

3GPP TSG CN Plenary Meeting #24
2nd – 4th June 2004 Seoul, KOREA.

NP-040227

Source: TSG CN WG4
Title: Technical Enhancements and Improvements on Automatic Device Detection
Agenda item: 9.21
Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level N4-040	Phase	Subject	Cat	Ver_C
23.008	130	4	580	Rel-6	Add IMEISV to 'data stored in the HLR' due to ADD function	B	6.1.0
29.060	488	2	582	Rel-6	Automatic Device Detection (ADD) support in Inter-SGSN Routing Area Update procedures	B	6.4.0
23.012	015	6	735	Rel-6	Addition of ADD feature	B	6.0.0
29.002	718	6	736	Rel-6	Addition of IMEISV to Update Location Procedure for ADD function	B	6.5.0

CHANGE REQUEST

⌘ **23.008 CR 130** ⌘ rev **4** ⌘ 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:	⌘ Add IMEISV to 'data stored in the HLR' due to ADD function		
Source:	⌘ CN		
Work item code:	⌘ TEI6	Date:	⌘ 29/04/2004
Category:	⌘ B	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ ADD function is introduced into SA requirement specification 22.101 v6.6.0. The solution requires that the HLR be updated with the IMEISV at Location Update/IMSI Attach procedure for the first time in the MSC/VLR or SGSN and if the subscriber later changes Ue. The IMEISV should be added to 'data stored in the HLR' to reflect this behaviour.		
Summary of change:	⌘ IMEISV added to 'data stored in the HLR'.		
Consequences if not approved:	⌘ Confusion to the implementors concerning the handling of IMEISV information in HLR when the ADD function is supported. Misaligned description between TSs.		

Clauses affected:	⌘ 2.2.3, 5.1, 5.2										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ 29.002 CR 718, 23.012 CR 015, 23.060 CR 488, 29.060 CR 488, 29.018 CR 041
Y	N										
X											
	X										
	X										
		Test specifications									
		O&M Specifications									
Other comments:	⌘										

How to create CRs using this form:

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

- 1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be

downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

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

First modification

2.2.3 International Mobile Equipment Identity and Software Version (IMEISV)

International Mobile Equipment Identity and Software Version (IMEISV) is defined in 3GPP TS 23.003 [5]. The IMEISV is temporary subscriber data and is stored in the VLR, ~~and~~ SGSN [and conditionally in HLR](#).

Next 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-	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
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

PARAMETER	SUBCLAUSE	HLR	VLR	TYPE
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
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

PARAMETER	SUBCLAUSE	HLR	VLR	TYPE
Provision of teleservice	2.5.2	M	M	P
BC allocation	2.5.3	C	C	P
IMSI detached flag	2.7.1	-	C	T
Confirmed by Radio Contact indicator	2.7.4.1	-	M	T
Subscriber Data Confirmed by HLR indicator	2.7.4.2	-	M	T
Location Information Confirmed in HLR indicator	2.7.4.3	-	M	T
Check SS indicator	2.7.4.4	M	-	T
MS purged for non-GPRS flag	2.7.5	M	-	T
MNRR	2.7.7	C	-	T
Subscriber status	2.8.1	C	C	P
Barring of outgoing calls	2.8.2.1	C	C	P
Barring of incoming calls	2.8.2.2	C	-	P
Barring of roaming	2.8.2.3	C	-	P
Barring of premium rate calls	2.8.2.4	C	C	P
Barring of supplementary service management	2.8.2.5	C	C	P
Barring of registration of call forwarding	2.8.2.6	C	-	P
Barring of invocation of call transfer	2.8.2.7	C	C	P
Operator determined barring PLMN-specific data	2.8.3	C	C	P
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

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
multinumbeing 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	-	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
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

PARAMETER	Subclause	HLR	VLR	SGSN	GGSN	TYPE
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

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.

Modification end

CR-Form-v7	CHANGE REQUEST
⌘ 23.012 CR 015 ⌘ rev 6 ⌘ 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:	⌘ Addition of ADD feature		
Source:	⌘ CN4		
Work item code:	⌘ TEI6	Date:	⌘ 13/05/2004
Category:	⌘ B	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ Location Management procedures need to be defined for the ADD feature, which is in SA requirement specification 22.101 v6.6.0, including updating of the HLR with the Subscriber's IMEISV if it changes.
Summary of change:	⌘ Procedures defined for VLR to check if subscriber's IMEISV has changed during location update/IMSI attach and if so send the IMEISV in an Update Location message to the HLR
Consequences if not approved:	⌘ ADD feature not complete

Clauses affected:	⌘ 1.2, 4.1.2.1, 4.1.2.1a, 4.1.3.1										
Other specs affected:	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"></td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications	Y	N	X			X		X	⌘	29.002 CR 718, 23.008 CR 130, 23.060 CR 488, 29.060 CR 488, 29.018 CR 041
Y	N										
X											
	X										
	X										
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

1.2 Abbreviations

Abbreviations are listed in 3GPP TR 21.905 [1].

In addition, for the purposes of the present document, the following abbreviations apply:

<u>ADD</u>	<u>Automatic Device Detection</u>
PUESBINE	Provision of User Equipment Specific Behaviour Information to Network Entities
UESBI-Iu	User Equipment Specific Behaviour Information over the Iu interface

Next modification

4.1.2 Detailed procedure in the VLR

4.1.2.1 Process Update_Location_Area_VLR

General comment: at any stage in the location updating process the MSC may receive an indication from the BSS that the MM transaction has been released. The MSC then sends an Abort signal to the VLR. Upon receipt of this message, the VLR shall follow one of two possible courses of action.

The two possible courses of action and the conditions determining which course shall be taken are as follows:

1. If a successfully authenticated radio connection is already established before the Abort message is received, the VLR shall ignore the message.
2. If a successfully authenticated radio connection has not been established before the Abort message is received, the VLR shall abort the Update Location Area process and return to the idle state.

Sheet 1: the location area updating process will be activated by receiving an Update Location Area indication from the MSC. If there are parameter errors in the indication, the process is terminated with the appropriate error sent in the Update Location Area response to the MSC. Else, the behaviour will depend on the subscriber identity received, either an IMSI or a TMSI.

~~Sheet 1: the handling starting with the procedure call "Retrieve_IMEISV_If_required" and finishing with the output signal "Send_UESBI-Iu to Access Network" is specific to PUESBINE. If the VLR does not support PUESBINE, processing continues with the test "Identity used?".~~

The ADD function is an optional feature that allows the HLR to be updated with the current User Equipment (IMEISV) and thus enables the network to configure the subscriber's equipment based on a predefined profile. The mechanism for the IMEISV retrieval by device management system (either from HLR or VLR) is outside the scope of this specification.

Sheet 2: at the decision "HLR updating required?" the "True" branch shall be taken if and only if one or more of the following conditions is true:

- (1) Location Info Confirmed in HLR is false.
- (2) Data Confirmed by HLR is false.

Sheet 2: : The execution of the test "HLR supports ADD?" and the action "set: skip subscriber data update" is optional and depends on the presence of the relevant indication from the HLR that ADD function is supported. If no indication is received, both are bypassed in which case processing continues at connector 4.

Sheet 3: the procedure Obtain_IMSI_VLR is specified in 3GPP TS 23.018 [5a].

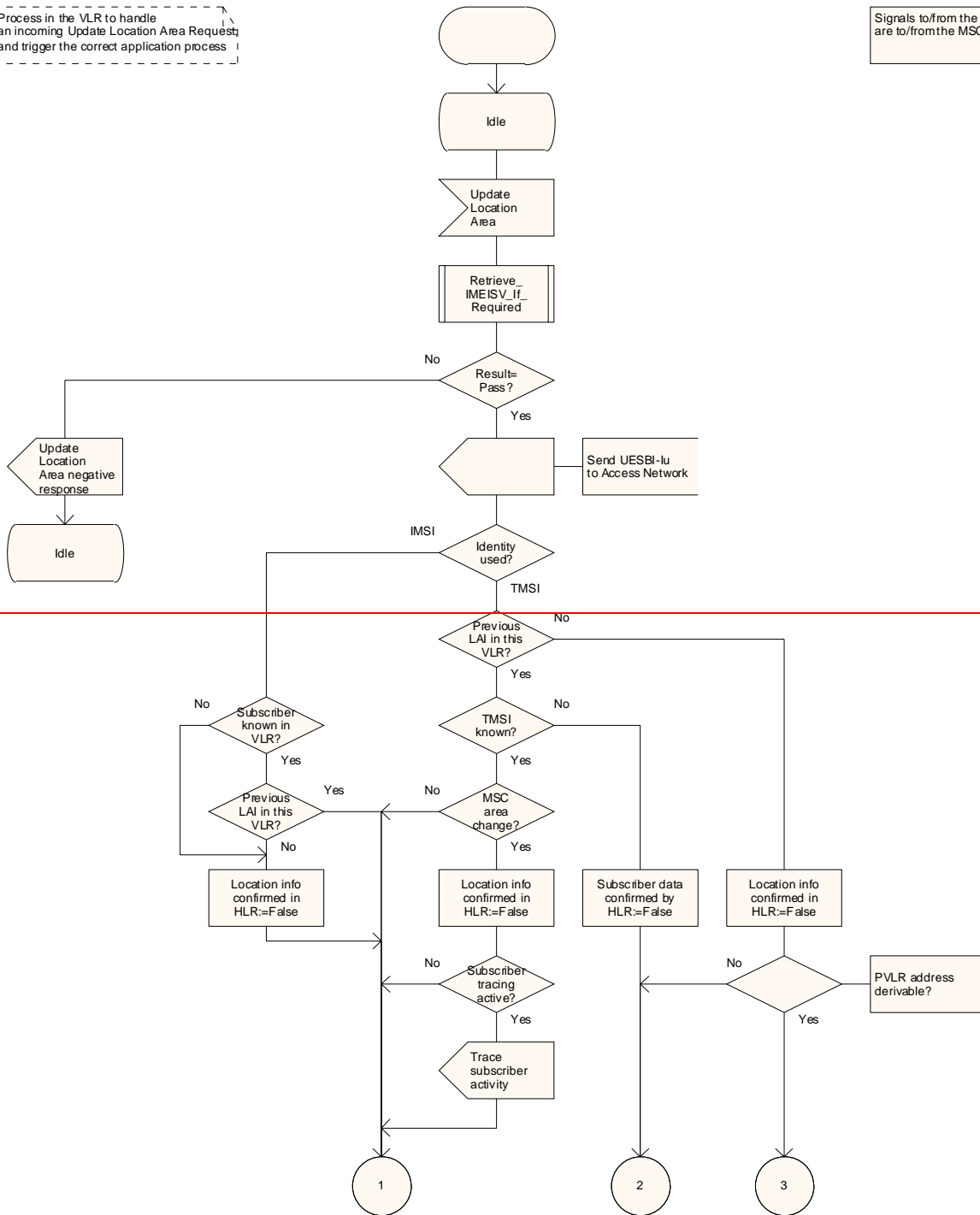
The type of Location Update is retrieved in 3G TS 23.078 procedure 'Set_Notification_Type' and is returned into the 'Notify' variable; this information is necessary for the CAMEL Mobility Management event notification procedure 3G TS 23.078 'Notify_gsmSCF'.

process Update_Location_Area_VLR

ULA_VLR1(3)

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

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



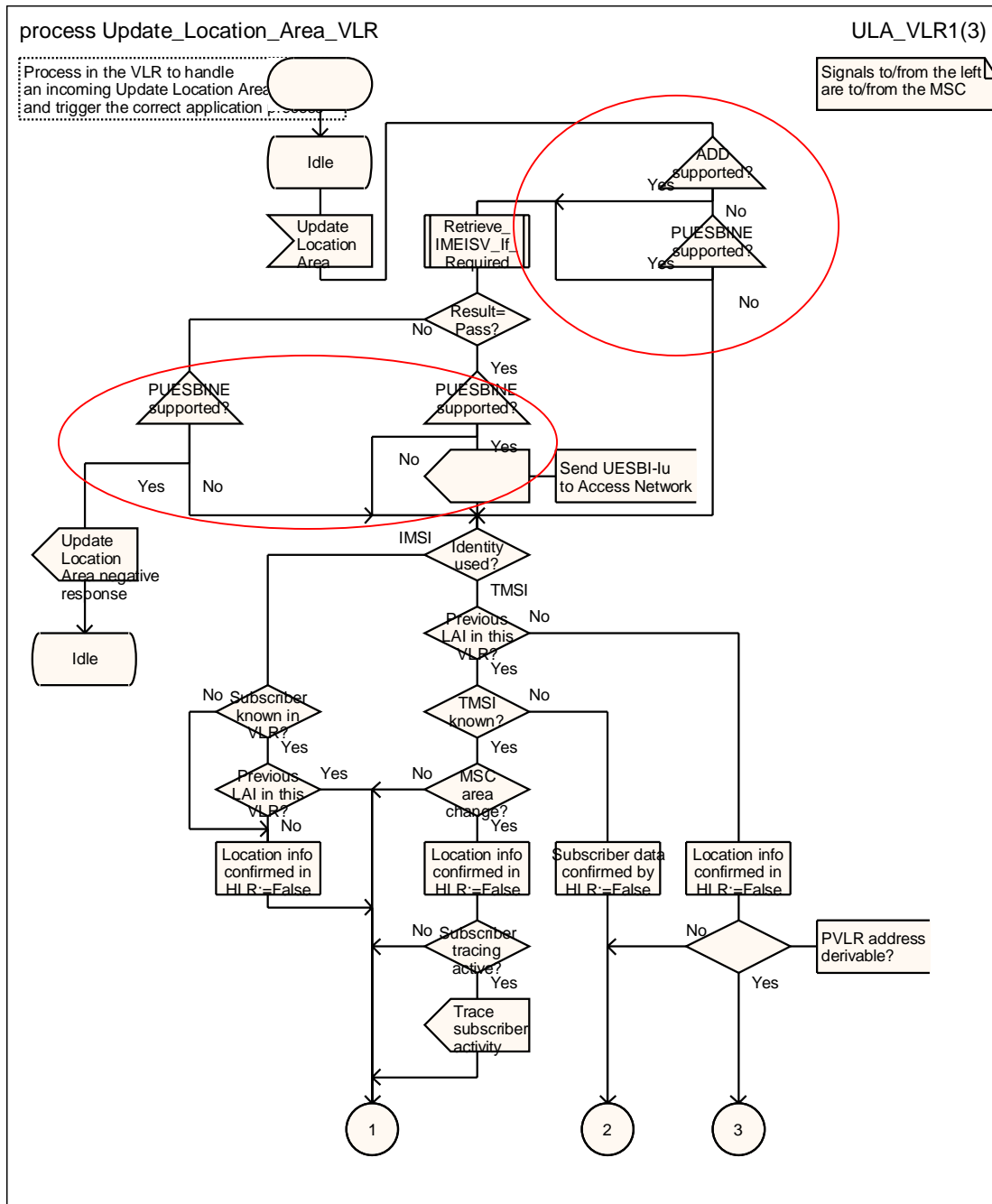


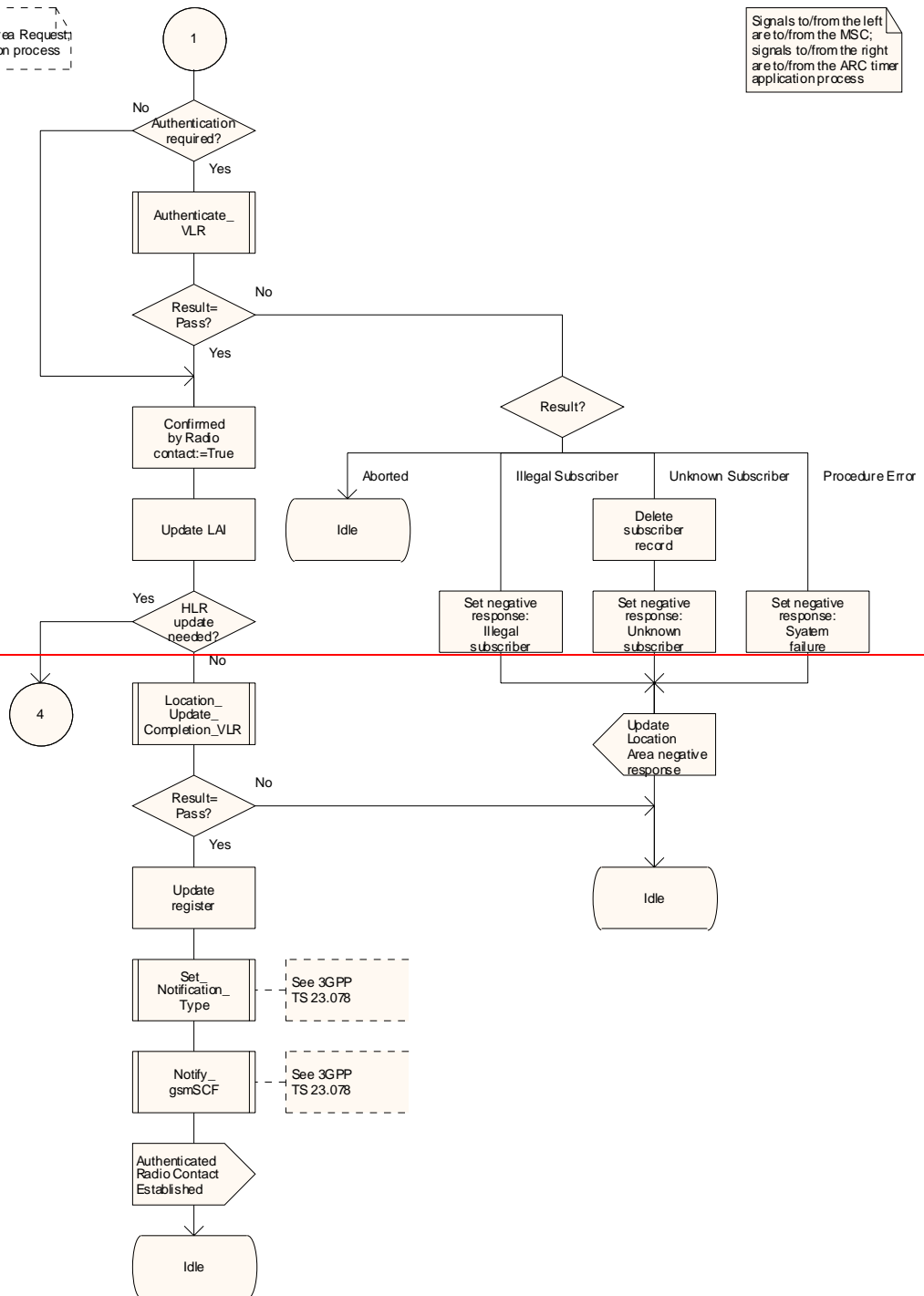
Figure 4.1.2.1 (sheet 1 of 3): Process Update_Location_Area_VLR

process Update_Location_Area_VLR

ULA_VLR2(3)

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

Signals to/from the left are to/from the MSC; signals to/from the right are to/from the ARC timer application process



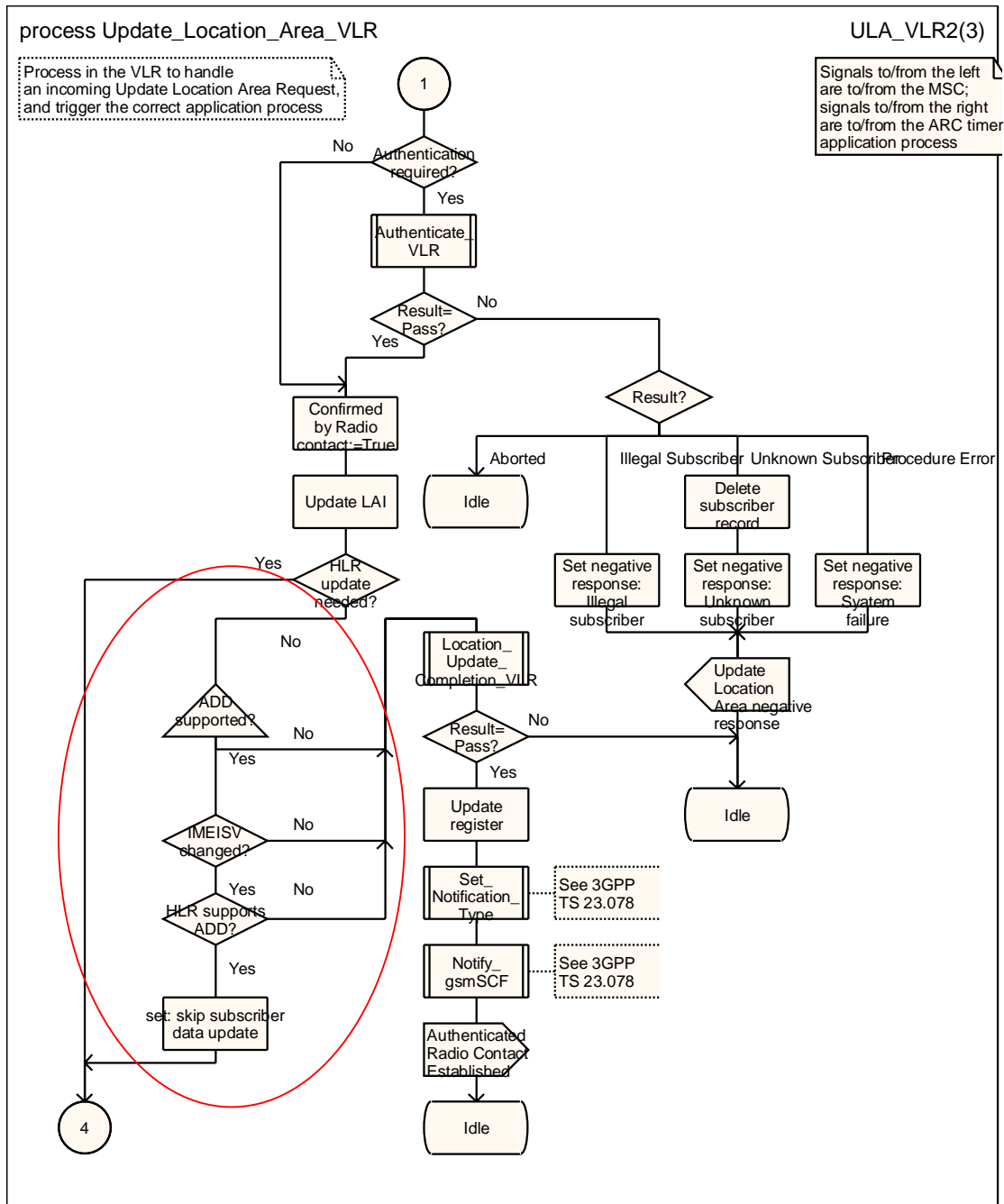


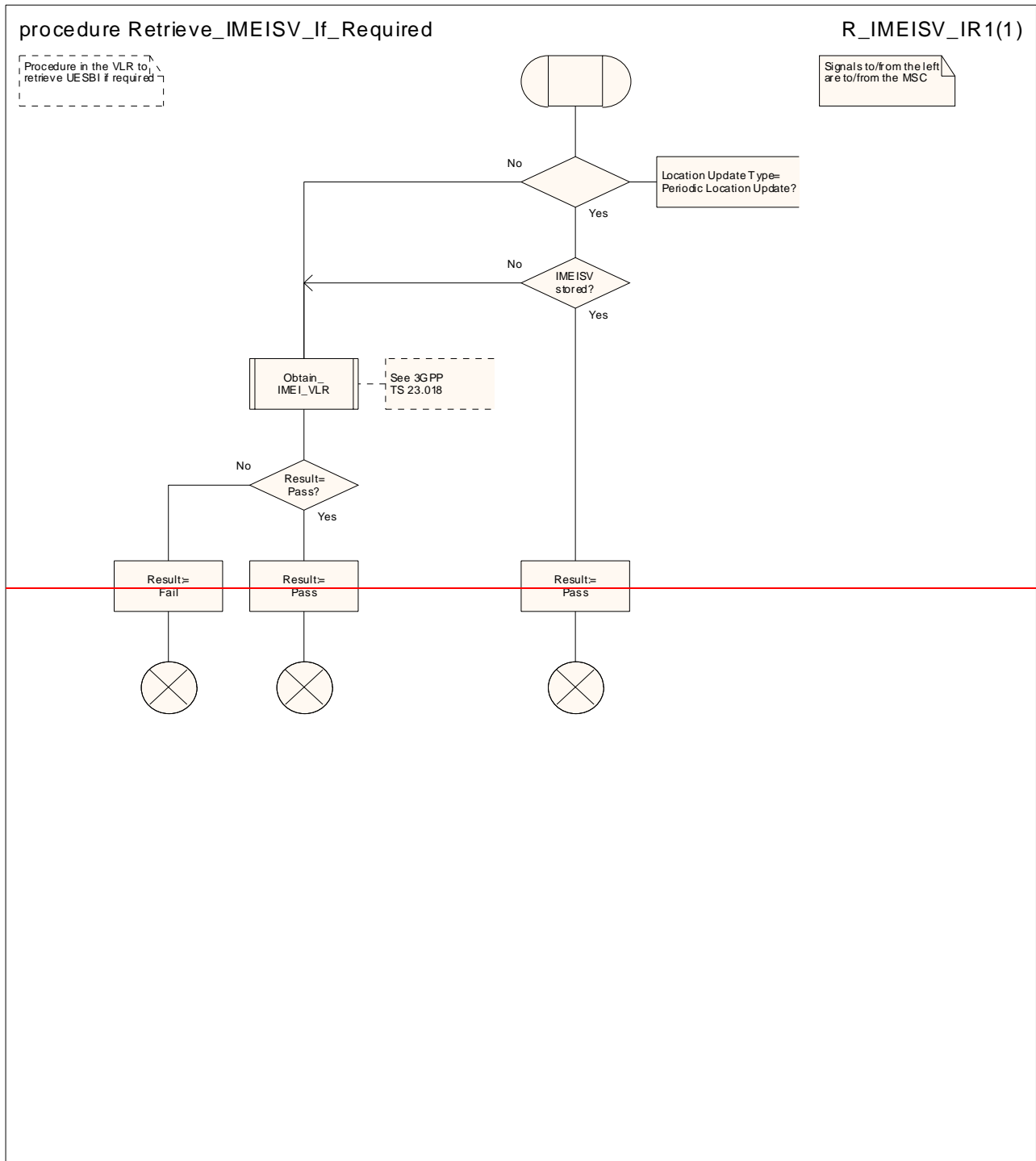
Figure 4.1.2.1 (sheet 2 of 3): Process Update_Location_Area_VLR

Next modification

4.1.2.1a Procedure Retrieve_IMEISV_If_Required

The procedure Obtain_IMEI_VLR is specified in 3GPP TS 23.018 [5a].

The decision box "received IMEISV = stored IMEISV" takes the "No" exit if no IMEISV is stored.



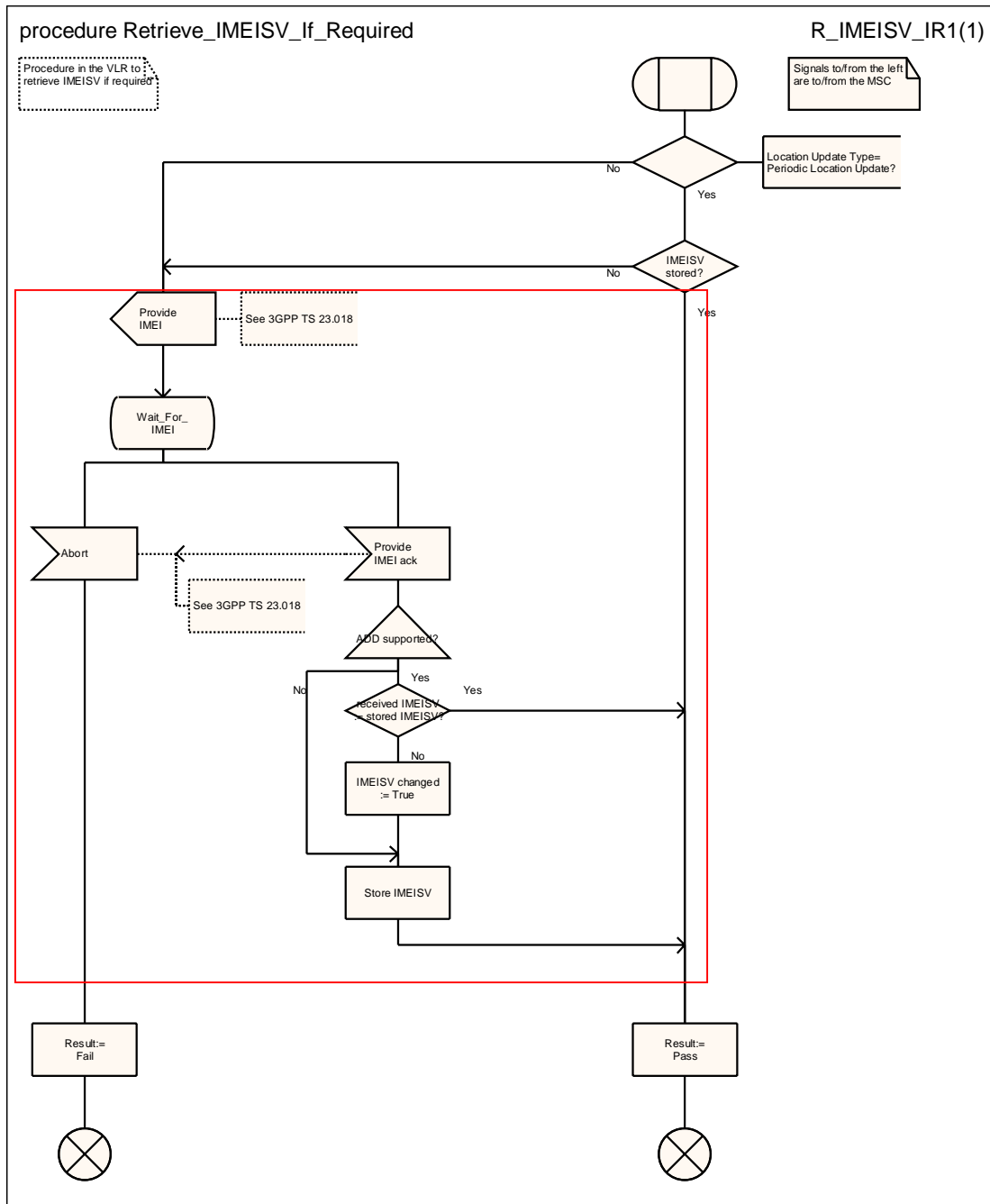


Figure 4.1.2.1A: Procedure Retrieve_IMEISV_If_Required

Next modification

4.1.3 Detailed procedure in the HLR

4.1.3.1 Process Update_Location_HLR

Sheet 1: The procedure Check_Parameters is specified in 3GPP TS 23.018 [5a].

Sheet 1: The procedure Super_Charged_Cancel_Location_HLR is specific to Super-Charger; it is specified in TS 23.116 [7]. If the previous VLR and the originating HLR support the Super-Charger functionality, processing continues from the "Yes" exit of the test "Result=Pass?".

Sheet 2: The procedure Super_Charged_Location_Updating_HLR is specific to Super-Charger; it is specified in TS 23.116 [7]. If subscription data needs to be sent to the VLR, processing continues from the "No" exit of the test "Result=Pass?".

Sheet 2: The execution of the test "skip subscriber data update?" is optional and depends on the presence of the relevant indication from the VLR. If no indication is received, then the result of the test is "No".

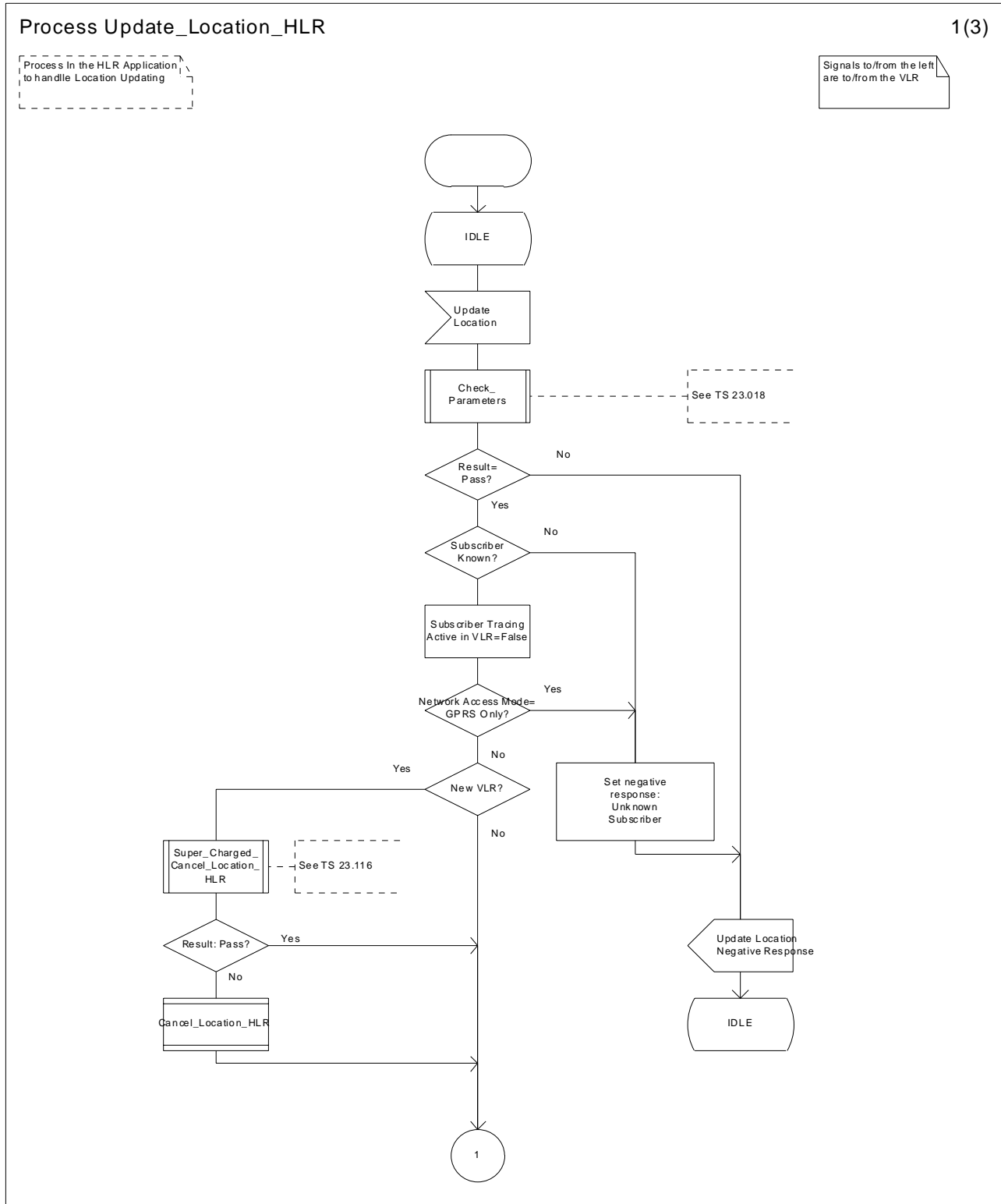


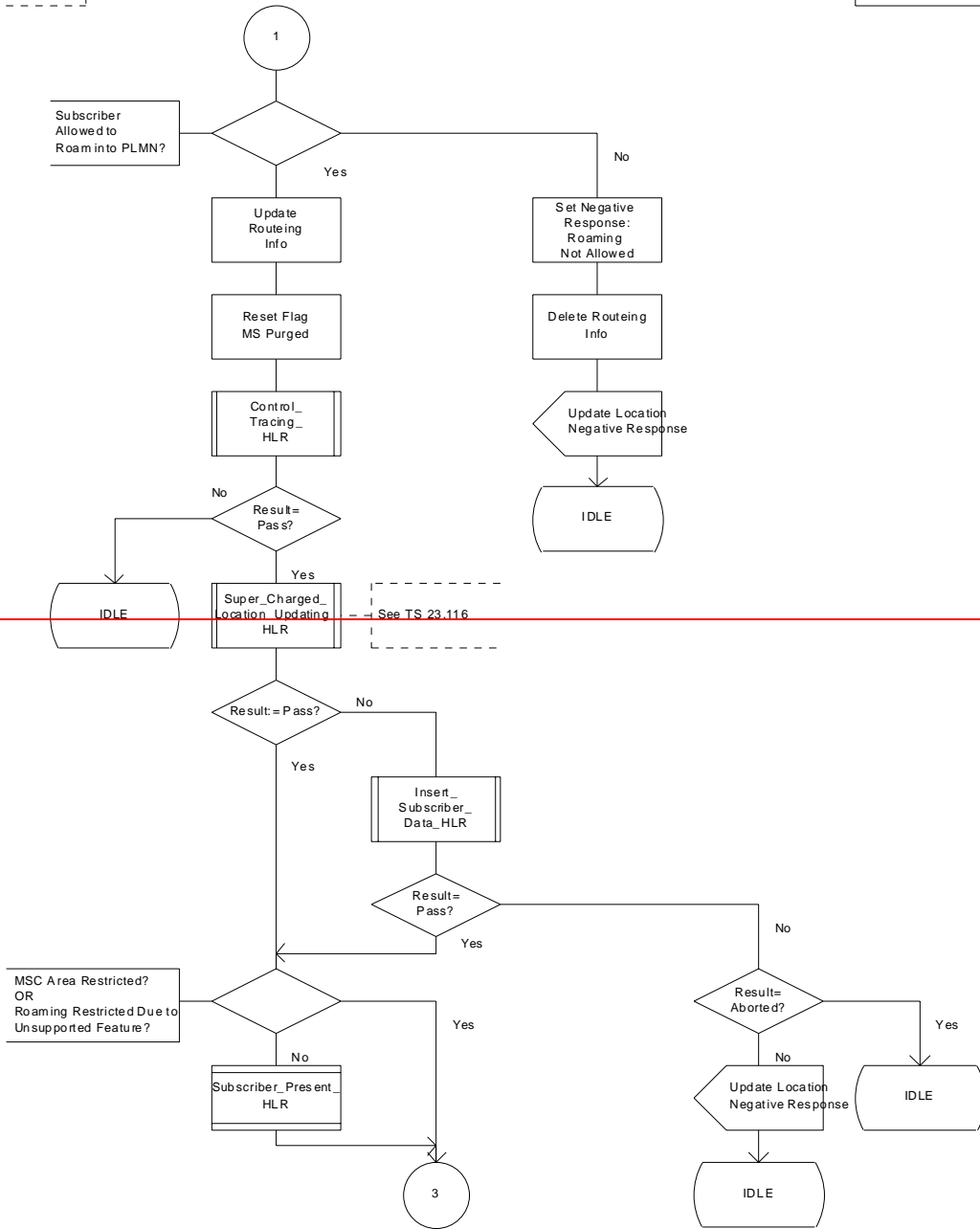
Figure 4.1.3.1 (sheet 1 of 3): Process Update_Location_HLR

Process Update_Location_HLR

2(3)

Process In the HLR Application to handle Location Updating

Signals to/from the left are to/from the VLR



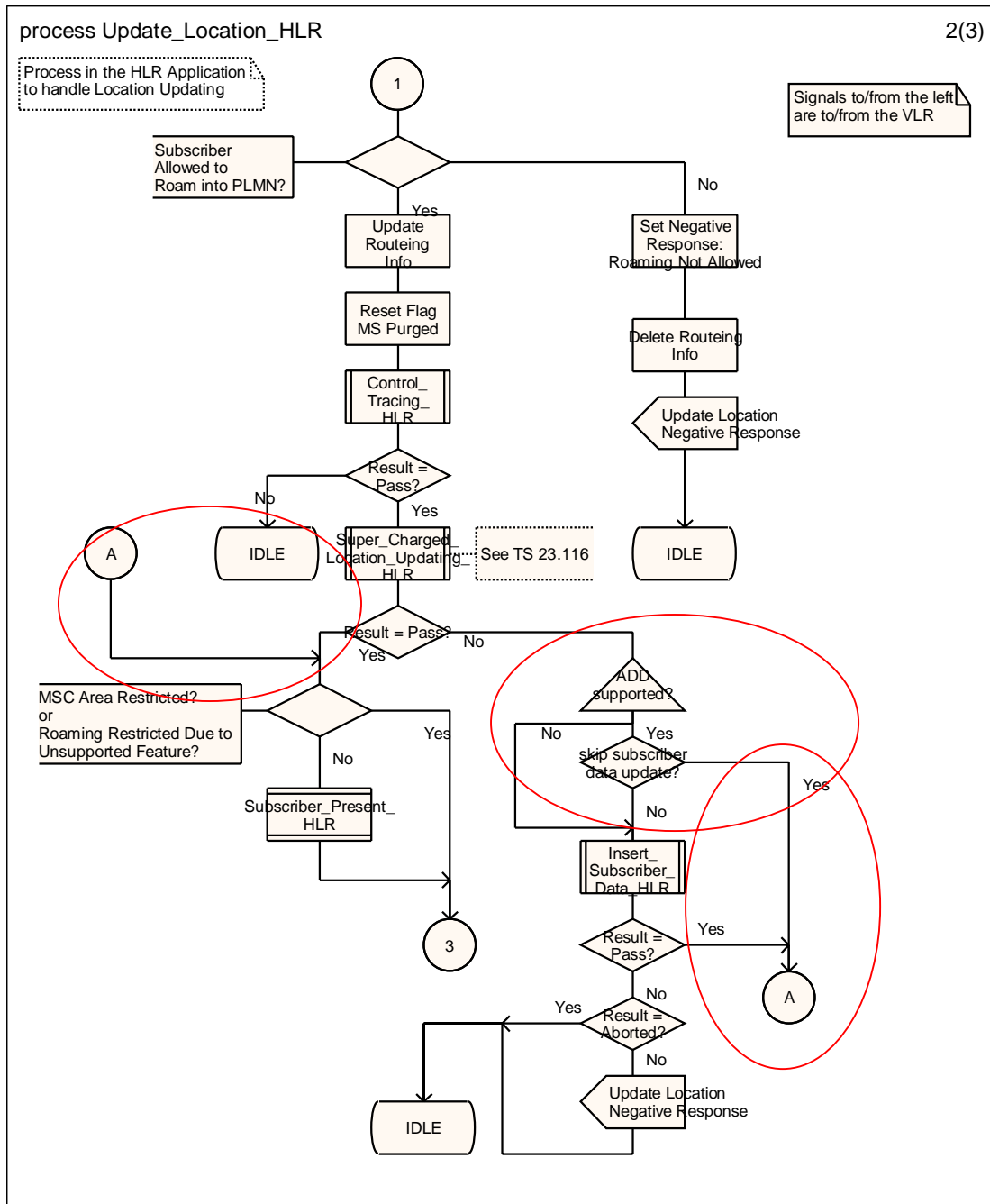


Figure 4.1.3.1 (sheet 2 of 3): Process Update_Location_HLR

Modification end

CHANGE REQUEST

⌘ **29.060 CR 488** ⌘ rev **2** ⌘ 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:	⌘ Automatic Device Detection (ADD) support in Inter-SGSN Routing Area Update procedures		
Source:	⌘ CN4		
Work item code:	⌘ TEI6	Date:	⌘ 26/04/2004
Category:	⌘ B	Release:	⌘ Rel-6
	<i>Use <u>one</u> of the following categories:</i> 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 .		<i>Use <u>one</u> of the following releases:</i> 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:	⌘ The Automatic Device Detection (ADD) function is introduced into SA requirement specification 22.101 v5.9.0 by SP-030700. Regarding 'Inter-SGSN Routeing Area Update procedure it is proposed that the IMEISV shall be transferred from the old SGSN to the new SGSN at inter-SGSN Routeing Area Update in the SGSN Context Response message. Existing procedures, described in 3GPP TS 23.060, permits the MS's identities optionally to be transferred from the old SGSN to the new SGSN in the Container within the MM Context IE (3GPP TS 29.060, sub clause 7.7.28). However, in 3GPP TS 29.060 it needs to be clarified that those SGSNs supporting the 'Automatic Device Detection' feature shall include the IMEISV in the Container within the MM Context.
Summary of change:	⌘ For the SGSN Context Response message it is clarified that SGSNs supporting the 'Automatic Device Detection' feature shall transfer the IMEISV in the MM Context.
Consequences if not approved:	⌘ The Automatic Device Detection function is not complete. Furthermore, implementers may miss that the IMEISV shall be transferred in the Container within the MM Context IE.

Clauses affected:	⌘ 2 , 3.2 , 7.5.4 , 7.7.28						
Other specs	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">Y</td> <td style="text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">X</td> <td style="text-align: center;"></td> </tr> </table> Other core specifications	Y	N	X		⌘	23.060 (CR# xxx), 23.008 (CR# 130),
Y	N						
X							

affected:

X	
X	

Test specifications

O&M Specifications

29.002 (CR# 718), 23.012 (CR# 015),
29.018 (CR# 041)

Other comments: ☞ Two small typos corrected in chapter 2 and 7.5.4

How to create CRs using this form:

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- 2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under <ftp://ftp.3gpp.org/specs/> For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.
- 3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

**** START OF MODIFICATION ****

2 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 23.003: "Numbering, addressing and identification".
- [3] 3GPP TS 23.007: "Restoration procedures".
- [4] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".
- [5] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".
- [6] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".
- [7] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".
- [8] 3GPP TS 33.102: "3G security; Security architecture".
- [9] 3GPP TS 43.020: " Security related network functions".
- [10] 3GPP TS 43.064: "Overall description of the GPRS radio interface; Stage 2".
- [11] 3GPP TS 44.064: "Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) layer specification".
- [12] IETF RFC 791 (STD 0005): "Internet Protocol", J. Postel.
- [13] IETF RFC 768 (STD 0006): "User Datagram Protocol", J. Postel.
- [14] IETF RFC 1700: "Assigned numbers", J. Reynolds and J. Postel.
- [15] IETF RFC 2181: "Clarifications to the DNS specification", R. Elz and R. Bush.
- [16] Void.
- [17] 3GPP TS 23.121: "Architectural requirements for Release 1999".
- [18] 3GPP TS 32.215: "Telecommunication management; Charging management; Charging data description for the Packet Switched (PS) domain".
- [19] 3GPP TS 23.236: "Intra domain connection of Radio Access Network (RAN) nodes to multiple Core Network (CN) nodes".
- [20] 3GPP TS 48.018: "General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN); BSS GPRS protocol".
- [21] 3GPP TR 44.901 (Release 5): "External Network Assisted Cell Change (NACC)".
- [22] 3GPP TS 33.210: "3G security; Network Domain Security (NDS); IP network layer security".
- [23] 3GPP TS 25.414: "UTRAN Iu interface data transport and transport signalling".

- [24] 3GPP TS 23.271: " Technical Specification Group Services and System Aspects; Functional stage 2 description of LCS".
- [25] 3GPP TS 23.195: "Provision of User Equipment Specific Behaviour Information (UESBI) to network entities".
- [26] 3GPP TS23.246: "Multimedia Broadcast/Multicast Service (MBMS) Architecture and Functional Description"
- [27] 3GPP TS29.061: "Interworking between the Public Land Mobile Network (PLMN) supporting Packet Based Services and Packet Data Networks (PDN)"
- [xx] [3GPP TS 22.101: "Service Principles"](#)

****** START OF NEXT MODIFICATION ******

3.2 Abbreviations

Abbreviations used in the present document are listed in 3GPP TS 21.905 [1]

For the purposes of the present document, the following additional abbreviations apply:

ADD	Automatic Device Detection
BB	Backbone Bearer
DF	Don't Fragment
FFS	For Further Study
GMLC	Gateway Mobile Location Centre
Gn interface	Interface between GPRS Support Nodes (GSNs) within a PLMN
Gp interface	Interface between GPRS Support Nodes (GSNs) in different PLMNs
GTP	GPRS Tunnelling Protocol
GTP-C	GTP Control
GTP-U	GTP User
IANA	Internet Assigned Number Authority
ICMP	Internet Control Message Protocol
IE	Information Element
IGMP	Internet Group Management Protocol
IP	Internet Protocol
IPv4	Internet Protocol version 4
IPv6	Internet Protocol version 6
MBMS	MultiMedia Broadcast/Multicast Service
MLD	Multicast Listener Discover
MTU	Maximum Transmission Unit
NACC	Network Assisted Cell Change
PUESBINE	Provision of User Equipment Specific Behaviour Information to Network Entities
QoS	Quality of Service
RAN	Radio Access Network
RANAP	Radio Access Network Application Part
RIM	RAN Information Management
RNC	Radio Network Controller
TEID	Tunnel Endpoint Identifier
TFT	Traffic Flow Template
UDP	User Datagram Protocol
UTRAN	UMTS Terrestrial Radio Access Network

****** START OF NEXT MODIFICATION ******

7.5.4 SGSN Context Response

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

Possible Cause values are:

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

If the Cause contains the value 'Request accepted', all information elements are mandatory, except PDP Context, RAB Context and Private Extension.

If the Cause contains the value 'P-TMSI Signature mismatch' the IMSI information element shall be included in the response, otherwise only the Cause information element shall be included in the response.

The old SGSN shall include a SGSN Address for control plane. The new SGSN shall store this SGSN Address and use it when sending control plane messages for the MS to the old SGSN in the SGSN context transfer procedure.

The Tunnel Endpoint Identifier Control Plane field specifies a Tunnel Endpoint Identifier, which is chosen by the old SGSN. The new SGSN shall include this Tunnel Endpoint Identifier in the GTP header of all subsequent control plane messages, which are sent from the new SGSN to the old SGSN and related to the PDP context(s) requested.

The IMSI information element contains the IMSI matching the TLLI or P-TMSI (for GSM or UMTS respectively) and RAI in the SGSN Context Request.

The MM Context contains necessary mobility management and security parameters. An SGSN supporting the 'PUESBINE' feature (see 3GPP TS 23.195 [25] for more information) [or the ADD feature \(see 3GPP TS 22.101 \[xx\] for more information\)](#) shall include the IMEISV in the MM Context when transferring the IMEISV from the old SGSN to the new SGSN.

All active PDP contexts in the old SGSN shall be included as PDP Context information elements. The PDP contexts are included in an implementation dependant prioritized order, and the most important PDP context is placed first. When the PDP Context Prioritization IE is included, it informs the new SGSN that the PDP contexts are sent prioritized. If the new SGSN is not able to maintain active all the PDP contexts received from the old SGSN when it is indicated that prioritization of the PDP contexts is applied, the new SGSN should use the prioritisation sent by old SGSN as input when deciding which PDP contexts to maintain active and which ones to delete.

If there is at least one active PDP context, the old SGSN shall start the T3-TUNNEL timer and store the address of the new SGSN in the "New SGSN Address" field of the MM context. The old SGSN shall wait for SGSN Context Acknowledge before sending T-PDUs to the new SGSN. If an SGSN Context Acknowledge message is not received within a time defined by T3-RESPONSE, the old SGSN shall retransmit the SGSN Context Response to the new SGSN as long as the total number of attempts is less than N3-REQUESTS. After N3-REQUESTS unsuccessfully attempts, the old SGSN shall proceed as described in section 'Reliable delivery of signalling messages' in case the transmission of a control plane message fails N3-REQUESTS times.

For each RAB using lossless PDCP context, the old SGSN shall include a RAB Context. If a RAB Context is included in the SGSN Context Response, the new SGSN shall ignore the N-PDU number fields and sequence number fields received in the PDP Context IE.

Radio Priority SMS contains the radio priority level for MO SMS transmission, and shall be included if a valid Radio Priority SMS value exists for the MS in the old SGSN.

Radio Priority LCS contains the radio priority level for MO LCS transmission, and shall be included if a valid Radio Priority LCS value exists for the MS in the old SGSN.

Radio Priority is the radio priority level that the MS uses when accessing the network for the transmission of uplink user data for a particular PDP context. One Radio Priority IE shall be included per PDP context that has a valid radio priority value assigned to it in the old SGSN.

Packet Flow Id is the packet flow identifier assigned to the PDP context. One Packet Flow Id IE shall be included per PDP context that has a valid packet flow identifier value assigned to it in the old SGSN.

Charging Characteristics IE contains the charging characteristics which apply for a PDP context; see 3GPP TS 32.215 [18]. One Charging Characteristics IE shall be included per PDP context IE. If no PDP context is active, this IE shall not be included. The mapping of a Charging Characteristics IE to a PDP Context IE is done according to the sequence of their appearance, e.g. the first Charging Characteristics IE is mapped to the first PDP Context IE.

The optional Private Extension contains vendor or operator specific information.

Table 27: Information Elements in a SGSN Context Response

Information element	Presence requirement	Reference
Cause	Mandatory	7.7.1
IMSI	Conditional	7.7.2
Tunnel Endpoint Identifier Control Plane	Conditional	7.7.14
RAB Context	Conditional	7.7.19
Radio Priority SMS	Optional	7.7.20
Radio Priority	Optional	7.7.21
Packet Flow Id	Optional	7.7.22
Charging Characteristics	Optional	7.7.23
Radio Priority LCS	Optional	7.7.25B
MM Context	Conditional	7.7.28
PDP Context	Conditional	7.7.29
SGSN Address for Control Plane	Conditional	7.7.32
PDP Context Prioritization	Optional	7.7.45
Private Extension	Optional	7.7.46

****** START OF NEXT MODIFICATION ******

7.7.28 MM Context

The MM Context information element contains the Mobility Management, MS and security parameters that are necessary to transfer between SGSNs at the Inter SGSN Routing Area Update procedure.

Security Mode indicates the type of security keys (GSM/UMTS) and Authentication Vectors (quintuplets/triplets) that are passed to the new SGSN.

Ciphering Key Sequence Number (CKSN) is described in 3GPP TS 24.008 [5]. Possible values are integers in the range [0; 6]. The value 7 is reserved. CKSN identifies Kc. During the Intersystem Change to 3G-SGSN, the KSI shall be assigned the value of CKSN.

Key Set Identifier (KSI) identifies CK and IK. During the Intersystem Change to 2G-SGSN, the CKSN shall be assigned the value of KSI.

Used Cipher indicates the GSM ciphering algorithm that is in use.

Kc is the GSM ciphering key currently used by the old SGSN. Kc shall be present if GSM key is indicated in the Security Mode.

CK is the UMTS ciphering key currently used by the old SGSN. CK shall be present if UMTS keys are indicated in the Security Mode.

IK is the UMTS integrity key currently used by the old SGSN. IK shall be present if UMTS keys are indicated in the Security Mode.

The Triplet array contains triplets encoded as the value in the Authentication Triplet information element. The Triplet array shall be present if indicated in the Security Mode.

The Quintuplet array contains Quintuplets encoded as the value in the Authentication Quintuplet information element. The Quintuplet array shall be present if indicated in the Security Mode. If the quintuplet array is present, the Quintuplet length field indicates its length.

DRX parameter indicates whether the MS uses DRX mode or not.

MS Network Capability provides the network with information concerning aspects of the MS related to GPRS. MS Network Capability and MS Network Capability Length are coded as in the value part described in 3GPP TS 24.008 [5].

DRX parameter is coded as described in 3GPP TS 24.008 [5], the value part only.

The two octets Container Length holds the length of the Container, excluding the Container Length octets.

Container contains one or several optional information elements as described in the clause 'Overview', from the clause 'General message format and information elements coding' in 3GPP TS 24.008 [5]. An SGSN supporting the 'PUESBINE' feature (see 3GPP TS 23.195 [25] for more information) [or the ADD feature \(see 3GPP TS 22.101 \[xx\] for more information\)](#) shall include the IMEISV in the Container.

Octets	Bits							
	8	7	6	5	4	3	2	1
1	Type = 129 (Decimal)							
2-3	Length							
4	Spare 1111					CKSN		
5	Security Mode		No of Vectors			Used Cipher		
6-13	Kc							
14-m	Triplet [0..4]							
(m+1)-(m+2)	DRX parameter							
(m+3)	MS Network Capability Length							
(m+4)-n	MS Network Capability							
(n+1)-(n+2)	Container length							
(n+3)-o	Container							

Figure 40: MM Context Information Element with GSM Key and Triplets

Octets	Bits							
	8	7	6	5	4	3	2	1
1	Type = 129 (Decimal)							
2-3	Length							
4	Spare 1111					KSI		
5	Security Mode		No of Vectors			Spare 111		
6-21	CK							
22-37	IK							
38-39	Quintuplet Length							
40-m	Quintuplet [0..4]							
(m+1)-(m+2)	DRX parameter							
(m+3)	MS Network Capability Length							
(m+4)-n	MS Network Capability							
(n+1)-(n+2)	Container length							
(n+3)-o	Container							

Figure 41: MM Context Information Element with UMTS Keys and Quintuplets

Octets	Bits							
	8	7	6	5	4	3	2	1
1	Type = 129 (Decimal)							
2-3	Length							
4	Spare 1111					CKSN		
5	Security Mode		No of Vectors			Used Cipher		

6-13	Kc
14-15	Quintuplet Length
16-m	Quintuplet [0..4]
(m+1)-(m+2)	DRX parameter
(m+3)	MS Network Capability Length
(m+4)-n	MS Network Capability
n+1-n+2	Container length
n+3-o	Container

Figure 42: MM Context Information Element with GSM Keys and UMTS Quintuplets

		Bits							
Octets		8	7	6	5	4	3	2	1
1	Type = 129 (Decimal)								
2-3	Length								
4	Spare 1111					CKSN/KSI			
5	Security Mode	No of Vectors		Used Cipher					
6-21	CK								
22-37	IK								
38-39	Quintuplet Length								
40-m	Quintuplet [0..4]								
(m+1)-(m+2)	DRX parameter								
(m+3)	MS Network Capability length								
(m+4)-n	MS Network Capability								
(n+1)-(n+2)	Container length								
(n+3)-n	Container								

Figure 42A: MM Context Information Element with Used Cipher value, UMTS Keys and Quintuplets

Table 46: Used Cipher Values

Cipher Algorithm	Value (Decimal)
No ciphering	0
GEA/1	1
GEA/2	2
GEA/3	3
GEA/4	4
GEA/5	5
GEA/6	6
GEA/7	7

Table 47: Security Mode Values

Security Type	Value (Decimal)
GSM key and triplets	1
GSM key and quintuplets	3
UMTS key and quintuplets	2
Used cipher value, UMTS Keys and Quintuplets	0

*** END OF MODIFICATIONS ***

CR-Form-v7	
CHANGE REQUEST	
⌘ 29.002 CR 718 ⌘ rev 6 ⌘	Current version 6.5.0 ⌘

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:	⌘ Addition of IMEISV to Update Location Procedure for ADD function		
Source:	⌘ CN4		
Work item code:	⌘ TEI6	Date:	⌘ 13/05/2004
Category:	⌘ B	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900 .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ ADD function is in SA requirement specification 22.101 v6.6.0. The proposed solution requires that the HLR be updated with the IMEISV at Location Update/IMSI Attach procedure for the first time in the MSC/VLR or SGSN and if the subscriber later changes Ue.
Summary of change:	⌘ IMEISV added to Update Location Procedure message.
Consequences if not approved:	⌘ ADD function will not work.

Clauses affected:	⌘ 3, 8.1.2.2, 8.1.2.3, 8.1.7.2, 8.1.7.3, 17.7.1										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 20px;">Y</td> <td style="width: 20px;">N</td> </tr> <tr> <td>X</td> <td></td> </tr> <tr> <td></td> <td>X</td> </tr> <tr> <td></td> <td>X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ 23.012 CR 015, 23.060 CR 488, 23.008 CR 130, 29.060 CR 488, 29.018 CR 041
Y	N										
X											
	X										
	X										
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

3 Abbreviations

[ADD Automatic Device Detection](#)

All other abbreviations used in the present document are listed in 3GPP TS 21.905.

Next modification

8.1.2 MAP_UPDATE_LOCATION service

8.1.2.1 Definition

This service is used by the VLR to update the location information stored in the HLR.

The MAP_UPDATE_LOCATION service is a confirmed service using the service primitives given in table 8.1/2.

8.1.2.2 Service primitives

Table 8.1/2: MAP_UPDATE_LOCATION

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
IMSI	M	M(=)		
MSC Address	M	M(=)		
VLR number	M	M(=)		
LMSI	U	C(=)		
Supported CAMEL Phases	C	C(=)		
SoLSA Support Indicator	C	C(=)		
IST Support Indicator	C	C(=)		
Super-Charger Supported in Serving Network Entity	C	C(=)		
Long FTN Supported	C	C(=)		
Supported LCS Capability Sets	C	C(=)		
Offered CAMEL 4 CSIs	C	C(=)		
Inform Previous Network Entity	C	C(=)		
CS LCS Not Supported by UE	C	C(=)		
V-GMLC Address	U	C(=)		
IMEISV	C	C(=)		
Skip Subscriber Data Update	U	C(=)		
ADD Capability			U	C(=)
HLR number			C	C(=)
User error			C	C(=)
Provider error				O

8.1.2.3 Parameter definitions and use

Invoke Id

See definition in clause 7.6.1.

IMSI

See definition in clause 7.6.2.

MSC Address

See definition for MSC number in clause 7.6.2. The MSC address is used for short message delivery only and for each incoming call set-up attempt the MSRN will be requested from the VLR.

VLR number

See definition in clause 7.6.2.

LMSI

See definition in clause 7.6.2. It is an operator option to provide the LMSI from the VLR; it is mandatory for the HLR to support the LMSI handling procedures.

Supported CAMEL Phases

This parameter indicates which phases of CAMEL are supported. Must be present if a CAMEL phase different from phase 1 is supported. Otherwise may be absent.

HLR number

See definition in clause 7.6.2. The presence of this parameter is mandatory in case of successful HLR updating.

SoLSA Support Indicator

This parameter is used by the VLR to indicate to the HLR in the Update Location indication that SoLSA is supported. If this parameter is not included in the Update Location indication and the Subscriber is marked as only allowed to roam in Subscribed LSAs, then the HLR shall reject the roaming and indicate to the VLR that roaming is not allowed to that Subscriber in the VLR.

This SoLSA Support Indicator shall be stored by the HLR per VLR where there are Subscribers roaming. If a Subscriber is marked as only allowed to roam in Subscribed LSAs while roaming in a VLR and no SoLSA Support indicator is stored for that VLR, the location status of that Subscriber shall be set to Restricted.

IST Support Indicator

This parameter is used to indicate to the HLR that the VMSC supports basic IST functionality, that is, the VMSC is able to terminate the Subscriber Call Activity that originated the IST Alert when it receives the IST alert response indicating that the call(s) shall be terminated. If this parameter is not included in the Update Location indication and the Subscriber is marked as an IST Subscriber, then the HLR may limit the service for the subscriber (by inducing an Operator Determined barring of Roaming, Incoming or Outgoing calls), or allow service assuming the associated risk of not having the basic IST mechanism available.

This parameter can also indicate that the VMSC supports the IST Command service, including the ability to terminate all calls being carried for the identified subscriber by using the IMSI as a key. If this additional capability is not included in the Update Location indication and the HLR supports the IST Command capability, then the HLR may limit the service for the subscriber (by inducing an Operator Determined barring of Roaming, Incoming or Outgoing calls), or allow service assuming the associated risk of not having the IST Command mechanism available.

Long FTN Supported

This parameter indicates that the VLR supports Long Forwarded-to Numbers.

Super-Charger Supported in Serving Network Entity

This parameter is used by the VLR to indicate to the HLR that the VLR supports the Super-Charger functionality and whether subscription data has been retained by the VLR. If subscription data has been retained by the VLR the age indicator shall be included. Otherwise the VLR shall indicate that subscriber data is required.

If this parameter is absent then the VLR does not support the Super-Charger functionality.

Supported LCS Capability Sets

This parameter indicates, if present, the capability sets of LCS which are supported. If the parameter is sent but no capability set is marked as supported then the VLR does not support LCS at all.

If this parameter is absent then the VLR may support at most LCS capability set 1, that is LCS Release98 or Release99 version.

Offered CAMEL 4 CSIs

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

Inform Previous Network Entity

This parameter is used by the VLR to ask the HLR to inform the previous network entity about the update by sending the previous network entity a Cancel Location message. It is used in case Super-Charger is supported in the network and the serving network entity has not been able to inform the previous network entity that MS has moved, that is if it has not sent Send Identification to the previous serving entity.

CS LCS Not Supported by UE

See definition in clause 7.6.11.

V-GMLC address

See definition in clause 7.6.2.

IMEISV

[For definition of the parameter see clause 7.6.2. For the use of this parameter see 3GPP TS 23.012. IMEISV shall be present if ADD function is supported and a new IMEISV is to be notified to the HLR \(The functional requirements for the presence of IMEISV due to ADD are described in 3GPP TS 22.101 clause 7.4\).](#)

Skip Subscriber Data Update

[The presence of the parameter is optional and if present it indicates that the service is solely used to inform the HLR about change of IMEISV. The parameter is used to optimise signalling load during Location Update procedure.](#)

ADD Capability

[This parameter indicates, if present, the support of ADD function by the HLR.](#)

User error

In case of unsuccessful updating, an error cause shall be returned by the HLR. The following error causes defined in clause 7.6.1 may be used, depending on the nature of the fault:

- unknown subscriber;
- roaming not allowed;

This cause will be sent if the MS is not allowed to roam into the PLMN indicated by the VLR number. The cause is qualified by the roaming restriction reason "PLMN Not Allowed" or "Operator Determined Barring". If no qualification is received (HLR with MAP Version 1), "PLMN Not Allowed" is taken as default.

- system failure;
- unexpected data value.

Provider error

For definition of provider errors see clause 7.6.1.

Next modification

8.1.7 MAP_UPDATE_GPRS_LOCATION service

8.1.7.1 Definition

This service is used by the SGSN to update the location information stored in the HLR.

The MAP_UPDATE_GPRS_LOCATION service is a confirmed service using the service primitives given in table 8.1/7.

8.1.7.2 Service primitives

Table 8.1/7: MAP_UPDATE_GPRS_LOCATION

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
IMSI	M	M(=)		
SGSN number	M	M(=)		
SGSN address	M	M(=)		
Supported CAMEL Phases	C	C(=)		
SoLSA Support Indicator	C	C(=)		
Super-Charger Supported in Serving Network Entity	C	C(=)		
GPRS enhancements support indicator	C	C(=)		
Supported LCS Capability Sets	C	C(=)		
Offered CAMEL 4 CSIs	C	C(=)		
Inform Previous Network Entity	C	C(=)		
PS LCS Not Supported by UE	C	C(=)		
V-GMLC Address	U	C(=)		
Call barring support indicator	C	C(=)		
IMEISV	C	C(=)		
Skip Subscriber Data Update	U	C(=)		
ADD Capability			U	C(=)
HLR number			C	C(=)
User error			C	C(=)
Provider error				O

8.1.7.3 Parameter definitions and use

Invoke Id

See definition in clause 7.6.1.

IMSI

See definition in clause 7.6.2.

SGSN number

See definition in clause 7.6.2.

SGSN address

See definition in clause 7.6.2.

Supported CAMEL Phases

This parameter indicates which phases of CAMEL are supported. The SGSN can only support CAMEL phase 3 or greater.

SoLSA Support Indicator

This parameter is used by the SGSN to indicate to the HLR in the Update GPRS Location indication that SoLSA is supported. If this parameter is not included in the Update GPRS Location indication and the Subscriber is marked as only allowed to roam in Subscribed LSAs, then the HLR shall reject the roaming and indicate to the SGSN that roaming is not allowed to that Subscriber in the SGSN.

This SoLSA Support Indicator shall be stored by the HLR per SGSN where there are Subscribers roaming. If a Subscriber is marked as only allowed to roam in Subscribed LSAs while roaming in a SGSN and no SoLSA Support indicator is stored for that SGSN, the location status of that Subscriber has to be set to Restricted.

Super-Charger Supported in Serving Network Entity

This parameter is used by the SGSN to indicate to the HLR that the SGSN supports the Super-Charger functionality and whether subscription data has been retained by the SGSN. If subscription data has been retained by the SGSN the age indicator shall be included. Otherwise the SGSN shall indicate that subscriber data is required.

If this parameter is absent then the SGSN does not support the Super-Charger functionality.

GPRS enhancements support indicator

This parameter is used by the SGSN to indicate to the HLR in the Update GPRS Location indication that GPRS enhancements are supported. If this parameter is included in the Update GPRS Location indication the HLR may send the extensible QoS in the PDP contexts to the SGSN.

HLR number

See definition in clause 7.6.2. The presence of this parameter is mandatory in case of successful HLR updating.

Supported LCS Capability Sets

This parameter indicates, if present, the capability sets of LCS which are supported. If the parameter is sent but no capability set is marked as supported then the SGSN does not support LCS at all.

The SGSN is not allowed to indicate support for LCS capability set 1.

If this parameter is absent then the SGSN does not support LCS at all.

Offered CAMEL 4 CSIs

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

Inform Previous Network Entity

This parameter is used by the SGSN to ask the HLR to inform the previous network entity about the update by sending the previous network entity a Cancel Location message. It is used in case Super-Charger is supported in the network and the serving network entity has not been able to inform the previous network entity that MS has moved, that is if it has not sent SGSN Context Request to the previous serving entity.

PS LCS Not Supported by UE

See definition in clause 7.6.11.

V-GMLC address

See definition in clause 7.6.2.

Call Barring support indicator

See definition in clause 7.6.3.92.

[IMEISV](#)

For definition of the parameter see clause 7.6.2. For the use of this parameter see 3GPP TS 23.060. IMEISV shall be present if ADD function is supported and the IMEISV is new in SGSN (The functional requirements for the presence of IMEISV due to ADD are described in 3GPP TS 22.101 clause 7.4).

Skip Subscriber Data Update

The presence of the parameter is optional and if present it indicates that the service is solely used to inform the HLR about change of IMEISV. The parameter is used to optimise signalling load during Location Update procedure.

ADD Capability

This parameter indicates, if present, the support of ADD function by the HLR.

User error

In case of unsuccessful updating, an error cause shall be returned by the HLR. The following error causes defined in clause 7.6.1 may be used, depending on the nature of the fault:

- unknown subscriber;
- roaming not allowed.

This cause will be sent if the MS is not allowed to roam into the PLMN indicated by the SGSN number. The cause is qualified by the roaming restriction reason "PLMN Not Allowed" or "Operator Determined Barring".

- system failure;
- unexpected data value.

The diagnostic in the Unknown Subscriber may indicate "Imsi Unknown" or "Gprs Subscription Unknown".

Provider error

For definition of provider errors see clause 7.6.1.

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,
    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,
GPRSMSCClass,

-- 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,
LCSCClientExternalID,
LCSCClientInternalID,
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)}

;

-- location registration types

```

UpdateLocationArg ::= SEQUENCE {		
imsi	IMSI,	
msc-Number	[1] ISDN-AddressString,	
vlr-Number	ISDN-AddressString,	
lmsi	[10] LMSI	OPTIONAL,
extensionContainer	ExtensionContainer	OPTIONAL,
...		
vlr-Capability	[6] VLR-Capability	OPTIONAL,
informPreviousNetworkEntity	[11] NULL	OPTIONAL,
cs-LCS-NotSupportedByUE	[12] NULL	OPTIONAL,
v-gmlc-Address	[2] GSN-Address	OPTIONAL,
add-info	[xx] ADD-Info	OPTIONAL }

UpdateLocationRes ::= SEQUENCE {		
hlr-Number	ISDN-AddressString,	
extensionContainer	ExtensionContainer	OPTIONAL,
...		
add-Capability	NULL	OPTIONAL }

```

ADD-Info ::= SEQUENCE {
  imeisv [xx] IMEI,
  skipSubscriberDataUpdate [xx] NULL OPTIONAL
  ...}

```

.....

Omitted text

.....

-- gprs location registration types

```

UpdateGprsLocationArg ::= SEQUENCE {
  imsi IMSI,
  sgsn-Number ISDN-AddressString,
  sgsn-Address GSN-Address,
  extensionContainer ExtensionContainer OPTIONAL,
  ... ,
  sgsn-Capability [0] SGSN-Capability OPTIONAL,
  informPreviousNetworkEntity [1] NULL OPTIONAL,
  ps-LCS-NotSupportedByUE [2] NULL OPTIONAL,
  v-gmlc-Address [3] GSN-Address OPTIONAL,
  add-info [x] ADD-Info OPTIONAL }+

```

```

UpdateGprsLocationRes ::= SEQUENCE {
  hlr-Number ISDN-AddressString,
  extensionContainer ExtensionContainer OPTIONAL,
  ...+
  add-Capability NULL OPTIONAL }

```

Modification end