3GPP TSG CN Plenary Meeting #23 **NP-040120**
10th – 12th March 2004 Phoenix, USA.

Source: TSG CN WG4

Title: Corrections on TEI6 (Access restriction)

Agenda item: 9.22

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.008	129		N4-040162	Rel-6	Inclusion of Access_Restriction_Data parameter	B	6.0.0
23.016	035		N4-040164	Rel-6	Include administrative restriction subscription parameter	B	6.0.0
23.012	014	1	N4-040283	Rel-6	Include administrative restriction subscription parameter	B	5.2.0
29.002	717	1	N4-040284	Rel-6	Include administrative restriction subscription parameter	B	6.4.0
29.010	101	1	N4-040285	Rel-6	Include administrative restriction subscription parameter	B	6.1.0

3GPP TSG CN WG4 Meeting #22
Atlanta, USA, 12th – 16th February 2004

N4-040162

CR-Form-v7

CHANGE REQUEST

⌘ **23.008** **CR** **129** ⌘ **rev** **-** ⌘ Current version: **6.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

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

Title:	⌘	Inclusion of Access_Restriction_Data parameter
Source:	⌘	CN4
Work item code:	⌘	TEI6
Date:	⌘	05/02/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	A new feature has been included for Rel-6 to allow administrative restriction of subscribers' access without the need of having explicit Location/Routing Area identities in the individual subscription profiles (SP-030774). This implies that according to this requirement, a new parameter in the HLR is holding the allowed/prohibited radio access technologies.
Summary of change:	⌘	A new parameter is added to indicate the allowed radio access technologies for the subscriber.
Consequences if not approved:	⌘	Feature not implemented

Clauses affected:	⌘	0.1, 2.4.x (new section), 5.1, 5.2			
		Y	**N**		
Other specs	⌘	**X**		Other core specifications	⌘ 23.012 CR 014, 23.016 CR 035, 29.002 CR 717, 29.010 CR 101
affected:			**X**	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:
Comprehensive information and tips about how to create CRs can be found at http://www.3gpp.org/specs/CR.htm.
Below is a brief summary:

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

First modification

0.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 22.002: "Circuit Bearer Services (BS) supported by a Public Land Mobile Network (PLMN)".

[3] 3GPP TS 22.003: "Circuit Teleservices supported by a Public Land Mobile Network (PLMN)".

[4] 3GPP TS 22.004: "General on supplementary services".

[5] 3GPP TS 23.003: "Numbering, addressing and identification".

[6] 3GPP TS 23.007: "Restoration procedures".

[7] 3GPP TS 23.009: "Handover procedures".

[8] 3GPP TS 23.012: "Location Management Procedures".

[9] 3GPP TS 23.015: "Technical realization of Operator Determined Barring (ODB)".

[10] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS)".

[11] 3GPP TS 22.060: "General Packet Radio Service (GPRS); Service description; Stage 1".

[12] 3GPP TS 23.067: "Enhanced Multi-Level Precedence and Preemption service (EMLPP); Stage 2".

[13] 3GPP TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL); Stage 2".

[14] 3GPP TS 23.081: "Line identification supplementary services; Stage 2".

[15] 3GPP TS 23.082: "Call Forwarding (CF) Supplementary Services; Stage 2".

[16] 3GPP TS 23.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services; Stage 2".

[17] 3GPP TS 23.084: "Multi Party (MPTY) Supplementary Service; Stage 2".

[18] 3GPP TS 23.085: "Closed User Group (CUG) Supplementary Service; Stage 2".

[19] 3GPP TS 23.086: "Advice of Charge (AoC) Supplementary Service; Stage 2".

[20] 3GPP TS 23.088: "Call Barring (CB) Supplementary Service; Stage 2".

[21] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service Description; Stage 2".

[22] 3GPP TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL); Stage 2".

[23] 3GPP TS 23.090: "Unstructured Supplementary Service Data (USSD); Stage 2".

[24] 3GPP TS 23.116: "Super-Charger Technical Realization; Stage 2."

[25] 3GPP TS 23.135: "Multicall supplementary service; Stage 2"

[26] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

[27] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[28] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[29] 3GPP TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp interface".

[30] 3GPP TS 42.032: "Digital cellular telecommunications system (Phase 2+); Immediate Service Termination (IST) Service description - Stage 1".

[31] 3GPP TS 43.020: "Digital cellular telecommunications system (Phase 2+); Security-related network functions".

[32] 3GPP TS 43.035: "Digital cellular telecommunications system (Phase 2+); Immediate Service Termination (IST); Stage 2".

[33] 3GPP TS 43.068: "Digital cellular telecommunications system (Phase 2+); Voice Group Call Service (VGCS); Stage 2".

[34] 3GPP TS 43.069: "Digital cellular telecommunications system (Phase 2+); Voice Broadcast Service (VBS); Stage 2".

[35] 3GPP TS 23.071: "Location Services (LCS); Functional Description; Stage 2".

[36] GSM 12.03: "Digital cellular telecommunications system (Phase 2+) (GSM); Security management".

[37] GSM 12.08: "Digital cellular telecommunications system (Phase 2+) (GSM); Subscriber and equipment trace".

[38] ITU-T Recommendation Q.763: "Signalling System No. 7 - ISDN User Part formats and codes".

[39] ANSI T1.113: "Signalling System No7 (SS7); Integrated Services Digital Network (ISDN) User Part"

[40] 3GPP TS 32.005 "Telecommunication Management; Charging and billing; 3G call and event data for the Circuit Switched (CS) domain".

[41] 3GPP TS 32.015: "Telecommunication Management; Charging and billing; 3G call and event data for the Packet Switched (PS) domain".

[42] 3GPP TS 23.228: "IP Multimedia Subsystem (IMS); Stage 2".

[43] 3GPP TS 29.228: "IP Multimedia (IM) Subsystem Cx and Dx interfaces; Signalling flows and message contents".

[44] 3GPP TS 29.229: "Cx and Dx Interfaces based on the Diameter protocol; Protocol details".

[45] IETF RFC 3261: "SIP: Session Initiation Protocol".

[46] IETF RFC 2396: "Uniform Resource Identifiers (URI): Generic Syntax".

[47] Void

[48] IETF RFC 2486: "The Network Access Identifier".

[49] 3GPP TS 33.203: "3G security; Access security for IP-based services".

[50] 3GPP TS 23.002: "Network Architecture".

[51] draft-ietf-aaa-diameter-08.txt: "Diameter Base Protocol", work in progress".

[52] 3GPP TS 33.102: "3G Security; Security Architecture".

[53] 3GPP TS 23.218: "IP Multimedia (IM) session handling; IM call model; Stage 2".

[54] 3GPP TS 29.328: "IP Multimedia Subsystem (IMS) Sh interface signalling flows and message contents (Release 5)".

[55] 3GPP TS 23.278: "Customised Applications for Mobile network Enhanced Logic (CAMEL) - IP Multimedia System (IMS) interworking; Stage 2".

[56] 3GPP TS 23.271: "".

[xx] 3GPP TS 23.221: " Architectural requirements ".

End First modification

Second modification

2.4 Data related to roaming

2.4.x AccessRestriction_Data

The use of this data is described in 3GPP TS 23.221 [xx].

The Access_Restriction_Data is permanent subscriber data stored in the HLR, and temporary subscriber data stored in the VLR and SGSN.

The parameter takes either of the following values (see also 3GPP TS 29.002 [27]):

- GERAN not allowed, the subscriber shall not be allowed to access the network in GERAN radio access. Valid for Idle and Connected mode;
- UTRAN not allowed, the subscriber shall not be allowed to access the network in LA/RAs using a UTRAN radio access. Valid for Idle and Connected mode;

The use of this parameter for LA/RA update procedures is described in TS 23.012 [8] and TS 23.060 [21].

End Second modification

Third modification

5.1 Non-GPRS Network Access Mode Data Storage

Table 5.1: Overview of data stored for non-GPRS Network Access Mode (CS)

PARAMETER	SUBCLAUSE	HLR	VLR	TYPE
IMSI	2.1.1.1	M	M	P
Network Access Mode	2.1.1.2	M	-	P
International MS ISDN number	2.1.2	M	M	P
multinumbering MSISDNs	2.1.3	C	-	P
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
Mobile Station Category	2.2.1	M	M	P
LMU Identifier	2.2.2	C	C	P
IMEISV	2.2.3	-	C	T
RAND, SRES and Kc	2.3.1		C	T
RAND, XRES, CK, IK and AUTN	2.3.2	M	C	T
Ciphering Key Sequence Number	2.3.3	-	M	T
Key Set Identifier (KSI)	2.3.4	-	M	T
MSRN	2.4.1	-	C	T
Location Area Identity	2.4.2	-	M	T
VLR number	2.4.5	M	-	T
MSC number	2.4.6	M	C	T
HLR number	2.4.7	-	C	T
Subscription restriction	2.4.10	C	-	P
RSZI lists	2.4.11.1	C	-	P
Zone Code List	2.4.11.2	-	C	P
MSC area restricted flag	2.4.12	M	-	T
LA not allowed flag	2.4.13	-	M	T
ODB-induced barring data	2.4.15.1	C	-	T
Roaming restriction due to unsupported feature	2.4.15.2	M	M	T
Cell Global ID or Service Area ID	2.4.16	-	C	T
LSA Identity	2.4.17.1	C	C	P
LSA Priority	2.4.17.2	C	C	P
LSA Preferential Access Indicator	2.4.17.2A	C	C	P
LSA Active Mode Support Indicator	2.4.17.2B	C	C	P
LSA Only Access Indicator	2.4.17.3	C	C	P
LSA Active Mode Indicator	2.4.17.4	C	C	P
VPLMN Identifier	2.4.17.5	C	-	P
Provision of bearer service	2.5.1	M	M	P
Provision of teleservice	2.5.2	M	M	P
BC allocation	2.5.3	C	C	P
IMSI detached flag	2.7.1	-	C	T
Confirmed by Radio Contact indicator	2.7.4.1	-	M	T
Subscriber Data Confirmed by HLR indicator	2.7.4.2	-	M	T
Location Information Confirmed in HLR indicator	2.7.4.3	-	M	T
Check SS indicator	2.7.4.4	M	-	T
MS purged for non-GPRS flag	2.7.5	M	-	T
MNRR	2.7.7	C	-	T
Subscriber status	2.8.1	C	C	P
Barring of outgoing calls	2.8.2.1	C	C	P
Barring of incoming calls	2.8.2.2	C	-	P
Barring of roaming	2.8.2.3	C	-	P

PARAMETER	SUBCLAUSE	HLR	VLR	TYPE
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
Notification to CSE flag for ODB	2.8.4	C	-	T
gsmSCF address list for ODB	2.8.5	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
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
VGCS Group Membership List	2.12.1	C	C	P
VBS Group Membership List	2.12.2	C	C	P
Broadcast Call Initiation Allowed List	2.12.2.1	C	C	P
Originating CAMEL Subscription Information (O-CSI)	2.14.1.1/3.1	C	C	P
Terminating CAMEL Subscription Information (T-CSI)	2.14.1.2	C	-	P
VMSC Terminating CAMEL Subscription Information (VT-CSI)	2.14.1.2/3.2	C	C	P
Location Information/Subscriber state Information	2.14.1.3	C	-	P
USSD CAMEL subscription information(U-CSI)	2.14.1.4	C	-	P
SS invocation notification (SS-CSI)	2.14.1.5/3.2	C	C	P
Translation information flag(TIF-CSI)	2.14.1.6/3.6	C	C	P
Dialled service CAMEL Subscription Information (D-CSI)	2.14.1.11/3.7	C	C	P
USSD General CAMEL service information (UG-CSI)	2.14.2.4	C	-	P
O-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C		T
SS-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C		T
VT-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C		T
Short Message Service CAMEL Subscription Information(MO-SMS-CSI)	2.14.1.8/2.14.3.5	C	C	P
Short Message Service CAMEL Subscription Information(MT-SMS-CSI)	2.14.1.9/2.14.3.6	C	C	P
MO-SMS-CSI VLR Negotiated CAMEL Capability Handling	2.14.2.1	C		T
MT-SMS-CSI VLR Negotiated CAMEL Capability Handling	2.14.2.1	C		P
M-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C		T
VLR Supported CAMEL Phases	2.14.2.3	C		T
GsmSCF address for CSI	2.14.2.4	C		P
VLR Offered CAMEL4 CSIs	2.14.2.2A	C		T
IST Alert Timer	2.15.1	C	C	P
Privacy Exception List	2.16.1.1	C	C	P
GMLC Numbers	2.16.1.2	C	C	P
MO-LR List	2.16.1.3	C	C	P
Service Types	2.16.1.4	C	C	P
Age Indicator	2.17.1	C	C	T
CS Allocation/Retention priority	2.18.1	C	C	P
Access Restriction Data	2.4.x	C	C	P

End Third modification

Forth modification

5.2 GPRS Network Access Mode Storage

Table 5.2: 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
Network Access Mode	2.1.1.2	M	-	C note1	-	P
International MS ISDN number	2.1.2	M	M	M	M	T
multinumbering MSISDNs	2.1.3	C	-	-	-	T
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
TLLI	2.1.6	-	-	C	-	T
Random TLLI	2.1.7	-	-	C	-	T
IMEI	2.1.9	-	-	C	-	T
IMEISV	2.2.3	-	-	C	-	T
RAND/SRES and Kc	2.3.1		-	C	-	T
RAND, XRES, CK, IK, AUTN	2.3.2	M	-	C	-	T
Ciphering Key Sequence Number	2.3.3	-	-	M	-	T
Key Set Identifier (KSI)	2.3.4	-	-	M	-	T
Selected Ciphering Algorithm	2.3.5	-	-	M	-	T
Current Kc	2.3.6	-	-	M	-	T
P-TMSI Signature	2.3.7	-	-	C	-	T
Routing Area Identity	2.4.3	-	-	M	-	T
VLR Number	2.4.5	M	-	C note2	-	T
SGSN Number	2.4.8.1	M	C note2	-	-	T
GGSN Number	2.4.8.2	M	-	-	-	P
RSZI Lists	2.4.11.1	C	-	-	-	P
Zone Code List	2.4.11.2	-	-	C	-	P
RA not allowed flag	2.4.14a	-	-	M	-	T
SGSN area restricted flag	2.4.14	M	-	-	-	T
Roaming Restricted in the SGSN due to unsupported feature	2.4.15.3	M	-	M	-	T
Cell Global ID or Service Area ID	2.4.16	-	-	C	-	T
LSA Identity	2.4.17.1	C	C	C	-	P
LSA Priority	2.4.17.2	C	C	C	-	P
LSA Preferential Access Indicator	2.4.17.2A	C	C	C		P
LSA Active Mode Support Indicator	2.4.17.2B	C	C	C		P
LSA Only Access Indicator	2.4.17.3	C	C	C	-	P
LSA Active Mode Indicator	2.4.17.4	C	C	C	-	P
VPLMN Identifier	2.4.17.5	C	-	-	-	P
Provision of teleservice	2.5.2	C	-	C	-	P
Transfer of SM option	2.5.4	M	-	-	-	P
MNRG	2.7.2	M	-	M	M	T
MM State	2.7.3	-	-	M	-	T
Subscriber Data Confirmed by HLR Indicator	2.7.4.2	-	-	M	-	T
Location Info Confirmed by HLR Indicator	2.7.4.3	-	-	M	-	T
MS purged for GPRS flag	2.7.6	M	-	-	-	T
MNRR	2.7.7	C	-	-	-	T
Subscriber Status	2.8.1	C	-	C	-	P
Barring of outgoing calls	2.8.2.1	C	-		-	P
Barring of roaming	2.8.2.3	C	-	C	-	P
Barring of Packet Oriented Services	2.8.2.8	C	-	C	-	P
ODB PLMN-specific data	2.8.3	C	-	C	-	P
Notification to CSE flag for ODB	2.8.4	C	-	-	-	T
gsmSCF address list for ODB	2.8.5	C	-	-	-	P
Trace Activated in SGSN	2.11.7	C	-	C	-	P
PDP Type	2.13.1	C	-	C	M	P
PDP Address	2.13.2	C	-	C	M	P
NSAPI	2.13.3	-	-	C	C	T
PDP State	2.13.4	-	-	C	-	T
New SGSN Address	2.13.5	-	-	C	-	T
Access Point Name	2.13.6	C	-	C	C	P/T

PARAMETER	Subclause	HLR	VLR	SGSN	GGSN	TYPE
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
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 note2	-	T
Classmark	2.13.20	-	-	M	-	T
TEID	2.13.21	-	-	C	C	T
Radio Priority	2.13.22	-	-	C	-	T
Radio Priority SMS	2.13.23	-	-	C	-	T
PDP Context Identifier	2.13.24	C	-	C	-	T
PDP Context Charging Characteristics	2.13.25	C	-	C	C	P
GPRS CAMEL Subscription Information (GPRS-CSI)	2.14.1.10/2.14.4.4	C	-	C	-	C
MO Short Message Service CAMEL Subscription Information(MO-SMS-CSI)	2.14.1.8/2.14.4.1	C	-	C	-	C
MT Short Message Service CAMEL Subscription Information(MT-SMS-CSI)	2.14.1.9/2.14.4.2.	C	-	C	-	C
MO-SMS-CSI SGSN Negotiated CAMEL Capability Handling	2.14.2.1	C	-	-	-	P
MT-SMS-CSI SGSN Negotiated CAMEL Capability Handling	2.14.2.1	C	-	-	-	P
Mobility Management for GPRS event notification (MG-CSI)	2.14.1.12/2.14.4.4	C	-	C	-	C
MG-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C	-	-	-	P
GPRS-CSI Negotiated CAMEL Capability Handling	2.14.2.1	C	-	-	-	T
SGSN Supported CAMEL Phases	2.14.2.3	C	-	-	-	T
SGSN Offered CAMEL4 CSIs	2.14.2.2A	C	-	-	-	T
GsmSCF address for CSI	2.14.2.4	C	-	-	-	P
Age Indicator	2.16.1	C	-	C	-	T
Subscribed Charging Characteristics	2.19.1	C	-	C	C	P
Privacy Exception List	2.16.1.1	C	-	C	-	P
GMLC Numbers	2.16.1.2	C	-	C	-	P
MO-LR List	2.16.1.3	C	-	C	-	P
Service Types	2.16.1.4	C	-	C	-	P
Access Restriction Data	2.4.x	C	-	C	-	P

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.

NOTE 1: This parameter is relevant in the SGSN only when the Gs interface is installed.

NOTE 2: 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.

For special condition of storage see in clause 2. See clause 4 for explanation of M, C, T and P in table 5.2.

3GPP TSG CN WG4 Meeting #22 **N4-040164**
Atlanta, USA, 12th – 16st February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **23.016** **CR** **035** ⌘**rev** **-** ⌘ Current version: **6.0.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

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

Title:	⌘	Include administrative restriction subscription parameter
Source:	⌘	CN4
Work item code:	⌘	TEI6
Date:	⌘	05/02/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	For combined GERAN/UTRAN networks it is important to achieve a proper load balancing between GERAN and UTRAN respectively. One important way to achieve this would be to make mobile stations camp in idle mode on the RAT in which they most often can get the service they request. To make this happen a new feature has been included for Rel-6 to add administrative restriction of subscribers' access in their subscription information (SP-030774). New subscription parameter Access-Restriction-Data is stored permanently in HLR and is transferred to VLR or SGSN during INSERT-SUBSCRIBER-DATA operation in order to be temporarily stored.
Summary of change:	⌘	Add a new subscription data group and add new Access-Restriction-Data parameter in subscription data.
Consequences if not approved:	⌘	The feature does not work.

Clauses affected:	⌘	2, 3.2, 4.3.1, 4.4, 4.5.4			
		Y	**N**		
Other specs affected:	⌘	**X**		Other core specifications	⌘ 23.012 CR 014, 23.008 CR 129, 29.002 CR 717, 29.010 CR 101
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

First modification

[31] 3GPP TS 23.071: "Location Services (LCS); Functional Description; Stage 2".

[32] 3GPP TS 23.135: "Multicall supplementary service; Stage 2".

[33] 3GPP TS 23.072: "Call Deflection Supplementary Service; Stage 2".

[xx] 3GPP TS 23.012: “Location Management Procedures”.

Next modification

3.2 Definitions

Subscriber data to be stored in the HLR, VLR and SGSN are defined in 3GPP TS 23.008, 3GPP TS 23.271, 3GPP TS 23.135 and in 3GPP TS 23.06x, 3GPP TS 23.08x and 3GPP TS 23.09x-series of technical specifications.

Voice Broadcast Service (VBS), Voice Group Call Service (VGCS) and enhanced Multi Level Precedence and Pre-emption Service (eMLPP) Data related to group call area, cell or dispatcher attributes is only stored in the Group Call Register (GCR) which is linked to each MSC/VLR.

The GCR and its stored data is out of scope of this specification.

Subscriber related VBS, VGCS and eMLPP Data only concerns entitlement data for these-services and is seen as shared non-GPRS subscriber data.

GPRS and non-GPRS subscriber data:

The HLR has to download data to the VLR and to the SGSN. In this specification those data sent to the VLR are called non-GPRS subscriber data and those data sent to the SGSN are called GPRS subscriber data.

Whenever the refining identifier non-GPRS or GPRS is missing a common rule is addressed which hold for both kinds of subscriber data.

Subscriber data specific to non-GPRS shall only be sent from the HLR to the VLR. Subscriber data specific to GPRS shall only be sent from the HLR to the SGSN.

Subscriber data common to both non-GPRS and GPRS (regional subscription information) are downloaded from the HLR to both entities.

Shared non-GPRS subscriber data: Common subset of subscriber data defined to be stored in both the HLR and VLR. Subscriber data only stored in the HLR is not part of shared subscriber data. Shared subscriber data includes:

BS: Bearer Service (see 3GPP TS 22.002);

TS: Teleservice (see 3GPP TS 22.003);

BSG: Basic Service Group (see 3GPP TS 22.001, 3GPP TS 22.004 and 3GPP TS 23.011);

EBSG: Elementary Basic Service Group (see 3GPP TS 23.011);

CBSG: Collective Basic Service Group (see 3GPP TS 23.011);

LSA Information: Localized Service Area Information (see 3GPP TS 23.073);

SC Information: Super-Charger Information (see 3GPP TS 23.116);

IST Information: Immediate Service Termination Information (see 3GPP TS 43.035).

Shared GPRS subscriber data: Common subset of subscriber data defined to be stored in both the HLR and SGSN. Subscriber data only stored in the HLR is not part of shared subscriber data. Shared GPRS subscriber data includes:

TS: Teleservice (see 3GPP TS 22.003);

PDP Context (see 3GPP TS 23.060);

LSA Information: Localized Service Area Information (see 3GPP TS 23.073);

SC Information: Super-Charger Information (see 3GPP TS 23.116);

Charging Information (see 3GPP TS 23.060).

Mandatory data: Data required to form a self-consistent set of subscriber data. The context governs whether a specific parameter is mandatory, e.g. the data set for a specific service may be optional, however if data for this service is present, then parameters within this data set may be mandatory.

Mandatory data is defined by the service description (see e.g. 3GPP TS 23.06x, 3GPP TS 23.08x and 3GPP TS 23.09x-series of technical specifications, 3GPP TS 23.015, 3GPP TS 23.071 and 3GPP TS 23.135) and by PLMN defined requirements.

NOTE: The above definition is seen from a semantic point of view. Semantically, mandatory parameters may be defined as syntactically optional or mandatory by the protocol.

Optional data: Data which is defined as subscriber data, but which is not required to form a self-consistent set of subscriber data; the context governs whether a specific parameter is optional.

Optional data is data which is defined by the service description (see e.g. 3GPP TS 23.06x, 3GPP TS 23.08x and 3GPP TS 23.09x-series of technical specifications, 3GPP TS 23.015, 3GPP TS 23.271 and 3GPP TS 23.135) or by PLMN defined requirements but is not defined as mandatory data.

NOTE: The above definition is seen from a semantic point of view. Semantically optional parameters are always defined as syntactically optional by the protocol.

Missing data: Data which is mandatory in a given context but is not received nor is valid data available locally.

Unexpected data: Data which is received and cannot be further processed. This may be either:

- optional data not required in a given context; or
- optional or mandatory data, required in this context but received with an unexpected value.

Overlapping data: Two different cases of overlapping within subscriber data are possible:

- two or more parameters are to be stored at the same address in the data structure (see subclause 4.4);
- two or more BSGs within a BSG list include or are identical with one and the same EBSG.

The following groups of non-GPRS subscriber information are defined:

- Subscriber information (Group A):
  - International Mobile Subscriber Identity (IMSI);
  - basic Mobile Station International ISDN Number (MSISDN);
  - category;
  - subscriber status;
  - LMU identifier (GSM only).
- Basic service information (Group B):
  - Bearer Service list;
  - Teleservice list.

NOTE: VBS and VGCS entitlement data are subsumed under Teleservices.

- Supplementary Service (SS) information (Group C):
  - forwarding information including deflection information;
  - call barring information;
  - Closed User Group (CUG) information;
  - eMLPP data;
  - MC data;
  - SS Data.
- Operator Determined Barring (ODB) information (Group D):
  - ODB Data for non-GPRS services;
- Roaming restriction information (Group E):
  - roaming restriction due to unsupported feature.
- Regional subscription information (Group F):
  - regional subscription data.
- VBS/VGCS subscription information (Group G):
  - VBS subscription data;
  - VGCS subscription data.
- CAMEL subscription information (Group H):
  - Originating CAMEL Subscription Information (O-CSI);
  - Dialled Service CAMEL Subscription Information (D-CSI);
  - VMSC Terminating CAMEL Subscription Information (VT-CSI);
  - Supplementary Service Invocation Notification CAMEL Subscription Information (SS-CSI);
  - Translation Information Flag CAMEL Subscription Information (TIF-CSI);
  - Mobile Originating Short Message Service CAMEL Subscription Information (MO-SMS-CSI);
  - Mobile Terminating Short Message Service CAMEL Subscription Information (MT-SMS-CSI);
  - Mobility Management Event Notification CAMEL Subscription Information (M-CSI).
- LSA Information (Group I):
  - LSA data.
- Super-Charger (SC) Information (Group K):
  - Age Indicator.
- Location Services (LCS) information (Group X):
  - GMLC List;
  - LCS Privacy Exception List;
  - MO-LR List;
  - LCS Service Types.

- IST Information (Group J):
  - IST data.
- Bearer Service Priority Information (Group L):
  - Bearer Service Priority Data.
- Administrative Restriction Information (Group M):
  - Access Restriction Data.

The following groups of GPRS subscriber information are defined:

- Subscriber information (Group P1):
  - International Mobile Subscriber Identity (IMSI);
  - basic Mobile Station International ISDN Number (MSISDN);
  - subscriber status.
- Basic service information (Group P2):
  - Teleservice list.
- Operator Determined Barring (ODB) information (Group P3):
  - ODB Data for GPRS services.
- Roaming restriction information (Group P4):
  - roaming restriction in SGSN due to unsupported feature.
- Regional subscription information (Group P5):
  - regional subscription data.
- GPRS subscription information (Group P6):
  - GPRS subscription data.
- SGSN CAMEL subscription information (Group P7):
  - GPRS CAMEL subscription information;
  - Mobile Originating Short Message Service CAMEL Subscription Information (MO-SMS-CSI);
  - Mobile Terminating Short Message Service CAMEL Subscription Information (MT-SMS-CSI);
  - Mobility Management Event for GPRS Notification CAMEL Subscription Information (MG-CSI).
- LSA Information (Group P8):
  - LSA data.
- Super-Charger (SC) Information (Group P9):
  - Age Indicator.
- Charging Information (Group P10):

  -Subscribed Charging Characteristics.
- Location Services (LCS) information (Group P11):
  - GMLC List;
  - LCS Privacy Exception List;

- MO-LR Lis;
- LCS Service Types.

- Administrative Restriction Information (Group P12):
  - Access Restriction Data.

Next modification

4.3.1 Order of information sent by the HLR

The order of information is defined by the order in which the transfer syntax is generated by the HLR. This includes a sequence of messages as well as the syntax within a message (first to last message, component, operation, parameter, etc...).

With the above definitions, the following rules shall apply for non-GPRS subscriber data for the order of information within an HLR-VLR dialogue:

- Group A information (subscriber status) shall be sent first;
- Group B information shall be sent after Group A information and before any Group C, E, F, G, H, J, L, M or X information;
- Group D information shall be sent after Group A information and in any order with respect to Group B, C, E, F, G, H, J, K, L, M and X information;
- a specific order of Group C, E, F, G, H, J, K, L, M or X information is not required.

There is no requirement for the sending of subscriber information groups in the same message.

With the above definitions, the following rules shall apply for GPRS subscriber data for the order of information within a dialogue:

- Group P1 information (subscriber status) shall be sent first;
- Group P2 information shall be sent after P1 information and before P4 and P5 information;
- Group P3 information shall be sent after Group P1 information and in any order with respect to Group P2, P4, P5, P6, P7, P8, P11 and P12~~1~~ information;
- a specific order of Group P4, P5, P6, P9, P10, P11 and P12~~1~~ information is not required.

Next modification

4.4 Abstract data structure of shared subscriber data

Figure 1 shows the general organization of the shared non-GPRS subscriber data stored in the HLR and VLR. Figure 2 shows the overall organization of subscriber data stored in HLR and SGSN. The figures 3 to 2~~5~~4 show the organization of the shared subscriber data stored in the HLR and VLR or in the HLR and SGSN. This structure is only valid for data stored in the registers and is not identical with the structure in the protocol, defining how data are transferred.

NOTE: This description is only a model for the logical structure and does not define the specific implementation of the data storage.

With this structure, the following general rules for the handling of subscriber data are defined:

- the root of this data tree is always the IMSI which identifies the subscriber;

- to address a specific parameter within this hierarchical tree, it is necessary to start from the IMSI and to go through the branches until the parameter is reached. The list of parameters met on the way defines the address of the parameter within the data structure;
- to delete or insert a specific parameter, the complete address information is required;
- if a parameter is inserted, all parameters in the address and the parameter itself shall be marked as present. A parameter value is stored irrespective of whether a value was already stored;
- if a parameter is deleted, all parameters connected to it in the sub-branches are also deleted i.e. they are marked as not present;
- if a parameter is overwritten with a new value, parameters connected to it in the sub-branches shall be set according to the rules of the individual service specification.

In addition to the general rules given above, special rules apply to certain specific subscriber data. This is out of scope of this specification (see references in the notes in figures 1 to 254).

Next modification

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.

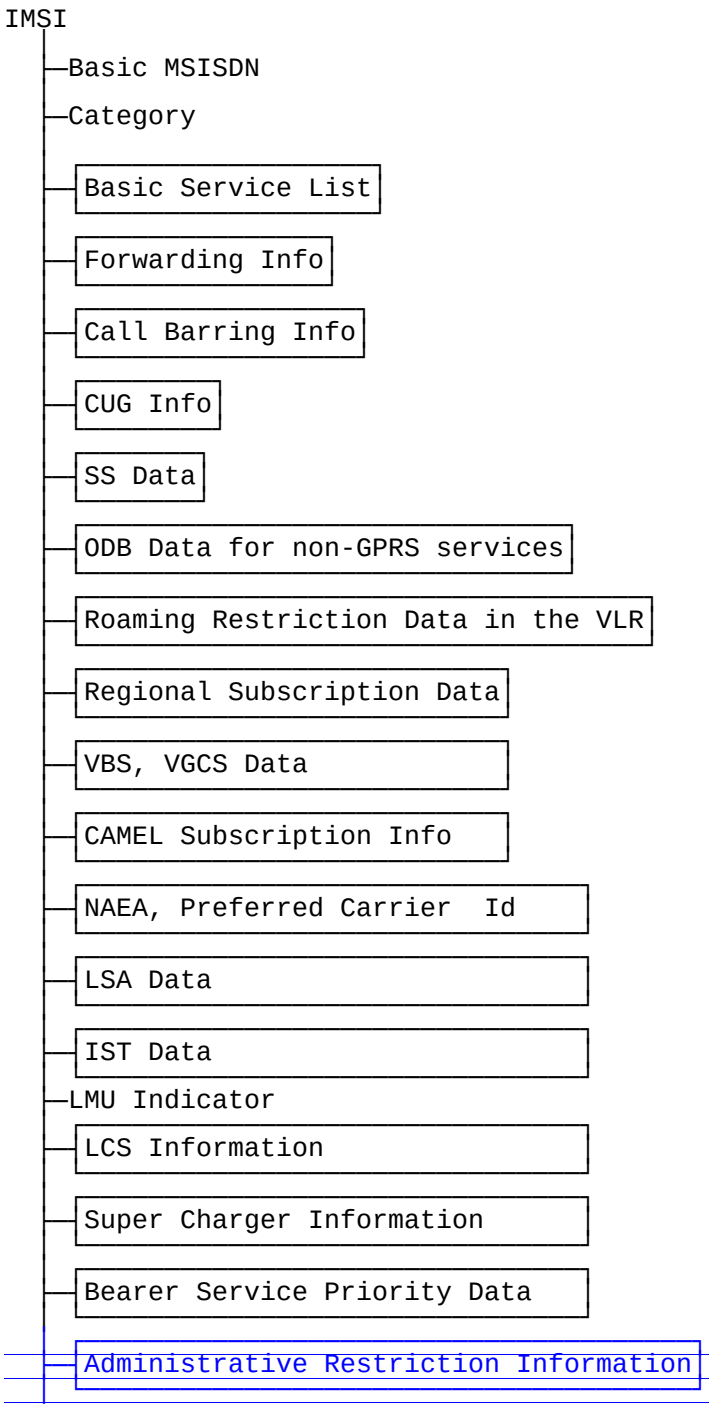


Figure 1: Abstract data structure of non-GPRS Subscriber Data (Data sent to the VLR)

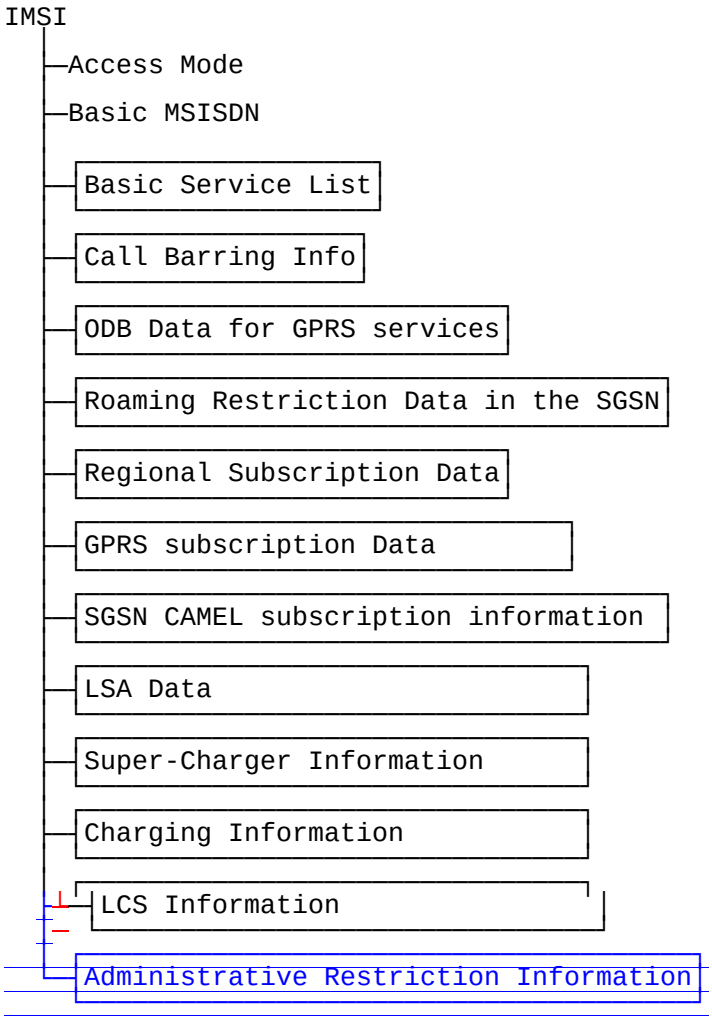
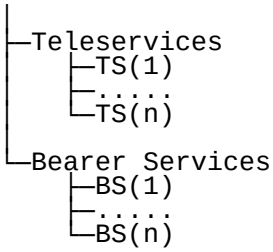


Figure 2: Abstract data structure of GPRS Subscriber Data (Data sent to the SGSN)



NOTE: For detailed information see 3GPP TS 22.001, 3GPP TS 22.002, 3GPP TS 22.003 and 3GPP TS 29.002.

Figure 3: Basic Service List

.....

Omitted text

.....

└CS Allocation/Retention priority

NOTE: For detailed information see 3GPP TS 23.008.

Figure 24: Bearer Service Priority Data in the VLR

└Subscribed Charging Characteristics

NOTE: For detailed information see 3GPP TS 23.060.

Figure 25: Charging Information.

└Access Restriction Data

NOTE: For detailed information see 3GPP TS 23.008.

Figure xx: Administrative Restriction Information in the VLR

Modification end

3GPP TSG CN WG4 Meeting #22 **N4-040283**
Atlanta, USA, 12th – 16st February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **23.012** **CR** **014** ⌘**rev** **1** ⌘ Current version: **5.2.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

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

Title:	⌘	Include administrative restriction subscription parameter
Source:	⌘	CN4
Work item code:	⌘	TEI6
Date:	⌘	18/02/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 (GSM Phase 2)
R96 (Release 1996)
R97 (Release 1997)
R98 (Release 1998)
R99 (Release 1999)
Rel-4 (Release 4)
Rel-5 (Release 5)
Rel-6 (Release 6)

Reason for change:	⌘	For combined GERAN/UTRAN networks it is important to achieve a proper load balancing between GERAN and UTRAN respectively. One important way to achieve this would be to make mobile stations camp in idle mode on the RAT in which they most often can get the service they request. To make this happen a new feature has been included for Rel-6 to add administrative restriction of subscribers' access in their subscription information (SP-030774). During the Update Location procedure, the VLR receives the Access Restriction information. Depending on both its value and the RAT used by the UE, the VLR will accept or reject the Update Location.
Summary of change:	⌘	Add AccessRestrictionData parameter handling during Update Location procedure. Modify the SDL in order to introduce the Administrative Restriction of Subscribers' Access
Consequences if not approved:	⌘	The feature does not work.

Clauses affected:	⌘	1.1, 3.6.1.2, 4.1.2.3,			
		Y	**N**		
Other specs	⌘	**X**		Other core specifications	⌘ 23.008 CR 129, 23.016 CR 035, 29.002 CR 717, 29.010 CR 101
affected:			**X**	Test specifications	
			X	O&M Specifications	
Other comments:	⌘	Source SDL files for procedure Location_Update_Completion_VLR were not available, so this procedure was designed from scratch in SDL. This is the			

	reason why the second sheet is replaced. There are no changes incorporated in the second SDL sheet.

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

First modification

1.1 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TR 21.905: "3G Vocabulary".

[2] 3GPP TS 23.002: "Network architecture".

[3] 3GPP TS 23.003: "Numbering, addressing and identification".

[4] 3GPP TS 23.007: "Restoration procedures".

[5] 3GPP TS 23.008: "Organization of subscriber data".

[5a] 3GPP TS 23.018: "Basic call handling; Technical realization".

[6] 3GPP TS 23.022: "Functions related to Mobile Station (MS) in idle mode".

[7] 3GPP TS 23.116: "Super-Charger Technical Realisation; Stage 2".

[8] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[9] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[10] 3GPP TS 43.020: "Security related network functions".

[11] 3GPP TS 23.078: " Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 4 – stage2 "

[11a] 3GPP TS 23.195: "Provision of UE Specific Behaviour Information to Network Entities".

[12] 3GPP TS 23.236: "Intra Domain Connection of RAN Nodes to Multiple CN Nodes"

[xx] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3".

[xy] 3GPP TS 29.010: "Information element mapping between Mobile Station - Base Station System and BSS - Mobile-services Switching Centre (MS - BSS - MSC) Signalling procedures and the Mobile Application Part (MAP)".

Next modification

3.6.1 Procedures for location management

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

3.6.1.1 Location updating procedure

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

The VLR provides its address to the HLR.

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

3.6.1.2 Downloading of subscriber parameters to the VLR

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

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

If the HPLMN applies the Administrative Restriction of Subscribers' Access feature, the HLR shall convey the subscriber access restriction parameter (AccessRestrictionData) to the VLR. The VLR shall check this subscription parameter against the radio access technology that supports the LA/RA in which the UE is roaming to decide whether the location update should be allowed or rejected.

For further information of the Subscriber access restriction see 3GPP TS 23.008[5].

Next modification

4.1.2.3 Procedure Location_Update_Completion_VLR

Sheet 1: Decision "National Roaming Restrictions Exist?" distinguishes whether or not the subscriber is allowed service in the target LA, based on the current location of the MS and the VLR's knowledge of other networks. The "Yes" branch results in the sending of "Update Location Area Negative Response" toward the MSC (and the MS), with cause "National Roaming Not Allowed." However, subscriber data shall not be deleted from the VLR. This is to avoid unnecessary HLR updating should the subscriber be allowed subsequently to roam in other LAs of the same MSC.

Sheet 1: Decision "Roaming restriction due to Unsupported Feature received in subscriber data?" distinguishes whether or not the subscriber data received from the HLR indicates "roaming restriction due to unsupported feature." The "Yes" branch results in the sending of "Update Location Area Negative Response" toward the MSC (and the MS), with cause "National Roaming Not Allowed." However, subscriber data shall not be deleted from the VLR. This is to avoid unnecessary HLR updating should the subscriber be allowed subsequently to roam in other LAs of the same MSC.

Sheet 1: Decision “Access-Restriction-Data permits current RAT?” performs a check on the subscriber’s AccessRestrictionData information received from the HLR and either allows the operation to continue or rejects the Location Update. The decision is taken according to the following:

-If AccessRestrictionData value includes “GERAN not allowed” and the LA/RA, where the MS accesses the network, is served by GERAN, then the subscriber’s access is not permitted.

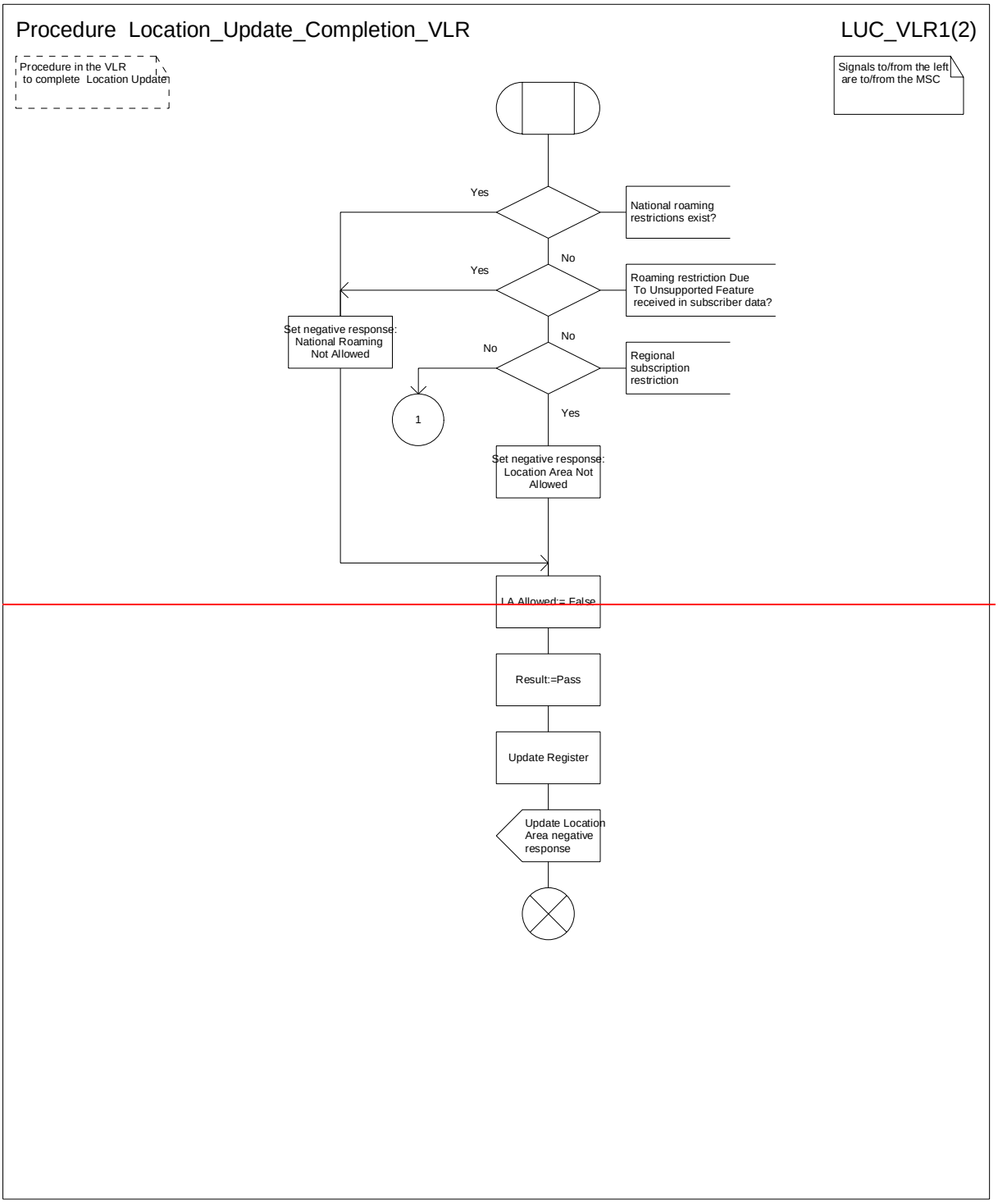
-If AccessRestrictionData value includes “UTRAN not allowed” and the LA/RA, where the MS accesses the network is served by UTRAN, then the subscriber’s access is not permitted.

Sheet 1: When the Location Update is not allowed because the subscriber access is restricted due to Administrative Restriction of Subscribers’ Access feature, the flow results in the sending of “Update Location Area Negative Response” toward the MSC (and the MS). The recommended cause code is “RAT not allowed”, but also cause codes “LA not allowed”, “PLMN not allowed” or “National Roaming Not allowed” may also be used based on operator configuration and the required MS behaviour.

Note: For the mapping of MAP Process cause code values to values on the MM protocol interface see 3GPP TS 29.010 [xy].
For the MS behaviour determined on the received cause code see 3GPP TS 24.008[xx].

Sheet 1: Decision "Regional subscription restriction" distinguishes whether or not the subscriber is allowed service in the target LA, which the VLR deduces based on regional subscription information received from the HLR. The "Yes" branch results in the sending of "Update Location Area Negative Response" toward the MSC (and the MS), with cause "location area not allowed." However, subscriber data shall not be deleted from the VLR. This is to avoid unnecessary HLR updating should the subscriber be allowed subsequently to roam in other LAs of the same MSC.

Sheet 2: The procedure Check_IMEI_VLR is specified in 3GPP TS 23.018 [5a].


Procedure Location_Update_Completion_VLR
LUC_VLR1(2)
Procedure in the VLR to complete Location Update
Signals to/from the left are to/from the MSC
Yes
National roaming restrictions exist?
No
Yes
Roaming restriction Due To Unsupported Feature received in subscriber data?
Set negative response: National Roaming Not Allowed
No
No
Regional subscription restriction
1
Yes
Set negative response: Location Area Not Allowed
LA Allowed:= False
Result:=Pass
Update Register
Update Location Area negative response

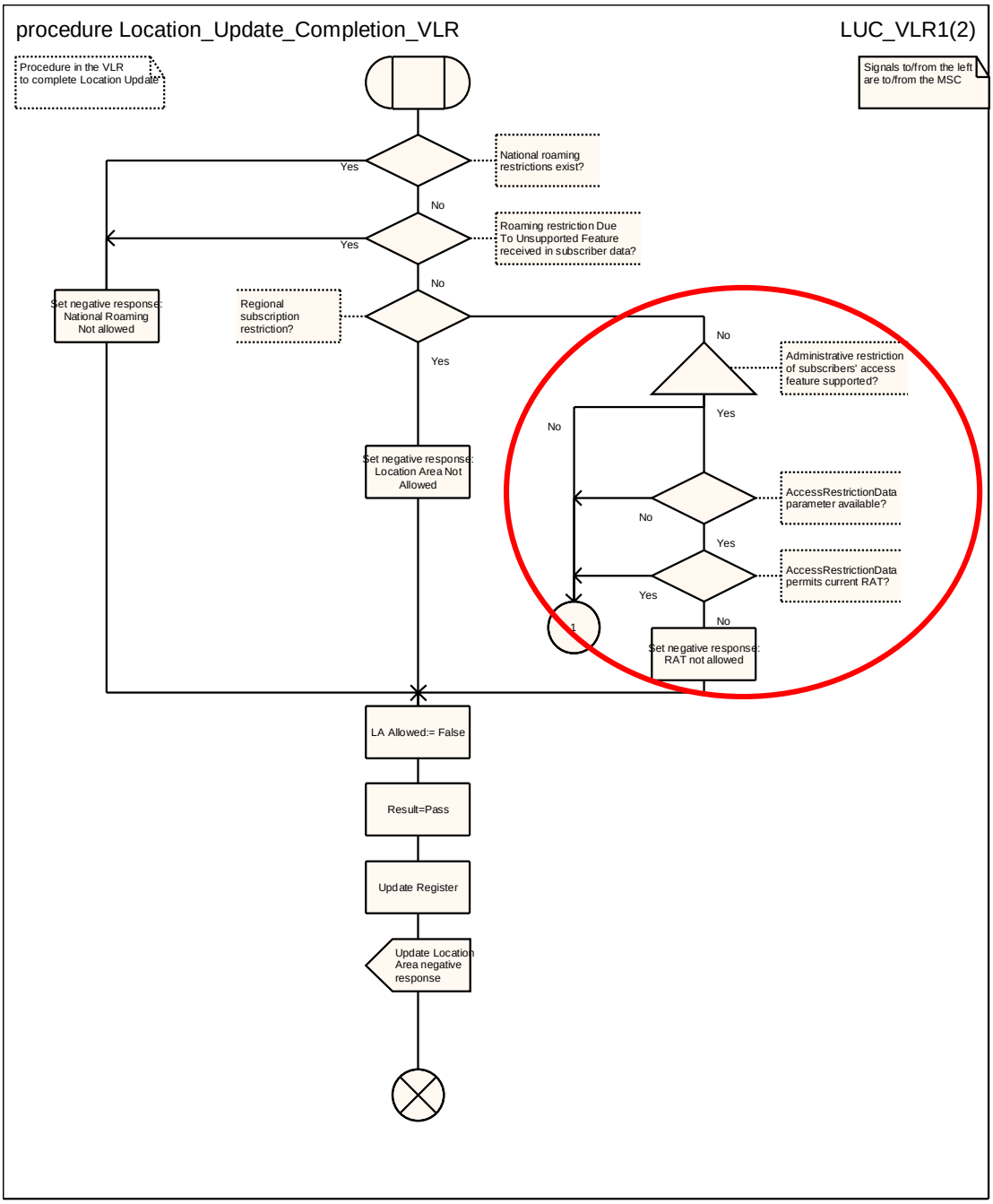
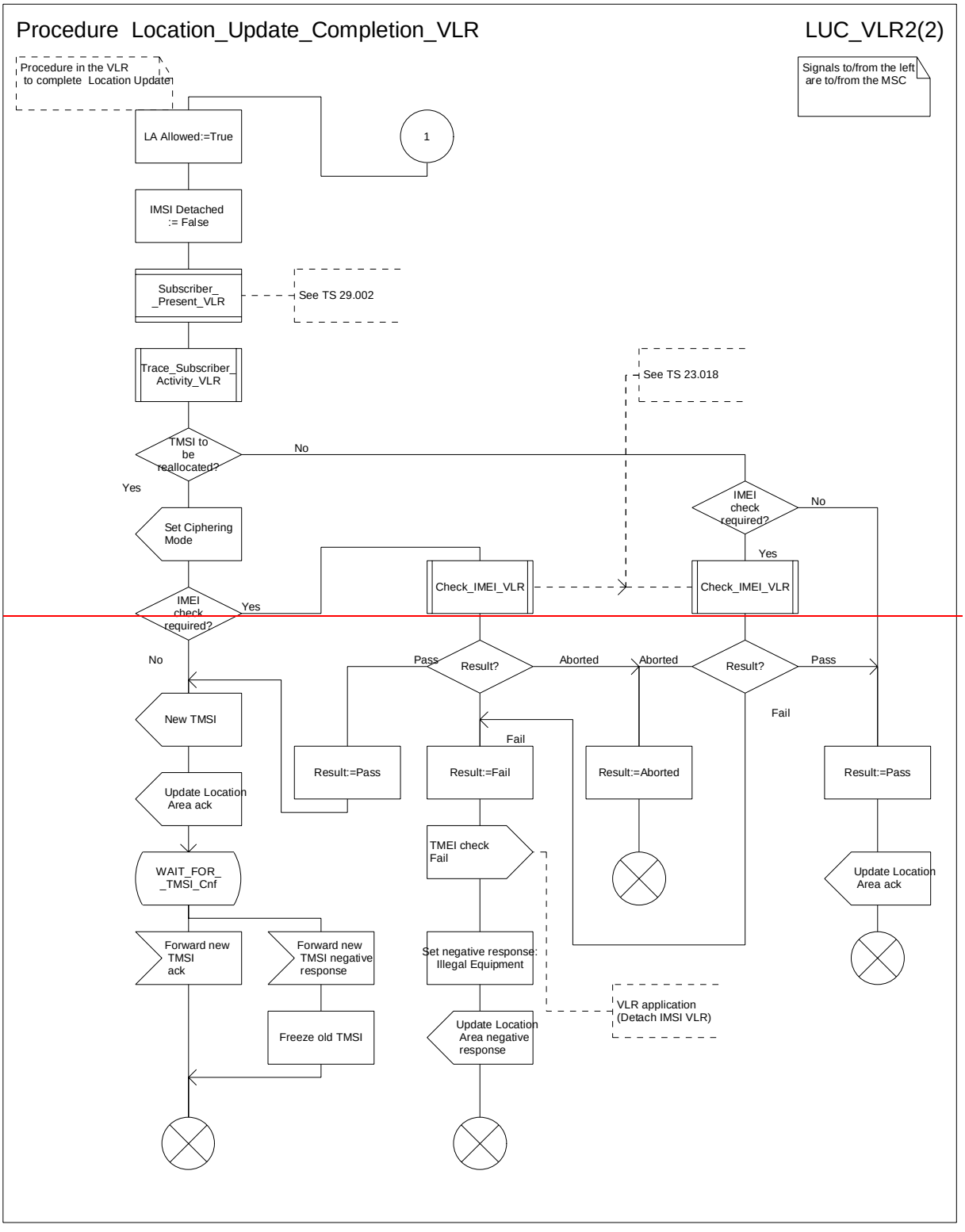


Figure 4.1.2.3 (sheet 1 of 2): Procedure Location_Update_Completion_VLR


Procedure Location_Update_Completion_VLR
LUC_VLR2(2)
Procedure in the VLR to complete Location Update
Signals to/from the left are to/from the MSC
LA Allowed:=True
1
IMSI Detached := False
Subscriber_ _Present_VLR
See TS 29.002
Trace_Subscriber_ Activity_VLR
See TS 23.018
TMSI to be reallocated?
No
Yes
IMEI check required?
No
Set Ciphering Mode
Yes
Check_IMEI_VLR
Check_IMEI_VLR
IMEI check required?
Yes
No
Pass
Result?
Aborted
Aborted
Result?
Pass
Fail
New TMSI
Fail
Result:=Pass
Result:=Fail
Result:=Aborted
Result:=Pass
Update Location Area ack
TMEI check Fail
WAIT_FOR_ _TMSI_Cnf
Update Location Area ack
Forward new TMSI ack
Forward new TMSI negative response
Set negative response: Illegal Equipment
VLR application (Detach IMSI VLR)
Freeze old TMSI
Update Location Area negative response

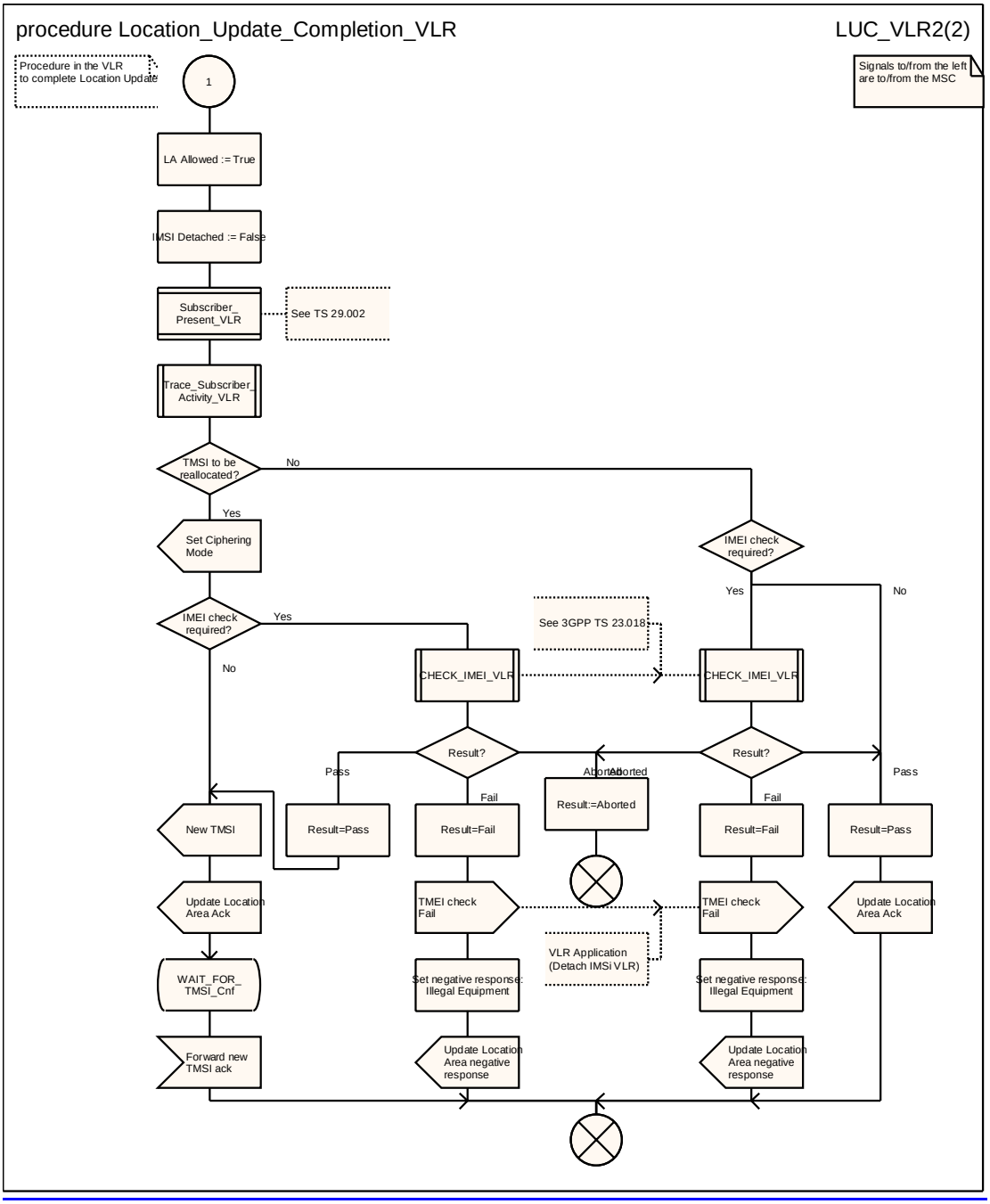


Figure 4.1.2.3 (sheet 2 of 2): Procedure Location_Update_Completion_VLR

Modification end

3GPP TSG CN WG4 Meeting #22 **N4-040284**
Atlanta, USA, 12th – 16st February 2004

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **717** ⌘**rev** **1** ⌘ Current version: **6.4.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

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

Title:	⌘	Include administrative restriction subscription parameter
Source:	⌘	CN4
Work item code:	⌘	TEI6
Date:	⌘	18/02/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	For combined GERAN/UTRAN networks it is important to achieve a proper load balancing between GERAN and UTRAN respectively. One important way to achieve this would be to make mobile stations camp in idle mode on the RAT in which they most often can get the service they request. To make this happen a new feature has been included for Rel-6 to add administrative restriction of subscribers' access in their subscription information (SP-030774). New subscription parameter Access-Restriction-Data is stored permanently in HLR and needs to be transferred to VLR and/or SGSN during INSERT-SUBSCRIBER-DATA operation in order to be temporarily stored.
Summary of change:	⌘	Add new Access-Restriction-Data parameter in INSERT-SUBSCRIBER-DATA message.
Consequences if not approved:	⌘	The feature does not work.

Clauses affected:	⌘	2, 7.6.3.xx (new clause), 8.8.1.2, 8.8.1.3, 17.7.1			
		Y	**N**		
Other specs affected:	⌘	**X**		Other core specifications	⌘ 23.012 CR 014, 23.016 CR 035, 23.008 CR 129, 29.010 CR 101
			X	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

How to create CRs using this form:

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

First modification

[22] 3GPP TS 23.011: "Technical realization of Supplementary Services - General Aspects".

[23] 3GPP TS 23.012: "Location ~~registration~~ management procedures".

[24] 3GPP TS 43.020: "Security related network functions".

Next modification

7.6.3.95 Unavailability Cause

This parameter is used to indicate the reason for the unavailability of one of the services as indicated by the Allowed Services IE (see 7.6.3.94) when two services have been requested, for the SCUDIF feature described in 3GPP TS 23.172 [126].

7.6.3.96 MNP Requested Info

This parameter indicates by its presence that Mobile Number Portability (MNP) information is requested for the subscriber, as defined in 3GPP TS 23.078 [98].

7.6.3.xx Access Restriction Data

This parameter refers to the radio access technologies that are possibly restricted to a subscriber via subscription data. For the use of the parameter, see 3GPP TS 23.012[23] for CS domain and 3GPP TS 23.060[104] for PS domain.

7.6.4 Supplementary services parameters

Next modification

8.8 Subscriber management services

8.8.1 MAP-INSERT-SUBSCRIBER-DATA service

8.8.1.1 Definition

This service is used by an HLR to update a VLR with certain subscriber data in the following occasions:

- the operator has changed the subscription of one or more supplementary services, basic services or data of a subscriber. Note that in case of withdrawal of a Basic or Supplementary service this primitive shall not be used;

- the operator has applied, changed or removed Operator Determined Barring;

- the subscriber has changed data concerning one or more supplementary services by using a subscriber procedure;

- the HLR provides the VLR with subscriber parameters at location updating of a subscriber or at restoration. In this case, this service is used to indicate explicitly that a supplementary service is not provisioned, if the supplementary service specification requires it. The only supplementary services which have this requirement are the CLIR and COLR services. Network access mode is provided only in restoration. If the Super-Charger functionality is supported the HLR may not need to provide the VLR with subscriber parameters at location updating of a subscriber. See TS 23.116.

Also this service is used by an HLR to update an SGSN with certain subscriber data in the following occasions:

- if the GPRS subscription has changed;

- if the network access mode is changed;

- the operator has applied, changed or removed Operator Determined Barring;

- the subscriber has changed data concerning one or more supplementary services by using a subscriber procedure;

- the HLR provides the SGSN with subscriber parameters at GPRS location updating of a subscriber. If the Super-Charger functionality is supported the HLR may not need to provide the SGSN with subscriber parameters. See 3GPP TS 23.116.

It is a confirmed service and consists of the primitives shown in table 8.8/1.

8.8.1.2 Service primitives

Table 8.8/1: MAP-INSERT-SUBSCRIBER-DATA

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
IMSI	C	C(=)		
MSISDN	C	C(=)		
Category	C	C(=)		
Subscriber Status	C	C(=)		
Bearer service List	C	C(=)	C	C(=)
Teleservice List	C	C(=)	C	C(=)
Forwarding information List	C	C(=)		
Call barring information List	C	C(=)		
CUG information List	C	C(=)		
SS-Data List	C	C(=)		
eMLPP Subscription Data	C	C(=)		
MC-Subscription Data	C	C(=)		
Operator Determined Barring General data	C	C(=)	C	C(=)
Operator Determined Barring HPLMN data	C	C(=)		
Roaming Restriction Due To Unsupported Feature	C	C(=)		
Regional Subscription Data	C	C(=)		
VLR CAMEL Subscription Info	C	C(=)		
Voice Broadcast Data	C	C(=)		
Voice Group Call Data	C	C(=)		
Network access mode	C	C(=)		
GPRS Subscription Data	C	C(=)		
Roaming Restricted In SGSN Due To Unsupported Feature	C	C(=)		
North American Equal Access preferred Carrier Id List	U	C(=)		
SGSN CAMEL Subscription Info	C	C(=)		
LSA Information	C	C(=)		
IST Alert Timer	C	C(=)		

Parameter name	Request	Indication	Response	Confirm
SS-Code List			C	C(=)
LMU Identifier	C	C(=)		
LCS Information	C	C(=)		
CS Allocation/Retention priority	C	C(=)		
Super-Charger Supported In HLR	C	C(=)		
Access Restriction Data	C	C(=)		
Regional Subscription Response			C	C(=)
Supported CAMEL Phases			C	C (=)
Offered CAMEL 4 CSIs			C	C (=)
User error			U	C(=)
Provider error				O

8.8.1.3 Parameter use

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

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. This parameter shall always be sent to the SGSN as part of the GPRS subscriber data at GPRS location updating. It shall be sent to the SGSN if it is changed as a result of administrative action.

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.

……..

Omitted text

……..

CS Allocation/Retention priority

The CS Allocation/Retention priority is used only for Circuit Switched (CS). This parameter specifies relative importance to compare with other bearers about allocation and retention of bearer. This parameter is used only by the VLR and if the SGSN receives this parameter it shall ignore it.

Offered CAMEL 4 CSIs

This parameter indicates the CAMEL phase 4 CSIs offered in the VMSC/VLR or SGSN (see clause 7.6.3.36D).

Access Restriction Data

This parameter indicates the allowed RAT according to subscription data. (see clause 7.6.3.96)

If the VLR/SGSN supports the Access Restriction feature but does not receive the Access Restriction Data parameter from the HLR, the VLR/SGSN shall assume that the subscriber's profile does not have any restrictions enabled.

For a detailed description of the use of the parameter, see 3GPP TS 23.012[23] for CS domain and 3GPP TS 23.060[104] for PS domain.

User error

Only one of the following values is applicable:

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

Next modification

17.7 MAP constants and data types

17.7.1 Mobile Service data types

```
MAP-MS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-MS-DataTypes (11) version9 (9)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS

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

   -- gprs location registration types
   GSN-Address,

   -- handover types
   ForwardAccessSignalling-Arg,
   PrepareHO-Arg,
   PrepareHO-Res,
   PrepareSubsequentHO-Arg,
   PrepareSubsequentHO-Res,
   ProcessAccessSignalling-Arg,
   SendEndSignal-Arg,
   SendEndSignal-Res,

   -- authentication management types
   SendAuthenticationInfoArg,
   SendAuthenticationInfoRes,
   AuthenticationFailureReportArg,
   AuthenticationFailureReportRes,

   -- security management types
   Kc,

   -- equipment management types
   CheckIMEI-Arg,
   CheckIMEI-Res,

   -- subscriber management types
   InsertSubscriberDataArg,
   InsertSubscriberDataRes,
   LSAIdentity,
   DeleteSubscriberDataArg,
   DeleteSubscriberDataRes,
   Ext-QoS-Subscribed,
   Ext2-QoS-Subscribed,
   SubscriberData,
   ODB-Data,
   SubscriberStatus,
   ZoneCodeList,
   maxNumOfZoneCodes,
   O-CSI,
   D-CSI,
   O-BcsmCamelTDPCriteriaList,
   T-BCSM-CAMEL-TDP-CriteriaList,
   SS-CSI,
   ServiceKey,
   DefaultCallHandling,
   CamelCapabilityHandling,
   BasicServiceCriteria,
   SupportedCamelPhases,
   OfferedCamel4CSIs,
   OfferedCamel4Functionalities,
```

```
   maxNumOfCamelTDPData,
   CUG-Index,
   CUG-Info,
   CUG-Interlock,
   InterCUG-Restrictions,
   IntraCUG-Options,
   NotificationToMSUser,
   QoS-Subscribed,
   IST-AlertTimerValue,
   T-CSI,
   T-BcsmTriggerDetectionPoint,
   APN,

   -- fault recovery types
   ResetArg,
   RestoreDataArg,
   RestoreDataRes,

-- provide subscriber info types
   GeographicalInformation,
   MS-Classmark2,
   GPRSMSClass,

   -- subscriber information enquiry types
   ProvideSubscriberInfoArg,
   ProvideSubscriberInfoRes,
   SubscriberInfo,
   LocationInformation,
   LocationInformationGPRS,
   RAIdentity,
   SubscriberState,
   GPRSChargingID,
   MNPInfoRes,
   RouteingNumber,

   -- any time information enquiry types
   AnyTimeInterrogationArg,
   AnyTimeInterrogationRes,

   -- any time information handling types
   AnyTimeSubscriptionInterrogationArg,
   AnyTimeSubscriptionInterrogationRes,
   AnyTimeModificationArg,
   AnyTimeModificationRes,

   -- subscriber data modification notification types
   NoteSubscriberDataModifiedArg,
   NoteSubscriberDataModifiedRes,

   -- gprs location information retrieval types
   SendRoutingInfoForGprsArg,
   SendRoutingInfoForGprsRes,

   -- failure reporting types
   FailureReportArg,
   FailureReportRes,

   -- gprs notification types
   NoteMsPresentForGprsArg,
   NoteMsPresentForGprsRes,

   -- Mobility Management types
   NoteMM-EventArg,
   NoteMM-EventRes,
   NumberPortabilityStatus

;

IMPORTS
   maxNumOfSS,
   SS-SubscriptionOption,
   SS-List,
   SS-ForBS-Code,
   Password
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SS-DataTypes (14) version9 (9)}

   SS-Code
```

```
FROM MAP-SS-Code {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SS-Code (15) version9 (9)}

   Ext-BearerServiceCode
FROM MAP-BS-Code {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-BS-Code (20) version9 (9)}

   Ext-TeleserviceCode
FROM MAP-TS-Code {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-TS-Code (19) version9 (9)}

   AddressString,
   ISDN-AddressString,
   ISDN-SubaddressString,
   FTN-AddressString,
   AccessNetworkSignalInfo,
   IMSI,
   IMEI,
   TMSI,
   HLR-List,
   LMSI,
   Identity,
   GlobalCellId,
   CellGlobalIdOrServiceAreaIdOrLAI,
   Ext-BasicServiceCode,
   NAEA-PreferredCI,
   EMLPP-Info,
   MC-SS-Info,
   SubscriberIdentity,
   AgeOfLocationInformation,
   LCSClientExternalID,
   LCSClientInternalID,
   Ext-SS-Status,
   LCSServiceTypeID,
   ASCI-CallReference,
   TBCD-STRING
FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version9 (9)}

   ExtensionContainer
FROM MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version9 (9)}

   AbsentSubscriberDiagnosticSM
FROM MAP-ER-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ER-DataTypes (17) version9 (9)}

;

.....
```

Omitted text

```
.....

-- 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,
    superChargerSupportedInHLR          [27] AgeIndicator                   OPTIONAL,
    mc-SS-Info                          [28] MC-SS-Info                     OPTIONAL,
    cs-AllocationRetentionPriority      [29] CS-AllocationRetentionPriority   OPTIONAL,
    sgsn-CAMEL-SubscriptionInfo         [17] SGSN-CAMEL-SubscriptionInfo    OPTIONAL,
    chargingCharacteristics             [18] ChargingCharacteristics        OPTIONAL,
    accessRestrictionData               [xx] AccessRestrictionData          OPTIONAL
}
    -- If the Network Access Mode parameter is sent, it shall be present only in
    -- the first sequence if segmentation is used
```

```
AccessRestrictionData ::= BIT STRING {
    UTRANnotallowed (0),
    GERANnotallowed (1) } (SIZE (2..8))
    -- exception handling:
    -- bits 2 to 7 shall be ignored if received and not understood
```

```
CS-AllocationRetentionPriority ::= OCTET STRING (SIZE (1))
    -- This data type encodes each priority level defined in TS 23.107 as the binary value
    -- of the priority level.
```

Modification end

3GPP TSG CN WG4 Meeting #22
Atlanta, USA, 12th – 16st February 2004

N4-040285

CR-Form-v7

CHANGE REQUEST

⌘ **29.010** **CR** **101** ⌘**rev** **1** ⌘ Current version: **6.1.0** ⌘

*For **HELP** on using this form, see bottom of this page or look at the pop-up text over the ⌘ symbols.*

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

Title:	⌘	Include administrative restriction subscription parameter
Source:	⌘	CN4
Work item code:	⌘	TEI6
Date:	⌘	05/02/2004
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
B *(addition of feature),*
C *(functional modification of feature)*
D *(editorial modification)*
Detailed explanations of the above categories can be found in 3GPP TR 21.900.

Use one of the following releases:
2 *(GSM Phase 2)*
R96 *(Release 1996)*
R97 *(Release 1997)*
R98 *(Release 1998)*
R99 *(Release 1999)*
Rel-4 *(Release 4)*
Rel-5 *(Release 5)*
Rel-6 *(Release 6)*

Reason for change:	⌘	For combined GERAN/UTRAN networks it is important to achieve a proper load balancing between GERAN and UTRAN respectively. One important way to achieve this would be to make mobile stations camp in idle mode on the RAT in which they most often can get the service they request. To make this happen a new feature has been included for Rel-6 to add administrative restriction of subscribers' access in their subscription information (SP-030774). New MAP error cause need to be introduced to identify this administrative restriction.
Summary of change:	⌘	Add new "RAT not allowed" error cause in Routeing area updating and in Location update. Furthermore, other error causes were missing in the "roaming not allowed" cause for Location area mapping table. They have been added.
Consequences if not approved:	⌘	The feature does not work.

Clauses affected:	⌘	3.2 and 3.8			
		Y	**N**		
Other specs	⌘	**X**		Other core specifications	⌘ 23.012 CR 014, 23.016 CR 035, 29.002 CR 717, 23.008 CR 129
affected:			**X**	Test specifications	
			X	O&M Specifications	
Other comments:	⌘				

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1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

First modification

3.2 Routeing area updating

	24.008	29.002	Notes
Forward message	GMM (ROUTEING AREA UPDATE REQUEST)	MAP_UPDATE_GPRS_LOCATION request	
	MS classmark 1	-	
	MS classmark 4	-	
	GPRS Ciphering key seq number	-	
	Mobile station identity	IMSI	
	Old routeing area identification	-	
Positive results	GMM (ROUTEING AREA UPDATE ACCEPT)	MAP_UPDATE_GPRS_LOCATION response	
	Routeing area identification	-	
	Mobile station identity	-	1
	C Mobile station	-	2
	C Reject: IMSI unknown in HLR	-	3
	C Reject: MSC temporarily not reacheable	-	4
Negative results	GMM (ROUTEING AREA UPDATE REJECT)	MAP_UPDATE_GPRS_LOCATION response	
	Network failure	-	5
	GPRS services not allowed in this PLMN	Unknown HLR	
	GPRS services not allowed	Unknown subscriber (no GPRS subscription)	6
	GPRS services and non GPRS services not allowed	Unknown subscriber (IMSI unknown)	7
	C GPRS services not allowed	Unknown subscriber (no GPRS subscription)	8
	C GPRS services and non-GPRS services not allowed	Unknown subscriber (IMSI unknown)	9
	MS identity cannot be derived by the network	-	10
	GPRS services not allowed in this PLMN	Roaming not allowed: PLMN not allowed	
	LA not allowed	-	
	Roaming not allowed in this LA	-	
	No Suitable cells in location area	-	11
	GPRS services not allowed in this PLMN	Operator determined barring	
	Illegal MS	-	
	Illegal ME	-	
	Network failure	System Failure	
	Network failure	Unexpected data value	
	Network failure	MAP_U/P_ABORT	
	Network failure	MAP_NOTICE	
	Network failure	MAP_CLOSE	

NOTE 1: The mobile station identity is inserted by the SGSN if the SGSN wants to deallocate or re-allocate a P-TMSI. If the SGSN wants to deallocate the P-TMSI it shall include the IMSI. If the SGSN wants to re-allocate the P-TMSI it shall include the new P-TMSI. If a P-TMSI is included, the MS shall respond with a ROUTEING AREA UPDATE COMPLETE message.

NOTE 2: The mobile station identity is inserted by the SGSN if it is received in a BSSAP+ LOCATION UPDATE ACCEPT message from the VLR. If a TMSI is included, the MS shall respond with a ROUTEING AREA UPDATE COMPLETE message. Only used in the Combined Routeing and Location Area procedure.

NOTE 3: This reject cause is inserted on the positive response by the SGSN if the SGSN receives a BSSAP+ LOCATION UPDATE REJECT message from the VLR indicating in the reject cause IMSI unknown in HLR. Only used in the Combined Routeing and Location Area procedure.

NOTE 4: This reject cause is inserted on the positive response by the SGSN if the SGSN does not receive any response from the VLR to a previous BSSAP+ LOCATION UPDATE REQUEST message. Only used in the Combined Routeing and Location Area procedure.

NOTE 5: The Unknown RA error is only generated as a result of incorrect information being inserted by the BSS.

NOTE 6: The HLR shall send Unknown subscriber with diagnostic value No GPRS subscription if the HLR indicates that there is an error in the type of subscription (i.e. SGSN requests service for a non-GPRS only subscriber). The HLR may also send this error in the MAP SEND AUTHENTICATION INFO RESPONSE message.

NOTE 7: The HLR shall send Unknown subscriber with diagnostic value IMSI unknown if the HLR indicates that the IMSI provided by the SGSN is unknown.

NOTE 8: The HLR shall send Unknown subscriber with diagnostic value No GPRS subscription if the HLR indicates that there is an error in the type of subscription (i.e. SGSN requests service for a non-GPRS only subscriber). Used in the Combined Routeing and Location Area procedure. The HLR may also send this error in the MAP SEND AUTHENTICATION INFO RESPONSE message.

NOTE 9: This reject cause is inserted if the SGSN receives a MAP GPRS UPDATE LOCATION negative response message indicating IMSI unknown. Used in the Combined Routeing and Location Area procedure.

NOTE 10: This reject cause is inserted if the SGSN does not receive any response from the old SGSN to a previous SGSN CONTEXT REQUEST message.

NOTE 11 The 'No Suitable cells in location area' error is generated when the MS has access to only part of the PLMN e.g. due to Administrative Restriction of Subscribers' Access, but where there may also be suitable location areas available. The MS retries on another location area. The recommended cause due to Administrative Restriction of Subscriber's Access is "No Suitable Cells in Location Area", but also cause "LA not allowed", or "Roaming Not Allowed in this LA" may also be used, based on operator configuration.

Next modification

3.8 Location update

	24.008	29.002	Notes
Forward message	MM (LOCATION UPDATING REQUEST)	MAP_UPDATE_LOCATION_ request	
	Location area id	-	
	Mobile identity	IMSI	
	Mobile station classmark 1	-	
	Mobile station classmark 2	-	
	Ciphering key seq number	-	
	Location update type	-	
Positive results	MM (LOCATION UPDATING ACCEPT)	MAP_UPDATE_LOCATION response	
	Location area identity	-	
	Mobile identity	-	
	Follow on proceed	-	
Negative results	MM (LOCATION UPDATING REJECT)	MAP_UPDATE_LOCATION response	
	IMSI unknown in HLR	Unknown subscriber	1
	PLMN not allowed	Roaming not allowed: PLMN not allowed	
	LA not allowed	LA not allowed	2
	Roaming not allowed in this LA	National Roaming not allowed	2
	No Suitable cells in location area	RAT not allowed	2
	PLMN not allowed	Operator determined barring	
	Illegal MS	-	
	Illegal ME	-	
	Network failure	System Failure	
	Network failure	Unexpected data value	
	Network failure	MAP_U/P_ABORT	
	Network failure	MAP_NOTICE	
	Network failure	MAP_CLOSE	

NOTE 1 The HLR shall also send this error if there is an error in the type of subscription (i.e. VLR requests service for a GPRS only subscriber).

NOTE 2 This code is inserted by the VLR depending on subscription information received from the HLR.

Modification end