vgcsGroupIndication                 [8] NULL   OPTIONAL,
    camelSubscriptionInfoWithdraw       [9] NULL   OPTIONAL,
    extensionContainer                  [6] ExtensionContainer OPTIONAL,
    ...,
    gprsSubscriptionDataWithdraw        [10] GPRSSubscriptionDataWithdraw OPTIONAL,
    roamingRestrictedInSgsnDueToUnsuppportedFeature [11] NULL           OPTIONAL,
    lsaInformationWithdraw              [12] LSAInformationWithdraw     OPTIONAL }
```

```
GPRSSubscriptionDataWithdraw ::= CHOICE {
    allGPRSData                     NULL,
    contextIdList                   ContextIdList}
```

```
ContextIdList ::= SEQUENCE SIZE (1..maxNumOfPDP-Contexts) OF
                                    ContextId
```

```
LSAInformationWithdraw ::= CHOICE {
    allLSAData                      NULL,
    lsaIdentityList                 LSAIdentityList }
```

```
LSAIdentityList ::= SEQUENCE SIZE (1..maxNumOfLSAs) OF
                                    LSAIdentity
```

```
BasicServiceList ::= SEQUENCE SIZE (1..maxNumOfBasicServices) OF
                                    Ext-BasicServiceCode
```

```
maxNumOfBasicServices  INTEGER ::= 70
```

```
DeleteSubscriberDataRes ::= SEQUENCE {
    regionalSubscriptionResponse    [0]
                                    RegionalSubscriptionResponse    OPTIONAL,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
VlrCamelSubscriptionInfo ::= SEQUENCE {
    o-CSI                           [0] O-CSI                       OPTIONAL,
    extensionContainer              [1] ExtensionContainer          OPTIONAL,
    ...,
    ss-CSI                          [2]  SS-CSI                     OPTIONAL,
    o-BcsmCamelTDP-CriteriaList     [4] O-BcsmCamelTDPCriteriaList  OPTIONAL,
    tif-CSI                         [3]  NULL                       OPTIONAL
    }
```

```
SS-CSI ::= SEQUENCE {
    ss-CamelData                    SS-CamelData,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
SS-CamelData  ::= SEQUENCE {
     ss-EventList                        SS-EventList,
     gsmSCF-Address                      ISDN-AddressString,
     extensionContainer                  [0] ExtensionContainer          OPTIONAL,
     ...
     }
```

```
SS-EventList  ::= SEQUENCE SIZE (1..maxNumOfCamelSSEvents) OF SS-Code
     -- Actions for the following SS-Code values are defined in CAMEL Phase 2:
     -- ect                              SS-Code ::= '00110001'B
     -- multiPTY                         SS-Code ::= '01010001'B
     -- cd                               SS-Code ::= '00100100'B
     -- all other SS codes shall be ignored
```

```
maxNumOfCamelSSEvents INTEGER ::= 10
```

```
O-CSI ::= SEQUENCE {
     o-BcsmCamelTDPDataList              O-BcsmCamelTDPDataList,
     extensionContainer                  ExtensionContainer              OPTIONAL,
     ...,
     camelCapabilityHandling             [0] CamelCapabilityHandling     OPTIONAL
     }
```

```
O-BcsmCamelTDPDataList ::= SEQUENCE SIZE (1..maxNumOfCamelTDPData) OF
     O-BcsmCamelTDPData
--- O-BcsmCamelTDPDataList shall not contain more than one instance of
--- O-BcsmCamelTDPData containing the same value for o-BcsmTriggerDetectionPoint.
--- For CAMEL Phase 2, this means that only one instance of O-BcsmCamelTDPData is allowed
--- with o-BcsmTriggerDetectionPoint being equal to DP2.
```

```
maxNumOfCamelTDPData  INTEGER ::= 10
```

```
O-BcsmCamelTDPData ::= SEQUENCE {
     o-BcsmTriggerDetectionPoint         O-BcsmTriggerDetectionPoint,
     serviceKey                          ServiceKey,
     gsmSCF-Address                      [0] ISDN-AddressString,
     defaultCallHandling                 [1] DefaultCallHandling,
     extensionContainer                  [2] ExtensionContainer          OPTIONAL,
     ...
     }
```

```
ServiceKey ::= INTEGER (0..2147483647)
```

```
O-BcsmTriggerDetectionPoint ::= ENUMERATED {
     collectedInfo (2),
     ... }
-- exception handling:
-- For O-BcsmCamelTDPData sequences containing this parameter with any
-- other value than the ones listed the receiver shall ignore the whole
-- O-BcsmCamelTDPDatasequence.
-- For O-BcsmCamelTDP-Criteria sequences containing this parameter with any
-- other value than the ones listed the receiver shall ignore the whole
-- O-BcsmCamelTDP-Criteria sequence.
```

```
O-BcsmCamelTDPCriteriaList ::= SEQUENCE SIZE (1..maxNumOfCamelTDPData) OF
     O-BcsmCamelTDP-Criteria
```

```
O-BcsmCamelTDP-Criteria ::= SEQUENCE {
     o-BcsmTriggerDetectionPoint         O-BcsmTriggerDetectionPoint,
     destinationNumberCriteria           [0] DestinationNumberCriteria   OPTIONAL,
     basicServiceCriteria                [1] BasicServiceCriteria        OPTIONAL,
     callTypeCriteria                    [2] CallTypeCriteria            OPTIONAL,
     ... }
```

```
DestinationNumberCriteria  ::= SEQUENCE {
     matchType                           [0] MatchType,
     destinationNumberList               [1] DestinationNumberList       OPTIONAL,
     destinationNumberLengthList         [2] DestinationNumberLengthList OPTIONAL,
     -- one or both of destinationNumberList and destinationNumberLengthList
     -- shall be present
     ... }
```

```
DestinationNumberList  ::= SEQUENCE SIZE   (1..maxNumOfCamelDestinationNumbers) OF
                                    ISDN-AddressString
-- The receiving entity shall not check the format of a number in
-- the dialled number list
```

```
DestinationNumberLengthList  ::= SEQUENCE SIZE (1..maxNumOfCamelDestinationNumberLengths)
OF
                                        INTEGER(1..maxNumOfISDN-AddressDigits)
```

```
BasicServiceCriteria   ::= SEQUENCE SIZE(1..maxNumOfCamelBasicServiceCriteria) OF
    Ext-BasicServiceCode
```

```
maxNumOfISDN-AddressDigits  INTEGER ::= 15
```

```
maxNumOfCamelDestinationNumbers  INTEGER ::= 10
```

```
maxNumOfCamelDestinationNumberLengths  INTEGER ::= 3
```

```
maxNumOfCamelBasicServiceCriteria  INTEGER ::= 5
```

```
CallTypeCriteria       ::= ENUMERATED {
    forwarded                          (0),
    notForwarded                       (1)}
```

```
MatchType       ::= ENUMERATED {
    inhibiting                         (0),
    enabling                           (1)}
```

```
DefaultCallHandling ::= ENUMERATED {
    continueCall (0) ,
    releaseCall (1) ,
    ...}
-- exception handling:
-- reception of values in range 2-31 shall be treated as "continueCall"
-- reception of values greater than 31 shall be treated as "releaseCall"
```

```
CamelCapabilityHandling ::= INTEGER(1..16)
-- value 1 = CAMEL phase 1,
-- value 2 = CAMEL phase 2:
-- reception of values greater than 2 shall be treated as CAMEL phase 2
```

```
SupportedCamelPhases ::= BIT STRING {
    phase1 (0),
    phase2 (1) } (SIZE (1..16))
```

-- gprs location information retrieval types

```
SendRoutingInfoForGprsArg ::= SEQUENCE {
    imsi                                [0] IMSI,
    ggsn-Address                        [1] GSN-Address             OPTIONAL,
    extensionContainer                  [2] ExtensionContainer      OPTIONAL,
    ...}
```

```
SendRoutingInfoForGprsRes ::= SEQUENCE {
    sgsn-Address                        [0] GSN-Address,
    ggsn-Address                        [1]  GSN-Address            OPTIONAL,
    mobileNotReachableReason            [2]  AbsentSubscriberDiagnosticSM
    OPTIONAL,
    extensionContainer                  [3] ExtensionContainer      OPTIONAL,
    ...}
```

-- failure report types

```
FailureReportArg ::= SEQUENCE {
    imsi                                [0] IMSI,
    ggsn-Number                         [1] ISDN-AddressString      ,
    ggsn-Address                        [2] GSN-Address             OPTIONAL,
    extensionContainer                  [3] ExtensionContainer      OPTIONAL,
    ...}
```

```
FailureReportRes ::= SEQUENCE {
    ggsn-Address                        [0] GSN-Address             OPTIONAL,
    extensionContainer                  [1] ExtensionContainer      OPTIONAL,
    ...}
```

-- gprs notification types

```
NoteMsPresentForGprsArg ::= SEQUENCE {
    imsi                                [0] IMSI,
    sgsn-Address                        [1] GSN-Address,
    ggsn-Address                        [2] GSN-Address             OPTIONAL,
    extensionContainer                  [3] ExtensionContainer      OPTIONAL,
    ...}
```

```
NoteMsPresentForGprsRes ::= SEQUENCE {
    extensionContainer                  [0] ExtensionContainer      OPTIONAL,
    ...}
```

-- fault recovery types

```
ResetArg ::= SEQUENCE {
    hlr-Number                      ISDN-AddressString,
    hlr-List                        HLR-List                        OPTIONAL,
    ...}
```

```
RestoreDataArg ::= SEQUENCE {
    imsi                            IMSI,
    lmsi                            LMSI                            OPTIONAL,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ... ,
    vlr-Capability                  [6] VLR-Capability              OPTIONAL }
```

```
RestoreDataRes ::= SEQUENCE {
    hlr-Number                      ISDN-AddressString,
    msNotReachable                  NULL                            OPTIONAL,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

-- VBS/VGCS types

```
VBSDataList ::= SEQUENCE SIZE (1..maxNumOfVBSGroupIds) OF
                                    VoiceBroadcastData
```

```
VGCSDataList ::= SEQUENCE SIZE (1..maxNumOfVGCSGroupIds) OF
                                    VoiceGroupCallData
```

```
maxNumOfVBSGroupIds  INTEGER ::= 50
```

```
maxNumOfVGCSGroupIds  INTEGER ::= 50
```

```
VoiceGroupCallData  ::= SEQUENCE {
    groupId                         GroupId,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
VoiceBroadcastData ::= SEQUENCE {
    groupid                         GroupId,
    broadcastInitEntitlement        NULL                            OPTIONAL,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
GroupId  ::= OCTET STRING (SIZE (3))
    -- Refers to the Group Identification as specified in GSM TS 03.03
    -- and 03.68/ 03.69
```

-- provide subscriber info types

```
ProvideSubscriberInfoArg ::= SEQUENCE {
    imsi     [0] IMSI,
    lmsi     [1] LMSI               OPTIONAL,
    requestedInfo                   [2] RequestedInfo,
    extensionContainer              [3] ExtensionContainer          OPTIONAL,
    ...}
```

```
ProvideSubscriberInfoRes ::= SEQUENCE {
    subscriberInfo                  SubscriberInfo,
    extensionContainer              ExtensionContainer              OPTIONAL,
    ...}
```

```
SubscriberInfo ::= SEQUENCE {
    locationInformation             [0] LocationInformation         OPTIONAL,
    subscriberState                 [1] SubscriberState             OPTIONAL,
    extensionContainer              [2] ExtensionContainer          OPTIONAL,
    ...}
```

```
RequestedInfo ::= SEQUENCE {
    locationInformation                 [0] NULL                            OPTIONAL,
    subscriberState                     [1] NULL                            OPTIONAL,
    extensionContainer                  [2] ExtensionContainer              OPTIONAL,
    ...}
```

```
LocationInformation ::= SEQUENCE {
    ageOfLocationInformation            AgeOfLocationInformation            OPTIONAL,
    geographicalInformation             [0] GeographicalInformation         OPTIONAL,
    vlr-number                          [1] ISDN-AddressString              OPTIONAL,
    locationNumber                      [2] LocationNumber                  OPTIONAL,
    cellIdOrLAI                         [3] CellIdOrLAI                     OPTIONAL,
    extensionContainer                  [4] ExtensionContainer              OPTIONAL,
    ...}
```

```
GeographicalInformation ::= OCTET STRING (SIZE (8))
-- Refers to geographical Information defined in GSM 03.32.
-- Only the description of an ellipsoid point with uncertainty circle
--as specified in GSM 03.32 is allowed to be used
-- The internal structure according to GSM 03.32 is as follows:
--       Type of shape (ellipsoid point with uncertainty circle)          1 octet
--       Degrees of Latitude                                              3 octets
--       Degrees of Longitude                                             3 octets
--       Uncertainty code                                                 1 octet
```

```
LocationNumber ::= OCTET STRING (SIZE (2..10))
    -- the internal structure is defined in CCITT Rec Q.763
```

```
SubscriberState ::= CHOICE {
    assumedIdle                         [0] NULL,
    camelBusy [1] NULL,
    netDetNotReachable                  NotReachableReason,
    notProvidedFromVLR                  [2] NULL}
```

```
NotReachableReason ::= ENUMERATED {
    msPurged (0),
    imsiDetached (1),
    restrictedArea (2),
    notRegistered (3)}
```

-- any time interrogation info types

```
AnyTimeInterrogationArg ::= SEQUENCE {
    subscriberIdentity                  [0] SubscriberIdentity,
    requestedInfo                       [1] RequestedInfo,
    gsmSCF-Address                      [3] ISDN-AddressString,
    extensionContainer                  [2] ExtensionContainer              OPTIONAL,
    ...}
```

```
AnyTimeInterrogationRes ::= SEQUENCE {
    subscriberInfo                      SubscriberInfo,
    extensionContainer                  ExtensionContainer                  OPTIONAL,
    ...}
```

```
END
```