3GPP TSG_CN#7 **NP-000071**

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 LCS**

Introduction:

This document contains **"5"** CRs on **Work Item LCS,** 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
N2B000097	09.02	A282		F	R98	7.3.0		Correction of SS codes for LCS
N2B000047	09.02	A285		F	R98	7.3.0		Privacy notification/verification for call related privacy class
N2B000019	23.007	004		F	R99	3.2.0		Support of VLR and HLR Data Restoration procedures with LCS
N2B000046	29.002	083		A	R99	3.3.0		Privacy notification/verification for call related privacy class
N2B000472	29.002	113		A	R99	3.3.1		Correction of SS codes for LCS

3GPP TSG-CN WG2 (ETSI SMG3 WPC) **Tdoc 3GPP N2B000097**
Kyoto
17 – 12 January 2000

CHANGE REQUEST No : **A282** *Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

Technical Specification GSM / UMTS: 09.02 Version: 7.3.0

Submitted to CN #07 *list SMG plenary meeting no. here ↑*

for approval	X	without presentation ("non-strategic")	
for information		With presentation ("strategic")	X

PT SMG CR cover form. Filename: crf26_3.doc

Proposed change affects: SIM [ ] ME [ ] Network [X]
(at least one should be marked with an X)

Work item: LCS

Source: N2 **Date:** 13.01.2000

Subject: Correction of SS-Codes for LCS

Category: *(one category and one release only 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	
				UMTS	

Reason for change: To distinguish MOLR-SS-codes from LCSPrivacyException SS-codes

Clauses affected: 17.7.5

Other specs affected:

Other releases of same spec		→ List of CRs:	
Other core specifications		→ List of CRs:	
MS test specifications / TBRs		→ List of CRs:	
BSS test specifications		→ List of CRs:	
O&M specifications		→ List of CRs:	

Other comments:

17.7.5 Supplementary service codes

.....

```
allLCSPrivacyException                  SS-Code ::= '10110000'B
     -- all LCS Privacy Exception Classes
universal                               SS-Code ::= '10110001'B
     -- allow location by any LCS client
callrelated                             SS-Code ::= '10110010'B
     -- allow location by any value added LCS client to which a call
     -- is established from the target MS
callunrelated                           SS-Code ::= '10110011'B
     -- allow location by designated external value added LCS clients
plmnoperator                            SS-Code ::= '10110100'B
     -- allow location by designated PLMN operator LCS clients
```

```
allMOLR-SS                              SS-Code ::= '1100110000'B
     -- all Mobile Originating Location Request Classes
basicSelfLocation                       SS-Code ::= '1100110001'B
     -- allow an MS to request its own location
autonomousSelfLocation                  SS-Code ::= '1100110010'B
     -- allow an MS to perform self location without interaction
     -- with the PLMN for a predetermined period of time
transferToThirdParty                    SS-Code ::= '1100110011'B
     -- allow an MS to request transfer of its location to another LCS client
```

END

3GPP TSG CN WG2
Kyoto, Japan, 17-21 January, 2000

Document N2B000047
e.g. for 3GPP use the format TP-99xxx
or for SMG, use the format P-99-xxx

CHANGE REQUEST

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09.02	**CR**	**A285**	Current Version:	7.3.0

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

For submission to:	TSG CN#7	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:** 7 January 2000

Subject: Privacy notification/verification for call related privacy class

Work item: Location Services (LCS)

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

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

Reason for change: According to stage 1 (GSM TS 02.71) the privacy notification procedure is applicable for commercial services. For this reason it needs to be applied also for call related privacy class.

Clauses affected: 7.6.3.63, 7.6.3.67, 17.7.1

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments: Common privacy verification is now provided for call related value added (commercial) LCS clients, call unrelated value added clients (client not identified in MS subscription profile) and call unrelated value added clients (client identified in MS subscription profile). Common privacy verification contains the following subscription options:

(a) notification of location request to MS without privacy verification
(b) notification of location request to MS with privacy verification – location allowed if MS user does not respond or if MS user grants permission
(c) notification to MS and privacy verification by MS – location allowed only if MS user granst permission (e.g. location not allowed if there is no response)

****** NEXT MODIFIED SECTION ******

7.6.3.63 LCS Privacy Exception Parameters

This parameter gives the status of each LCS privacy exception class and any additional parameters relevant to this class. The parameter contains the following information:

- provisioned SS-Status (see subclause 7.6.3.17);
- privacy ~~verification by~~notification to MS user (see subclause 7.6.3.65B)
- external client List (see subclause 7.6.3.64);
- internal client List (see subclause 7.6.3.65)

7.6.3.64 External Client List

This parameter is only applicable to the non-call related privacy class and gives the identities of the external clients that are allowed to locate a target MS for a non-call related MT-LR. Each identity is an international (e.g.E.164) address. For each identified external client, GMLC restrictions may be defined. It may also be indicated if the MS shall be notified of a non-restricted MT-LR from each identified LCS client.and, if so, whether notification only or notification with privacy verification shall apply. Usage of this parameter is defined in GSM 03.71.

7.6.3.65 Internal Client List

This parameter is only applicable to the PLMN operator privacy class and gives the identities of the internal PLMN operator clients that are allowed to locate a target MS for an NI-LR or MT-LR. Usage of this parameter is defined in GSM 03.71.

7.6.3.66 MO-LR List

This parameter defines the classes of MO-LR for which a subscription exists for a particular MS. For each class, the following information is provided:

- SS-Code (see subclause 7.6.4.1);

7.6.3.67 Privacy Notification to ~~Verification By~~ MS User

This parameter is applicable to the non-call related privacy class and call related privacy class.~~and~~ For non-call related privacy class it indicates whether the MS user shall be notified for a non-call related MT-LR from any value added LCS client when the MT-LR is restricted and be enabled to accept or override the restriction. For call related privacy class it indicates whether the MS shall be notified of a call related MT-LR and, if so, whether notification only or notification with privacy verification shall apply. Usage of this parameter is defined in GSM 03.71.

****** NEXT MODIFIED SECTION ******

17.7 MAP constants and data types

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,
   NotificationToMSUser,


```

****** NEXT REFERENCED ASN.1 DEFINITION ******

```
-- 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 seqmentation is used

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

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

maxNumOfGMLC  INTEGER ::= 5
```

****** NEXT MODIFIED ASN.1 DEFINITION ******

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

maxNumOfPrivacyClass  INTEGER ::= 4

LCS-PrivacyClass ::= SEQUENCE {
    ss-Code                             SS-Code,
    ss-Status                           Ext-SS-Status,
    privacyVerificationByMSuser         [0] NULL                            OPTIONAL,
    notificationToMSUser                [0] NotificationToMSUser            OPTIONAL,
    -- notificationToMSUser privacyVerificationByMSUser is expected only for SS-code =
callunrelated or
    -- SS-code = callrelated
    externalClientList                  [1] ExternalClientList              OPTIONAL,
    -- externalClientList is expected only for SS-code = callunrelated
    plmnClientList                      [2] PLMNClientList                  OPTIONAL,
    -- plmnClientList is expected only for SS-code = plmnoperator
    extensionContainer                  [3] ExtensionContainer              OPTIONAL,
    ...}
    -- if segmentation is used, the complete LCS-PrivacyClass shall be sent in one segment

ExternalClientList ::= SEQUENCE SIZE (0..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,
    notificationToMSUser            [1] NotificationToMSUser        OPTIONAL,
    extensionContainer              [2] ExtensionContainer          OPTIONAL,
    ... }
```

```
GMLC-Restriction ::= ENUMERATED {
    gmlc-List                       (0),
    home-Country                    (1),
    ... }
-- exception handling:
-- At reception of any other value than the ones listed the receiver shall ignore
-- GMLC-Restriction.
```

```
NotificationToMSUser ::= ENUMERATED {
    notifyLocationAllowednotification    (0),
    notifyAndVerify-LocationAllowedIfNoResponsenotificationWithPrivacyVerification   (1),
    notifyAndVerify-LocationNotAllowedIfNoResponse(2),
    ... }
-- exception handling:
-- At reception of any other value than the ones listed the receiver shall ignore
-- NotificationToMSUser.
```

3GPP TSG CN WG2
Kyoto, Japan, 17-21 January, 2000

Document N2B000019
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or for SMG, use the format P-99-xxx

CHANGE REQUEST

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23.007	CR	004	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:	TSG CN#7	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:** 4 Jan 2000

Subject: Support of VLR and HLR Data Restoration procedures with LCS

Work item: Location Services (LCS)

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

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

Reason for change: Mirror CR to A009r1 for GSM 03.07 in Release 98 – to modify data restoration procedures for the new LCS phase 2 architecture.

Clauses affected: 1, 3, 4, 12, 13

Other specs affected:

Other 3G core specifications		→ List of CRs:
Other GSM core specifications		→ List of CRs:
MS test specifications		→ List of CRs:
BSS test specifications		→ List of CRs:
O&M specifications		→ List of CRs:

Other comments:

1 Scope

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

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

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

Procedures for supporting these functions are defined in GSM 09.02 and 09.60.

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

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

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

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

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

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

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

1.1 Normative references

References may be made to:

a) specific versions of publications (identified by date of publication, edition number, version number, etc.), in which case, subsequent revisions to the referenced document do not apply; or

b) all versions up to and including the identified version (identified by "up to and including" before the version identity); or

c) all versions subsequent to and including the identified version (identified by "onwards" following the version identity); or

d) publications without mention of a specific version, in which case the latest version applies.

A non-specific reference to an ETS shall also be taken to refer to later versions published as an EN with the same number.

[1] GSM 01.04: "Digital cellular telecommunication system (Phase 2+); Abbreviations and acronyms".

[2] GSM 03.05: "Digital cellular telecommunication system (Phase 2+): Technical performance objectives".

[3] GSM 03.18: "Digital cellular telecommunications system (Phase 2+); Basic call handling; Technical realization".

[4] GSM 03.22: "Digital cellular telecommunications system (Phase 2+); Functions related to Mobile Station (MS) in idle mode and group receive mode".

[5] GSM 03.40: "Digital cellular telecommunications system (Phase 2+); Technical realization of the Short Message Service (SMS) Point-to-Point (PP)".

[6] GSM 03.60: "Digital cellular telecommunication system (Phase 2+); Stage 2 Service Description of the General Packet Radio Service (GPRS)".

[7] GSM 03.71: “Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Functional Description; Stage 2”.

[8] GSM 09.02: "Digital cellular telecommunications system (Phase 2+); Mobile Application Part (MAP) specification".

[9] GSM 09.18:"Digital cellular telecommunications system (Phase 2+); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification”.

[10] GSM 09.60: "Digital cellular telecommunication system (Phase 2+); General Packet radio Service (GPRS); GPRS Tunneling Protocol (GTP) across the Gn and Gp Interface”.

[11] GSM 12.07: "Digital cellular telecommunications system (Phase 2); Operations and performance management".

1.2 Abbreviations

Abbreviations used in this TS are listed in GSM 01.04.

**** NEXT MODIFIED SECTION ****

3 Restoration indicators in location registers and in GPRS support nodes

3.1 Restoration Indicators in the VLR

Three restoration indicators are provided in the VLR for each IMSI record: "Confirmed by Radio Contact", "Subscriber Data Confirmed by HLR" and "Location Information Confirmed in HLR". ~~A further restoration indicator is provided in the VLR for each IMSI record belonging to an LMU: "Location Information Confirmed in SMLC".~~

The indicator "Confirmed by Radio Contact" indicates whether the VLR"s record of location area identity and MSC number for the mobile station is confirmed by radio contact.

The indicator "Confirmed by Radio Contact" in an IMSI record is set to the initial value "Not Confirmed" when the VLR receives a "Provide Roaming Number" request, an "Update Location Area" request or an "IMSI Attach" request for an MS for which the VLR does not have an IMSI record. The indicator "Confirmed by Radio Contact" in an IMSI record is also set to the initial value "Not Confirmed" when the VLR receives a Reset indication message from the SGSN serving the MS if the MS is attached to both GPRS and non-GPRS services.

The indicator "Confirmed by Radio Contact" is set to "Confirmed" when the radio contact that has been established with the MS is authenticated.

The indicator "Subscriber Data Confirmed by HLR" indicates whether the subscriber data set for the mobile station held by the VLR is consistent with that held by the HLR.

The indicator "Subscriber Data Confirmed by HLR" is set to the initial value "Not Confirmed" when the VLR receives a "Provide Roaming Number" request, an "Update Location Area" request or an "IMSI Attach" request for an MS for which the VLR does not have an IMSI record.

The indicator "Subscriber Data Confirmed by HLR" is set to "Confirmed" at either of the following events:

- The VLR successfully performs an "Update Location" to the HLR;
- The VLR successfully performs a "Restore Data" operation to the HLR.

The indicator "Location Information Confirmed in HLR" indicates whether the HLR"s record of VLR number and MSC number for the mobile station is confirmed by radio contact.

The indicator "Location Information Confirmed in HLR" is set to "Not Confirmed" at any of the following events:

- The VLR receives an "Update Location Area" request or an IMSI Attach" request for an MS for which the VLR has no IMSI record;
- A VLR which serves two or more MSCs receives a "Provide Roaming Number" request for an MS for which the VLR has no IMSI record;
- The VLR receives a "Reset" message from the HLR with which the MS is registered.

The indicator "Location Information Confirmed in HLR" is set to "Confirmed" at either of the following events:

- A VLR which serves only one MSC receives a "Provide Roaming Number" request for an MS for which the VLR has no IMSI record;
- Successful completion of the "Update Location" procedure triggered by authenticated radio contact.

~~The indicator "Location Information Confirmed in SMLC" indicates whether an SMLC's record of MSC number for a particular LMU is confirmed by radio contact.~~

~~The indicator "Location Information Confirmed in SMLC" is set to "Not Confirmed" at any of the following events:~~

- ~~The VLR receives an "Update Location Area" request or an "IMSI Attach" request for an MS for which the VLR has no IMSI record. The indicator, in this case, becomes valid only if HLR subscriber data later indicates an LMU.~~
- ~~The VLR receives an "LCS Reset" message from an SMLC where the message is targetted to either a specific LMU or all LMUs registered with the SMLC.~~
- ~~The VLR receives an "IMSI Detach" from an LMU that is registered with an SMLC~~

~~The indicator "Location Information Confirmed in SMLC" is set to "Confirmed" at the following event:~~

- ~~Successful completion of the "LCS Registration" procedure triggered by a successful location update~~
- ~~Successful transfer of an LCS Information message from an SMLC to the LMU~~

3.2 Restoration Indicators in the HLR

As an implementation option, one restoration indicator may be provided in the HLR for each IMSI record: "Check SS".

The "Check SS" indicator is set to "Check Required" when the HLR restarts after a failure.

The "Check SS" indicator is checked whenever the HLR receives an "Update Location" request from a VLR. If it is set to "Check Required", after successful completion of subscriber data retrieval that ran embedded in the "Update Location" procedure the HLR sends a "Forward Check SS Indication" request message to the VLR and sets the "Check SS" indicator to "Check Not Required".

3.3 Restoration Indicators in the SGSN

Two restoration indicators are provided in the SGSN for reach IMSI record: "Subscriber Data Confirmed by HLR" and "Location Information Confirmed in HLR".

The indicator "Subscriber Data Confirmed by HLR" indicates whether the subscriber data set for the mobile station held by the SGSN is consistent with that held by the HLR.

The indicator "Subscriber Data Confirmed by HLR" is set to the initial value "Not Confirmed" when the SGSN receives a Routing Area Update request or an IMSI- and/or GPRS Attach request for an MS for which the SGSN does not have an IMSI record.

The indicator "Subscriber Data Confirmed by HLR" is set to "Confirmed" at the following event:

- The SGSN successfully performs an Update GPRS Location to the HLR;

The indicator "Location Information Confirmed in HLR" indicates whether the HLRs record of the SGSN address for the mobile station is confirmed by radio contact.

The indicator "Location Information Confirmed in HLR" is set to "Not Confirmed" at any of the following events:

- The SGSN receives a Routing Area Update request or an IMSI- and/or GPRS Attach request for an MS for which the SGSN has no IMSI record;
- The SGSN receives a "Reset" message from the HLR with which the MS is registered.

The indicator "Location Information Confirmed in HLR" is set to "Confirmed" at the following event:

- Successful completion of the Update GPRS Location procedure to the HLR.

The indicator "VLR-Reliable" indicates whether the VLR serving the MS has performed a restart.

The indicator "VLR-Reliable" is set to the value "false" when the SGSN receives a Reset indication message from the VLR serving the MS if the MS is attached to both GPRS and non-GPRS services. The indicator "VLR-Reliable" is set

to the value "true" when the SGSN receives a confirmation from a VLR that a location update procedure to the affected VLR has been successfully performed.

The indicator “SGSN-Reset” indicates whether the SGSN has recently experienced a restart.

The indicator "SGSN-Reset" is set to the value "true" when the SGSN suffers a restart. This indicator is unique per SGSN. The indicator "SGSN-Reset" is set to the value "false" after a certain time specified by the operator. The value of the timer controlling the reset of the “SGSN-Reset” indicator shall be longer than the periodic routeing area update timer value used by the MSs.

4 Restoration of data in the VLR

The effect on service of failure of a VLR is different from the effect of failure of an HLR. The procedures for restoration of a VLR and an HLR are therefore different.

4.1 Restart of the VLR

When a VLR restarts after a failure, all IMSI records affected by the failure are erased.

There will be no subscriber data or location information stored for an affected mobile station until after the VLR has received either a "Provide Roaming Number" request or an "Update location Area" request for that mobile station.

The VLR causes all affected TMSIs and all affected LMSIs to become invalid. "Invalid" in this context means that the TMSI and LMSI can no longer be regarded as accurate. The term is used to avoid unnecessary constraints on the implementation.

On receipt of either a "Provide Roaming Number" request or an "Update Location Area" request, restoration of subscriber data in the VLR is triggered individually for each IMSI record as described below.

4.2 Restoration Procedures

The objective of the restoration procedure is to handle all traffic for each mobile subscriber correctly. In order to meet this objective, the procedure must make the subscriber data in the VLR consistent with that in the HLR, and make the location information in the HLR and VLR reflect accurately the current location of the MS. ~~For an LMU, the procedure must also make the location information in the SMLC reflect accurately the current serving location of the LMU.~~

4.2.1 Incoming Call

a) Send Routing Information (GMSC->HLR)

   The HLR sends "Provide Roaming Number" to the VLR as for normal operation. The LMSI is updated by the VLR when the VLR requests the transfer of subscriber data from the HLR using the "Restore Data" operation.

b) Provide Roaming Number (HLR->VLR)

   - Regardless of whether the VLR has an IMSI record corresponding to the IMSI in the "Provide Roaming Number", it returns an MSRN. If no IMSI record exists, the VLR creates a skeleton IMSI record, sets the indicators "Subscriber Data Confirmed by Radio Contact" and "Confirmed by HLR" to "Not Confirmed" and (if IMSI Attach is used) marks the IMSI as attached. If the VLR serves two or more MSCs, the VLR sets the indicator "Location Information Confirmed in HLR" to "Not Confirmed". Otherwise, if the VLR serves only one MSC, the indicator "Location Information Confirmed in HLR" is set to the initial value "Confirmed".

   - If the indicator "Subscriber Data Confirmed by HLR" is "Not Confirmed" the VLR requests authentication data, if required and still not available and subscriber data from the HLR. When the dialogue that covers the subscriber data retrieval procedure is completed successfully, the VLR sets the indicator "Subscriber Data Confirmed by HLR" to "Confirmed". The indicators "Confirmed by Radio Contact" and "Location Information Confirmed in HLR" remain unchanged.

- If the IMSI record for the MS is marked "Subscriber Data Confirmed by HLR" but "Not Confirmed by Radio Contact" the operator may choose an appropriate method to limit the number of "Search for MS" procedures for that MS.

- ~~If subscriber data from the HLR indicates an LMU, the indicator "Location Information Confirmed in SMLC" becomes applicable and is set to "not confirmed". The means by which this indicator is set to "confirmed" are described under "Incoming LCS Information Request" and "Outgoing LMU Request".~~

c) Send Information for I/C Call Setup (MSC->VLR)

- If the VLR has no IMSI record, or if the record is marked "Subscriber Data Not Confirmed by HLR" the VLR returns a "System Failure" error.

- If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Not Confirmed by Radio Contact", the VLR handles the request in the normal way, except that the "Search for MS" procedure is used instead of the "Page MS" procedure.

- If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Confirmed by Radio Contact", the VLR handles the request in the normal way; for this MS, VLR restoration is complete.

- The state of the indicator "Location Information Confirmed in HLR" does not affect the "Send Information for I/C Call Setup" procedure.

d) Process Access Request in Response to Search (MSC->VLR)

- If the MS responds to paging, the MSC sends a positive response to the search request and a "Process Access Request" to the VLR. After successful authentication, if required, the VLR sets the indicator "Confirmed by Radio Contact" to "Confirmed", sets the location area information for the MS, and handles the request in the normal way.

- The VLR checks the indicator "Location Information Confirmed in HLR". If it indicates "Not Confirmed" the VLR starts an "Update Location" procedure to the HLR. When this procedure is successfully completed the VLR sets the indicator "Location Information Confirmed in HLR" to "Confirmed".

For this MS, VLR restoration is complete.

4.2.2 Mobile Terminated Short Message

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

The HLR returns the MSC number as for normal operation.

b) Send Information for MT SMS (MSC->VLR) - MAP version 2

- If the VLR has no IMSI record, or if the record is marked "Subscriber Data Not Confirmed by HLR" the VLR returns an "Unidentified Subscriber" error. This causes the MSC to report a short message delivery failure, with cause "Unidentified Subscriber", to the SMS gateway MSC. The Gateway MSC sends a "Report SM Delivery Status" request, with a cause of "Absent Subscriber", to the HLR. This causes the HLR to set the "Mobile Station Not Reachable Flag" for the MS, as described in Technical Specifications GSM 03.40 and GSM 09.02.

- If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Not Confirmed by Radio Contact", the VLR handles the request in the normal way, except that the "Search for MS" procedure is used instead of the "Page MS" procedure.

- If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Confirmed by Radio Contact", the VLR handles the request in the normal way; for this MS, VLR restoration is complete.

- The state of the indicator "Location Information Confirmed in HLR" does not affect the "Send Information for MT SMS" procedure.

c) Send Information for I/C Call Setup (MSC->VLR) - MAP version 1

- If the VLR has no IMSI record, or if the record is marked "Subscriber Data Not Confirmed by HLR" the VLR returns a "System Failure" error. This causes the MSC to report a short message delivery failure, with cause "System Failure", to the SMS gateway MSC.

- If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Not Confirmed by Radio Contact", the VLR handles the request in the normal way, except that the "Search for MS" procedure is used instead of the "Page MS" procedure.

- If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Confirmed by Radio Contact", the VLR handles the request in the normal way; for this MS, VLR restoration is complete.

- The state of the indicator "Location Information Confirmed in HLR" does not affect the "Send Information for MT SMS" procedure.

d) Process Access Request in Response to Search (MSC->VLR)

- If the MS responds to paging, the MSC sends a positive response to the search request and a "Process Access Request" to the VLR. After successful authentication, if required, the VLR sets the indicator "Confirmed by Radio Contact" to "Confirmed", sets the location area information for the MS, and handles the request in the normal way.

- The VLR checks the indicator "Location Information Confirmed in HLR". If it indicates "Not Confirmed" the VLR starts an "Update Location" procedure to the HLR. When this procedure is successfully completed, the VLR sets the indicator "Location Information Confirmed in HLR" to "Confirmed".

For this MS, VLR restoration is complete.

4.2.3 Mobile Terminating Location Request (MT-LR)

Receipt of an MT-LR for a target MS identified by its IMSI in a serving MSC during VLR restoration is supported by the procedures below.

a) Provide Subscriber Location (GMLC->MSC/VLR)

- If the VLR has no IMSI record, or if the record is marked "Subscriber Data Not Confirmed by HLR" the VLR returns an "Unidentified Subscriber" error. This causes the MSC to report a location failure, with cause "Unidentified Subscriber", to the GMLC.

- If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Not Confirmed by Radio Contact", the VLR handles the request in the normal way, except that the "Search for MS" procedure is used instead of the "Page MS" procedure when paging for the MS.

- If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Confirmed by Radio Contact", the VLR handles the request in the normal way; for this MS, VLR restoration is complete.

- The state of the indicator "Location Information Confirmed in HLR" does not affect the "Provide Subscriber Location" procedure.

b) Process Access Request in Response to Search (MSC->VLR)

- If the MS responds to paging, the MSC sends a positive response to the search request and a "Process Access Request" to the VLR. After successful authentication, if required, the VLR sets the indicator "Confirmed by Radio Contact" to "Confirmed", sets the location area information for the MS, and handles the request in the normal way.

- The VLR checks the indicator "Location Information Confirmed in HLR". If it indicates "Not Confirmed" the VLR starts an "Update Location" procedure to the HLR. When this procedure is successfully completed, the VLR sets the indicator "Location Information Confirmed in HLR" to "Confirmed".

For this MS, VLR restoration is complete.

4.2.4 Incoming LCS Information Request

Receipt of an incoming BSSMAP-LE LMU Connection Request~~LCS Information Request~~ from an SMLC directed to a specific Type A LMU is supported by the procedures below.

a) Request associated with an LMU (SMLC->MSC/VLR)

- If the VLR has no IMSI record, or if the record is marked "Subscriber Data Not Confirmed by HLR"~~ or if both the record is marked "Location Information not Confirmed in SMLC" and any LMSI supplied by the SMLC is incorrect~~, the VLR returns an "Unidentified Subscriber" error.

- If the VLR has an IMSI record for an LMU marked "Subscriber Data Confirmed by HLR" and "Not Confirmed by Radio Contact", the VLR handles the request in the normal way, except that the "Search for MS" procedure is used instead of the "Page MS" procedure when paging for the LMU.

- ~~If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Confirmed by Radio Contact" and "Location Information not Confirmed in SMLC", then if the VLR serves more than one MSC, the VLR verifies if the Location Area for the LMU belongs to the MSC to which the SMLC sent the LCS Information. Request. If this is not verified, the VLR returns an "Unidentified subscriber" error. Otherwise, the VLR handles the request in the normal way and sets the "Location Information Confirmed in SMLC" indicator to "Confirmed". For this LMU, data restoration is complete.~~

- If the VLR has an IMSI record marked "Subscriber Data Confirmed by HLR" and "Confirmed by Radio Contact"~~ and "Location Information Confirmed in SMLC"~~, the VLR handles the request in the normal way. For this LMU, data restoration is complete.

- The state of the indicator "Location Information Confirmed in HLR" does not affect the incoming ~~LCS Information~~LMU Connection Request.

b) Process Access Request in Response to Search (MSC->VLR)

- If the LMU responds to paging, the MSC sends a positive response to the search request and a "Process Access Request" to the VLR. After successful authentication, if required, the VLR sets the indicator "Confirmed by Radio Contact" to "Confirmed",~~ sets the indicator "Location Information Confirmed in SMLC" to "Confirmed" (if not already "Confirmed"),~~ sets the location area information for the LMU, and handles the request in the normal way.

- The VLR checks the indicator "Location Information Confirmed in HLR". If it indicates "Not Confirmed" the VLR starts an "Update Location" procedure to the HLR. When this procedure is successfully completed, the VLR sets the indicator "Location Information Confirmed in HLR" to "Confirmed".

For this LMU, VLR restoration is complete.

4.2.5 Outgoing MS request

An outgoing request (MS originated call, mobile originated Short Message or call-independent supplementary service activity) from the MS causes the VLR to check its IMSI record for that MS.

- If the MS is unknown in this VLR (i.e. the VLR has no IMSI record for the MS) or there is an IMSI record marked "Subscriber Data Not Confirmed by HLR" the outgoing request is rejected with error cause "Unidentified Subscriber". This causes the MS to initiate the location registration procedure described below.

- If the VLR has an IMSI record for the MS marked "Subscriber Data Confirmed by HLR" the request is handled in the normal way, and after any necessary authentication and/or IMEI checking the record is marked "Confirmed by Radio Contact".

- The VLR checks the indicator "Location Information Confirmed in HLR". If it indicates "Not Confirmed" the VLR starts an "Update Location" procedure to the HLR. When this procedure is successfully completed the VLR sets the indicator "Location Information Confirmed in HLR" to "Confirmed".

For this MS, VLR restoration is complete.

4.2.6 Outgoing LMU Request

An outgoing request (CM ServiceRequest) for LCS from a~~n~~ Type A LMU causes the VLR to check its IMSI record for that LMU.

- If the LMU is unknown in this VLR (i.e. the VLR has no IMSI record for the LMU) or there is an IMSI record marked "Subscriber Data Not Confirmed by HLR" the outgoing request is rejected with error cause "Unidentified Subscriber". This causes the LMU to initiate the location registration procedure described below.

- ~~If the VLR has an IMSI record for the MS marked "Subscriber Data Confirmed by HLR" and "Location Information not Confirmed in SMLC", the outgoing request is rejected with the error cause "Not registered in SMLC". This causes the LMU to initiate the location registration procedure described below.~~

- If the VLR has an IMSI record for the MS marked "Subscriber Data Confirmed by HLR"~~ and "Location Information Confirmed in SMLC"~~, the request is handled in the normal way, and after any necessary authentication and/or IMEI checking the record is marked "Confirmed by Radio Contact".

- The VLR checks the indicator "Location Information Confirmed in HLR". If it indicates "Not Confirmed" the VLR starts an "Update Location" procedure to the HLR. When this procedure is successfully completed the VLR sets the indicator "Location Information Confirmed in HLR" to "Confirmed".

For this LMU, VLR restoration is complete.

4.2.7 Location Updating or IMSI Attach

A location registration request (location updating or IMSI attach) from an MS causes the VLR to check its IMSI record for that MS.

- If the MS is unknown in this VLR (i.e. the VLR has no IMSI record for the MS) the VLR creates a skeleton IMSI record for the MS and sets the indicators "Confirmed by Radio Contact", "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Not Confirmed". If authentication is required, the VLR retrieves authentication data. When the radio contact with the Mobile Station is authenticated, the VLR sets the indicator "Confirmed by Radio Contact" to "Confirmed. The VLR then performs an "Update Location" to the HLR. If this is successful, the VLR sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed". For this MS, VLR restoration is complete.

- If the VLR has an IMSI record for the MS, after successful authentication, if required, the VLR sets the indicator "Confirmed by Radio Contact" to "Confirmed". If the record is marked "Location Information Not Confirmed in HLR" or "Subscriber Data Not Confirmed by HLR" the VLR performs an "Update Location" to the HLR. If this is successful, the VLR sets the indicators "Location Information Confirmed in HLR" and "Subscriber Data Confirmed by HLR" to "Confirmed". For this MS, VLR restoration is complete.

- ~~If the VLR performs a successful "Update Location" and the IMSI record indicates an LMU with the indicator "Location Information Confirmed in SMLC" set to "Not Confirmed", the VLR performs an "LCS Registration" to the SMLC associated with either the IMSI or serving cell of the LMU. If this is sucessful, the VLR sets the indicator "Location Information Confirmed in SMLC" to "Confirmed". For this LMU, VLR restoration is complete.~~

4.2.8 Use of TMSI

After the VLR has restarted but before the next authenticated radio contact the TMSI known by the MS is invalid, as it was allocated before the VLR restarted. The VLR therefore uses the IMSI to identify the MS on the first radio contact during restoration.

- A VLR which initiates a "Search for Subscriber" procedure uses the IMSI to identify the MS.

- If an MS identifies itself by a TMSI in a "Location Registration" request, the VLR proceeds as follows:

  a) The VLR checks the location area identity (LAI) of the previous location area sent by the MS. If this LAI is in a VLR different from the current one, the request is handled in the normal way.

b) If the LAI is in the current VLR, the status of the TMSI is checked.

- If the TMSI was allocated after the VLR restarted, and corresponds to a valid IMSI record, the request is handled as described in subclause 4.2.7.

- If the TMSI was allocated before the VLR restarted, or does not correspond to a valid IMSI record, the VLR requests the IMSI from the MS. If the MS returns an IMSI the VLR proceeds as described in subclause 4.2.7. If the MS does not return an IMSI the network aborts the location registration procedure.

- If an MS identifies itself by a TMSI in an outgoing MS request, the VLR proceeds as follows:

- If the TMSI was allocated after the VLR restarted, and corresponds to a valid IMSI record, the request is handled as described in subclause 4.2.5.

- If the TMSI was allocated before the VLR restarted, or does not correspond to a valid IMSI record, the VLR requests the IMSI from the MS. If the MS returns an IMSI the VLR proceeds as described in subclause 4.2.5. If the MS does not return an IMSI the network aborts the outgoing request.

4.2.9 SGSN associations

Based on configuration data, “Reset” messages are sent on the Gs-interface to the SGSNs in the Location Areas served by the VLR. The SGSNs mark all associations with the VLR as unreliable by setting the restoration indicator "VLR-Reliable" to "alse" for the MSs served by that VLR. The associations will be re-initiated one by one by the SGSN at the next Routing Area update or combined RA/LA update from each MS.

**** NEXT MODIFIED SECTION ****

12 Restoration of Data in an SMLC

12.1 Restart of an SMLC

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

- Reload all administered LMU data from non-volatile back-up

~~- Mark each LMU as "not registered"~~

- Reinitialize other temporary data for each LMU to indicate no ongoing measurement or diagnostic activities

- Perform data restoration for each affected Type A and Type B LMU as described below.

~~- Send an "LCS Reset" message containing no LMU identifier to each VLR where an LMU may be currently served~~

~~Any VLR receiving an "LCS Reset" containing no LMU identifier shall reset the indicator "Location Information Confirmed in SMLC" to "Not Confirmed" for each LMU registered with this SMLC. The VLR shall also request the serving MSC for each affected LMU to release any LCS signaling connection to this LMU with the cause "Not registered in SMLC".~~

~~While the "Location Information Confirmed in SMLC" indicator remains "not Confirmed" for any LMU, the VLR shall react to any outgoing request from the LMU as follows~~

~~- For an outgoing request for LCS service, the VLR shall return an error response with cause "not registered in SMLC". This shall cause the LMU to request a location update.~~

~~- For a location update request, the VLR shall behave as for a normal MS. Once any location update to the HLR is completed successfully, or if no location update to the HLR is needed, the VLR shall perform an "LCS Registration" to the SMLC. If this is successful, the indicator "Location Information Confirmed in SMLC" shall be set to "Confirmed".~~

~~After an "LCS Registration" has been successfully completed, the SMLC may send an LCS Information Request to the LMU containing an LCS O&M Reset command. On receipt of this, the LMU shall cancel all active LCS measurement and O&M tasks previously ordered by the SMLC.~~

~~For this LMU, data restoration in the SMLC is complete.~~

12.2 Data Restoration for a Specific LMU

An SMLC may restore data for a specific LMU when the data in the SMLC or LMU is considered unreliable (e.g. if there is no communication between the SMLC and LMU for a long time or if messages received by the SMLC are inconsistent with the LMU state kept by the SMLC). To restore data for a specific LMU, the SMLC shall open a signaling connection to the LMU if this is Type A, as described in GSM 03.71. For both a Type A LMU and Type B LMU, the SMLC shall then send an LLP Reset message to the LMU. ~~"LCS Reset" containing the identity of the LMU to the current serving VLR or to every VLR that may serve the LMU.~~ On receiving an LLP Reset, an LMU shall cancel any LCS measurement and O&M tasks previously ordered by the SMLC and shall return an LLP Reset acknowledgment to the SMLC.

~~Any VLR receiving an "LCS Reset" containing a specific LMU identifier shall reset the indicator "Location Information Confirmed in SMLC" to "Not Confirmed" for this LMU and shall request the serving MSC to release any LCS signaling connection to this LMU with the cause "Not registered in SMLC". Further actions by the MSC, LMU and SMLC are as described in section 12.1~~

13 Restoration of Data in an LMU

When an LMU restarts following a failure, it shall reinitialize all data concerning LCS measurement and O&M tasks to indicate that no tasks ordered by an SMLC are active. ~~The~~A Type A LMU shall then perform an "IMSI Attach". ~~Other actions are for further study.~~ A Type A LMU shall then open a signaling connection to its controlling SMLC as described in GSM 03.71. Both a Type A LMU and a Type B LMU shall send an LLP Status Update message to their controlling SMLC containing an indication that the LMU has restarted following a failure. The SMLC shall update its data regarding the state of the LMU and shall return an LLP Update Status acknowledgment to the LMU.

3GPP TSG CN WG2
Kyoto, Japan, 17-21 January, 2000

Document N2B000046
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.

29.002	CR	083	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:	TSG 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:**	7 January 2000

Subject:	Privacy notification/verification for call related privacy class

Work item:	Location Services (LCS)

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

Reason for change:	Mirror CR to LCS CR for GSM 09.02 v.7.3.0 According to stage 1 (GSM TS 02.71) the privacy notification procedure is applicable for commercial services. For this reason it needs to be applied also for call related privacy class.

Clauses affected:	7.6.3.63, 7.6.3.67, 17.7.1

Other specs affected:			
	Other 3G core specifications		→ List of CRs:
	Other GSM core specifications		→ List of CRs:
	MS test specifications		→ List of CRs:
	BSS test specifications		→ List of CRs:
	O&M specifications		→ List of CRs:

Other comments:

Note that the latest 29.002 version 3.3.0 resulting from CN#6 was not available at the time this CR was approved by T1P1.5 LCS SWG. Consequently, this CR is based on what is expected to be in the new specification according to the LCS CR to 29.002 v.3.2.0 approved at CN#6 and which modified the applicable sections here.

Common privacy verification is now provided for call related value added (commercial) LCS clients, call unrelated value added clients (client not identified in MS subscription profile) and call unrelated value added clients (client identified in MS subscription profile). Common privacy verification contains the following subscription options:

(a) notification of location request to MS without privacy verification
(b) notification of location request to MS with privacy verification – location allowed if MS user does not respond or if MS user grants permission
(c) notification to MS and privacy verification by MS – location allowed only if MS user granst permission (e.g. location not allowed if there is no response)

****** NEXT MODIFIED SECTION ******

7.6.3.63 LCS Privacy Exception Parameters

This parameter gives the status of each LCS privacy exception class and any additional parameters relevant to this class. The parameter contains the following information:

- provisioned SS-Status (see subclause 7.6.3.17);
- privacy notification to ~~verification by~~ MS user (see subclause 7.6.3.65B);
- external client List (see subclause 7.6.3.64);
- internal client List (see subclause 7.6.3.65)

7.6.3.64 External Client List

This parameter is only applicable to the non-call related privacy class and gives the identities of the external clients that are allowed to locate a target MS for a non-call related MT-LR. Each identity is an international (e.g.E.164) address. For each identified external client, GMLC restrictions may be defined. It may also be indicated if the MS shall be notified of a non-restricted MT-LR from each identified LCS client.and, if so, whether notification only or notification with privacy verification shall apply. Usage of this parameter is defined in GSM 03.71.

7.6.3.65 Internal Client List

This parameter is only applicable to the PLMN operator privacy class and gives the identities of the internal PLMN operator clients that are allowed to locate a target MS for an NI-LR or MT-LR. Usage of this parameter is defined in GSM 03.71.

7.6.3.66 MO-LR List

This parameter defines the classes of MO-LR for which a subscription exists for a particular MS. For each class, the following information is provided:

- SS-Code (see subclause 7.6.4.1);

7.6.3.67 Privacy Notification to ~~Verification By~~ MS User

This parameter is applicable to the non-call related privacy class and call related privacy class.~~and~~ For non-call related privacy class it indicates whether the MS user shall be notified for a non-call related MT-LR from any value added LCS client when the MT-LR is restricted and be enabled to accept or override the restriction. For call related privacy class it indicates whether the MS shall be notified of a call related MT-LR and, if so, whether notification only or notification with privacy verification shall apply. Usage of this parameter is defined in GSM 03.71.

****** NEXT MODIFIED SECTION ******

17.7 MAP constants and data types

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) version6 (6)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS

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


   -- 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,
   NotificationToMSUser,
   IST-AlertTimerValue,


```

****** NEXT REFERENCED ASN.1 DEFINITION ******

```
-- 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,
     istAlertTimer                       [26] IST-AlertTimerValue              OPTIONAL
      }
     -- If the Network Access Mode parameter is sent, it shall be present only in
     -- the first sequence if the seqmentation is used

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

LCSInformation ::= SEQUENCE {
     GMLC-List [0]                       GMLC-List OPTIONAL,
     lcs-PrivacyExceptionList            [1]  LCS-PrivacyExceptionList     OPTIONAL,
     molr-List                           [2]  MOLR-List                    OPTIONAL,
...}

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

maxNumOfGMLC  INTEGER ::= 5
```

****** NEXT MODIFIED ASN.1 DEFINITION ******

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

maxNumOfPrivacyClass  INTEGER ::= 4

LCS-PrivacyClass ::= SEQUENCE {
     ss-Code                             SS-Code,
     ss-Status                           Ext-SS-Status,
     privacyVerificationByMSuser         [0] NULL                          OPTIONAL,
     notificationToMSUser                [0] NotificationToMSUser          OPTIONAL,
     -- notificationToMSUser privacyVerificationByMSUser is expected only for SS-code =
callunrelated or
     -- SS-code = callrelated
     externalClientList                  [1] ExternalClientList            OPTIONAL,
     -- externalClientList is expected only for SS-code = callunrelated
     plmnClientList                      [2] PLMNClientList                OPTIONAL,
     -- plmnClientList is expected only for SS-code = plmn operator
     extensionContainer                  [3] ExtensionContainer            OPTIONAL,
-- if segmentation is used, the complete LCS-PrivacyClass shall be sent in one segment
     ...}

ExternalClientList ::= SEQUENCE SIZE (0..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,
    notificationToMSUser            [1] NotificationToMSUser        OPTIONAL,
    extensionContainer              [2] ExtensionContainer          OPTIONAL,
    ... }
```

```
GMLC-Restriction ::= ENUMERATED {
    gmlc-List                       (0),
    home-Country                    (1),
    ... }
-- exception handling:
-- At reception of any other value than the ones listed the receiver shall ignore
-- GMLC-Restriction.
```

```
NotificationToMSUser ::= ENUMERATED {
    notifyLocationAllowednotification    (0),
    notifyAndVerify-LocationAllowedIfNoResponsenotificationWithPrivacyVerification   (1),
    notifyAndVerify-LocationNotAllowedIfNoResponse                                   (2),
    ... }
-- exception handling:
-- At reception of any other value than the ones listed the receiver shall ignore
-- NotificationToMSUser.
```

3GPP TSG-CN WG2 (ETSI SMG3 WPC) **Tdoc 3GPP N2B000472**
Kyoto
17 – 12 January 2000

CHANGE REQUEST No : **113** *Please see embedded help file at the bottom of this page for instructions on how to fill in this form correctly.*

Technical Specification GSM / UMTS: 29.002 Version: 3.3.1

Submitted to CN #07 *list SMG plenary meeting no. here ↑*
for approval [X] for information [ ]
without presentation ("non-strategic") [ ] With presentation ("strategic") [X]

PT SMG CR cover form. Filename: crf26_3.doc

Proposed change affects: *(at least one should be marked with an X)* SIM [ ] ME [ ] Network [X]

Work item: LCS

Source: N2 **Date:** 13.01.2000

Subject: Correction of SS-Codes for LCS

Category: *(one category and one release only 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	
Release 99	X
UMTS	

Reason for change: To distinguish MOLR-SS-codes from LCSPrivacyException SS-codes

Clauses affected: 17.7.5

Other specs affected:

Other releases of same spec	[ ]	→ List of CRs:
Other core specifications	[ ]	→ List of CRs:
MS test specifications / TBRs	[ ]	→ List of CRs:
BSS test specifications	[ ]	→ List of CRs:
O&M specifications	[ ]	→ List of CRs:

Other comments:

17.7.5 Supplementary service codes

.....

```
allLCSPrivacyException                  SS-Code ::= '10110000'B
     -- all LCS Privacy Exception Classes
universal                               SS-Code ::= '10110001'B
     -- allow location by any LCS client
callrelated                             SS-Code ::= '10110010'B
     -- allow location by any value added LCS client to which a call
     -- is established from the target MS
callunrelated                           SS-Code ::= '10110011'B
     -- allow location by designated external value added LCS clients
plmnoperator                            SS-Code ::= '10110100'B
     -- allow location by designated PLMN operator LCS clients
```

```
allMOLR-SS                              SS-Code ::= '1100110000'B
     -- all Mobile Originating Location Request Classes
basicSelfLocation                       SS-Code ::= '1100110001'B
     -- allow an MS to request its own location
autonomousSelfLocation                  SS-Code ::= '1100110010'B
     -- allow an MS to perform self location without interaction
     -- with the PLMN for a predetermined period of time
transferToThirdParty                    SS-Code ::= '1100110011'B
     -- allow an MS to request transfer of its location to another LCS client
```

END