3GPP TSG CN Plenary Meeting #27 **NP-050056**
9th – 11th March 2005 Tokyo, JAPAN.

Source: TSG CN WG4

Title: Corrections on TEI6

Agenda item: 9.21

Document for: APPROVAL

Doc-2nd-Level	Spec	CR	Rev	Phase	Subject	Cat	Ver_C
N4-050128	29.010	112		Rel-6	Correction of partly implemented CR 108	F	6.4.0
N4-050298	23.067	012	1	Rel-6	Clarification on mapping of eMLPP priorities	F	6.0.0
N4-050445	23.012	018	2	Rel-6	Introduction of Hop Counter for Send Identification	B	6.2.0
N4-050446	29.002	745	2	Rel-6	Introduction of Hop Counter for Send Identification	B	6.8.0
N4-050447	29.060	529	1	Rel-6	Introduction of Hop Counter to Identification Request and SGSN Context Request	B	6.7.0

3GPP TSG-CN WG4 Meeting #26 **N4-050128**
Sydney, AUSTRALIA. 14th to 18th February 2005.

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.010** **CR** **112** ⌘ **rev** **-** ⌘ 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:	⌘	Correction of partly implemented CR108
Source:	⌘	CN4
Work item code:	⌘	TEI-6
Date:	⌘	01/02/2005
Category:	⌘	**F**
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:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	During CN#25 CR108 was approved. The incorporation of the CR within the specification was not done correctly.
Summary of change:	⌘	Addition of the missing part in the Positive Results of the Routeing Area updating section
Consequences if not approved:	⌘	Approved CR not fully incorporated into specification.

Clauses affected:	⌘	3.2

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		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 **********

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
	C	Reject: GPRS services not allowed in this PLMN	-	~~12~~ 12
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.

NOTE 12: This reject cause is inserted if the SGSN receives in MAP INSERT SUBSCRIBER DATA message an indication of Roaming restricted in SGSN due to unsupported feature.

********** end of modification **********

3GPP TSG-CN4 Meeting #26 **Tdoc N4-050298**
Sydney, Australia, 14-18 Feburary 2005

CR-Form-v7.1

CHANGE REQUEST

⌘ **23.067** **CR** **012** ⌘**rev** **1** ⌘ 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:	⌘	Clarification on mapping of eMLPP priorities
Source:	⌘	CN4
Work item code:	⌘	TEI6
Date:	⌘	22/Dec/2004
Category:	⌘	**F**
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:

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R97	*(Release 1997)*
R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	It is not clear how to map eMLPP priority to the priority related information elements in RANAP. Since TS 23.107 specifies overall QoS concept for UMTS bearer services, it is necessary that the overall QoS concept described in TS 23.107 needs to be taken into account for parameter mapping in TS 23.067. In addition, typos are to be corrected by this CR.
Summary of change:	⌘	Add explanatory text to clarify that 23.107 shall take into account for eMLPP priority mapping Fix typos. (25.431 is corrected to 25.413)
Consequences if not approved:	⌘	eMLPP function may not work with inappropriate parameter mapping in MSC.

Clauses affected:	⌘	2, 4, 11.3.1.4, 11.3.2.2, 11.4.1 and 11.5

Other specs affected:	⌘	Y	N		⌘
			X	Other core specifications	
			X	Test specifications	
			X	O&M Specifications	

Other comments:	⌘	Be noted that the related CR S2-050446 against to 23.107 is under E-mail approval process in SA2. See the attached.  D:\ 資材置き場\ S2- 050446.doc

How to create CRs using this form:

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First Changes

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.

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

[2] 3GPP TS 22.101: "UMTS Service Principles".

[3] 3GPP TS 22.067: "enhanced Multi-Level Precedence and Pre-emption service (eMLPP) - Stage 1".

[4] 3GPP TS 23.011:"Technical realization of supplementary services".

[5] 3GPP TS 23.068: "Voice Group Call Service (VGCS) - Stage 2".

[6] 3GPP TS 23.069: "Voice Broadcast Service (VBS) - Stage 2".

[7] 3GPP TS 48.008: "Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".

[8] ITU-T Recommendation Q.85: "Stage 2 description for community of interest supplementary services (clause 3: Multi-Level Precedence and Pre-emption MLPP)".

[9] ITU-T Recommendation Q.735: "Stage 3 description for community of interest supplementary services using SS No. 7 (clause 3: Multi-Level Precedence and Pre-emption (MLPP)".

[10] *Void*

[11] 3GPP TS 25,331: "RRC Protocol Specification".

[12] 3GPP TS 25.413~~31~~: "UTRAN Iu Interface RANAP Signalling".

[13] 3GPP TS 24.008: "Core Network Protocols - Stage 3".

[XX] 3GPP TS 23.107: "Quality of Service (QoS) concept and architecture".

End of First Changes

2nd Changes

4 Main concepts

The enhanced Multi-Level Precedence and Pre-emption service (eMLPP) provides different levels of precedence for call set-up and for call continuity in case of handover.

---------- SKIPPED ----------

For both cases, the priority level applied shall be included, either in the paging message or Call Waiting indication, or in the notification message, in order to enable the Mobile Station to decide on an automatic reaction (automatic answering or called-party pre-emption) or to indicate the incoming, non pre-empting call to the user.

The priority information of the assignment request shall also be applied for BSS internal and also UTRAN internal handover. For external handover, the MSC shall include the priority information in the handover request according to the definition in 3GPP TS 48.008 (for GSM) and TS 25.413~~31~~ [12] (for UMTS) in the same way as for the assignment request.

5 General architecture

No specific requirements are identified.

End of 2nd Changes

3rd Changes

11.3.1.4 Indication of priority to the BSC/RNC

In GSM, the channel assignment request to the BSC shall also include the priority level and pre-emption capability of the connection as defined in 3GPP TS 48.008. The MSC maps the eMLPP priority on these priority levels. In addition, the eMLPP priority shall be explicitly indicated to the BSC in the assignment request. The BSC shall store the priority level in order to decide on later actions, e.g. to arrange notifications to the Mobile Station according to priorities.

In UMTS, the RAB assignment request to the RNC may also include the priority level and pre-emption capability of the connection as defined in TS 25.413~~31~~ [12]. The MSC maps the eMLPP priority on these priority levels. In addition, the eMLPP priority shall be explicitly indicated to the RNC in the RAB assignment request. Values for radio access bearer service attributes defined in TS 23.107 [XX] should be taken into account for mapping from eMLPP priority into priority related information element in RANAP. The RNC shall store the priority level in order to decide on later actions, e.g. to arrange notifications to the Mobile Station according to priorities.

End of 3rd Changes

4th Changes

11.3.2.2 Indication of priority to the BSC/RNC

In GSM, the channel assignment request to the BSC may include the priority level and pre-emption capability of the connection as defined in 3GPP TS 48.008. The MSC maps the eMLPP priority on these priority levels. In addition, the eMLPP priority shall be explicitly indicated to the BSC in the assignment request. The BSC shall store the priority level in order to decide on later actions, e.g. to arrange notifications to the Mobile Station according to priorities.

In UMTS, the RAB assignment request to the RNC may include the priority level and pre-emption capability of the connection as defined in TS 25.413 [12]~~31~~. The MSC maps the eMLPP priority on these priority levels. In addition, the eMLPP priority shall be explicitly indicated to the RNC in the RAB assignment request. Values for radio access bearer service attributes defined in TS 23.107 [XX] should be taken into account for mapping from eMLPP priority into priority related information element in RANAP. The RNC shall store the priority level in order to decide on later actions, e.g. to arrange notifications to the Mobile Station according to priorities.

End of 4th Changes

5th Changes

11.4.1 Choice of communication to pre-empt

For all resources where pre-emption may be required, namely radio channels, A-interface (for GSM) or Iu interface (for UMTS) channels and inter switch trunks, the network specific service configuration stored within the MSC shall be used to determine whether pre-emption should occur, and if so, which communication to pre-empt. The MSC shall inform the BSS (for GSM) or RNC (for UMTS) about priority and pre-emption by using the priority message element in the assignment request as defined in 3GPP TS 48.008 (for GSM) and TS 25.413~~31~~ [12] (for UMTS). Mapping of the priority information in this message element on the network specific eMLPP configuration shall be performed in the MSC.

End of 5th Changes

6th Changes

11.5 Pre-emption at handover/relocation

When an on-going call is handed over or relocated into a fully used cell, the BSC or RNC shall perform queuing and pre-emption if necessary according to the priority and pre-emption capability information received with the assignment request.

In case of BSS external handover or RNC relocation, the priority and pre-emption capability information shall be included in the handover request as defined in 3GPP TS 48.008 (for GSM) and TS 25.413~~31~~ [12] (for UMTS).

End of 6th Changes

3GPP TSG-CN WG4 Meeting #26 **Draft*N4-050445***

Sydney, Australia. 14th to 18th February 2005.

CR-Form-v7.1

CHANGE REQUEST

⌘ **23.012** **CR** **018** ⌘**rev** **2** ⌘ Current version: **6.2.0** ⌘

*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:	⌘	Introduction of Hop Counter for Send Identification
Source:	⌘	CN4
Work item code:	⌘	TEI6
Date:	⌘	17/02/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

Use one of the following categories:
F *(correction)*
A *(corresponds to a correction in an earlier release)*
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R98	*(Release 1998)*
R99	*(Release 1999)*
Rel-4	*(Release 4)*
Rel-5	*(Release 5)*
Rel-6	*(Release 6)*
Rel-7	*(Release 7)*

Reason for change:	⌘	To prevent endless relaying of Send Identification messages in an IuFlex architecture.
Summary of change:	⌘	Introduce a Hop Counter to Send Identification
Consequences if not approved:	⌘	There is a risk of endless message relaying.

Clauses affected:	⌘	4,1,2,1, 4.1.2.9			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	29.002 CR 745
		X /	Other core specifications		
		/ **X**	Test specifications		
		/ **X**	O&M Specifications		
Other comments:	⌘				

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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.

The Automatic Device Detection (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. As an optimisation, the VLR may optionally store whether or not the HLR supports the ADD feature and use this information to decide whether or not to send an update to the HLR.

Sheet 1: The usage of a Hop Counter is an optional optimization.

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:

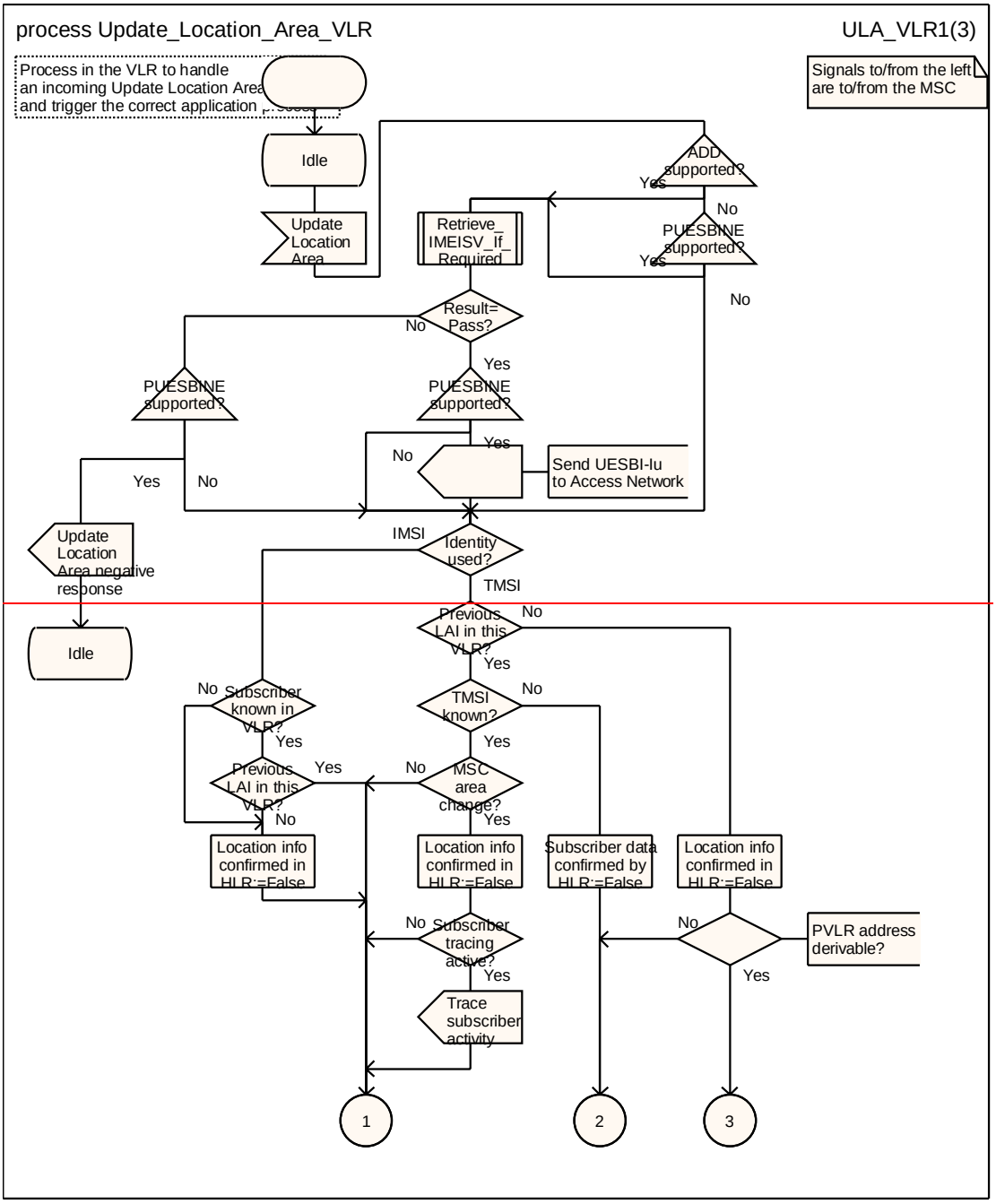
(1) Location Info Confirmed in HLR is false.

(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 an optional optimisation and depends on the presence of the relevant indication from the HLR that ADD functionality is supported. If this optimisation is not supported on the VLR or 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 and trigger the correct application
Signals to/from the left are to/from the MSC
Idle
Update Location Area
Retrieve_ IMEISV_If_ Required
ADD supported?
Yes
No
PUESBINE supported?
Yes
No
Result= Pass?
No
Yes
PUESBINE supported?
PUESBINE supported?
Yes
No
Send UESBI-Iu to Access Network
Yes
No
Update Location Area negative response
Idle
IMSI
Identity used?
TMSI
Previous LAI in this VLR?
No
Yes
No Subscriber known in VLR?
Yes
TMSI known?
No
Yes
Previous LAI in this VLR?
Yes
No
MSC area change?
No
Yes
Location info confirmed in HLR:=False
Location info confirmed in HLR:=False
Subscriber data confirmed by HLR:=False
Location info confirmed in HLR:=False
No Subscriber tracing active?
Yes
Trace subscriber activity
No
PVLR address derivable?
Yes
1
2
3

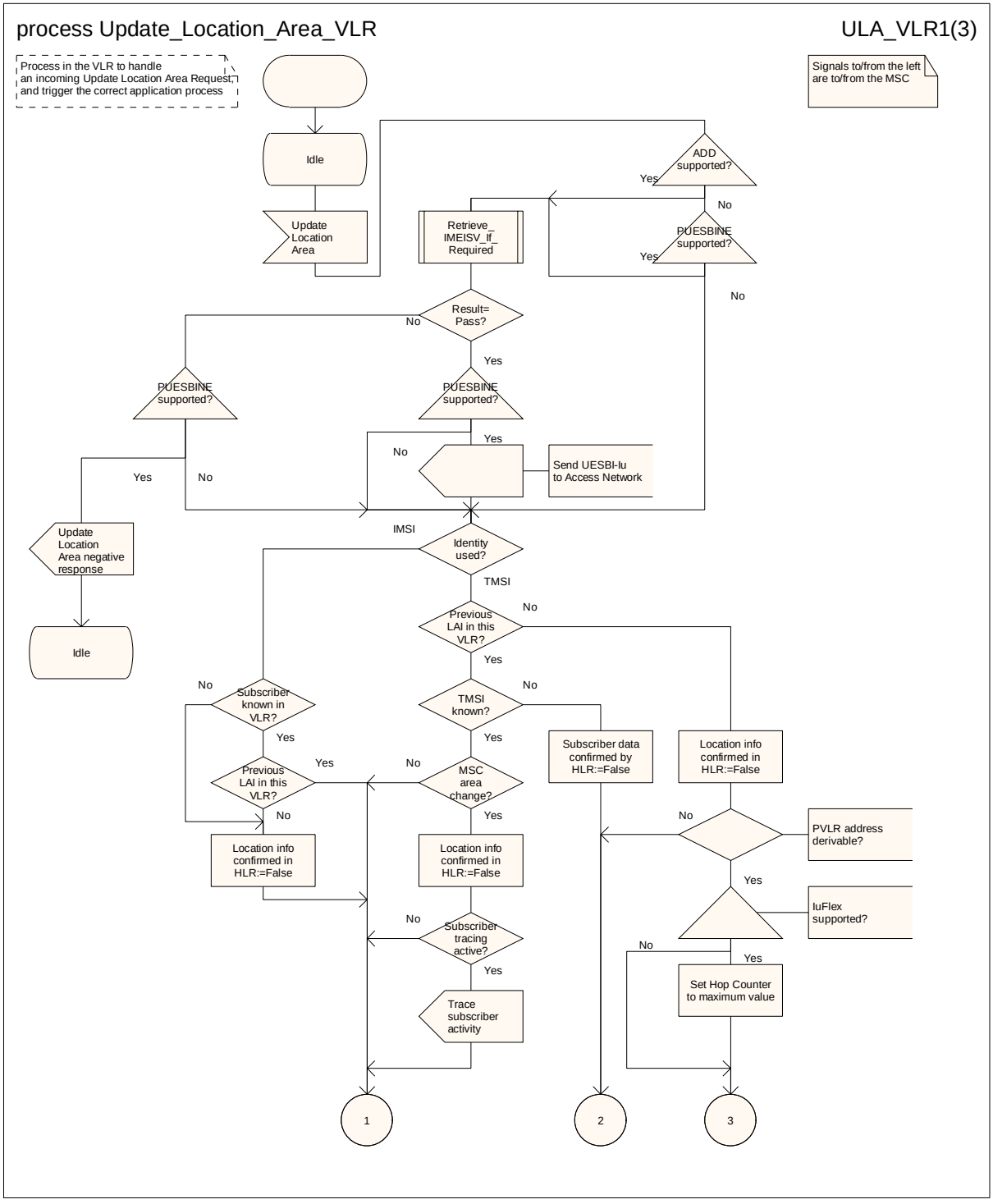


Figure 4.1.2.1 (sheet 1 of 3): Process Update_Location_Area_VLR

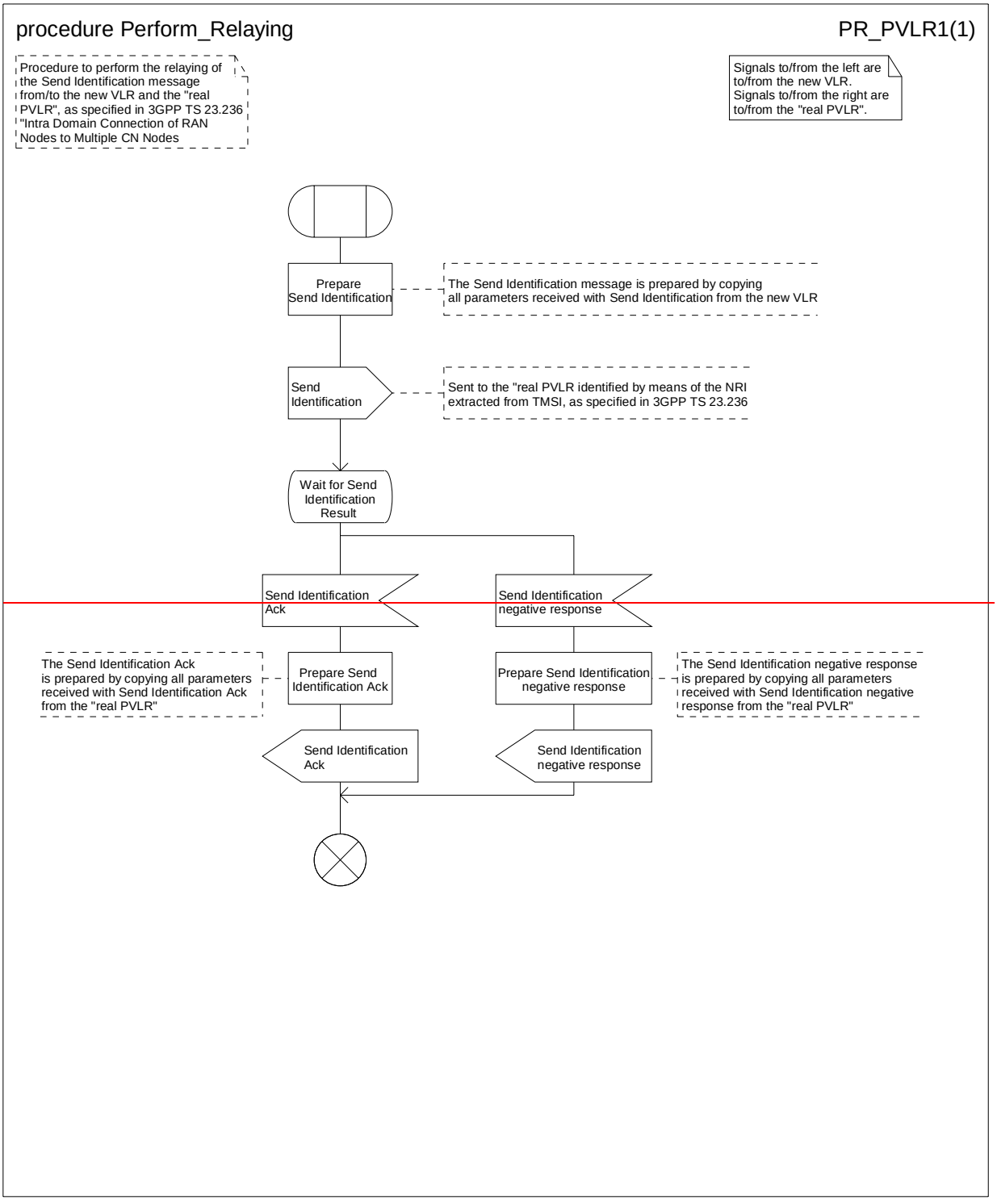
**********next modification**********

4.1.2.9 Procedure Perform Relaying

The relay may be performed by opening a new MAP dialogue to the "real PVLR" and keeping it linked to the existing MAP dialogue between the new VLR and the PVLR. Every message received for one of these dialogues shall be relayed to the other one, until the two dialogues are closed. This mechanism is described in figure 4.1.2.9.

In order to improve the signalling efficiency of the relaying function, alternative mechanisms may be implemented as long as no difference shall be perceived by the new VLR and the "real PVLR".

The usage of a Hop Counter is an optional optimization.


procedure Perform_Relaying
PR_PVLR1(1)
Procedure to perform the relaying of the Send Identification message from/to the new VLR and the "real PVLR", as specified in 3GPP TS 23.236 "Intra Domain Connection of RAN Nodes to Multiple CN Nodes
Signals to/from the left are to/from the new VLR. Signals to/from the right are to/from the "real PVLR".
Prepare Send Identification
The Send Identification message is prepared by copying all parameters received with Send Identification from the new VLR
Send Identification
Sent to the "real PVLR identified by means of the NRI extracted from TMSI, as specified in 3GPP TS 23.236
Wait for Send Identification Result
Send Identification Ack
Send Identification negative response
The Send Identification Ack is prepared by copying all parameters received with Send Identification Ack from the "real PVLR"
Prepare Send Identification Ack
Prepare Send Identification negative response
The Send Identification negative response is prepared by copying all parameters received with Send Identification negative response from the "real PVLR"
Send Identification Ack
Send Identification negative response

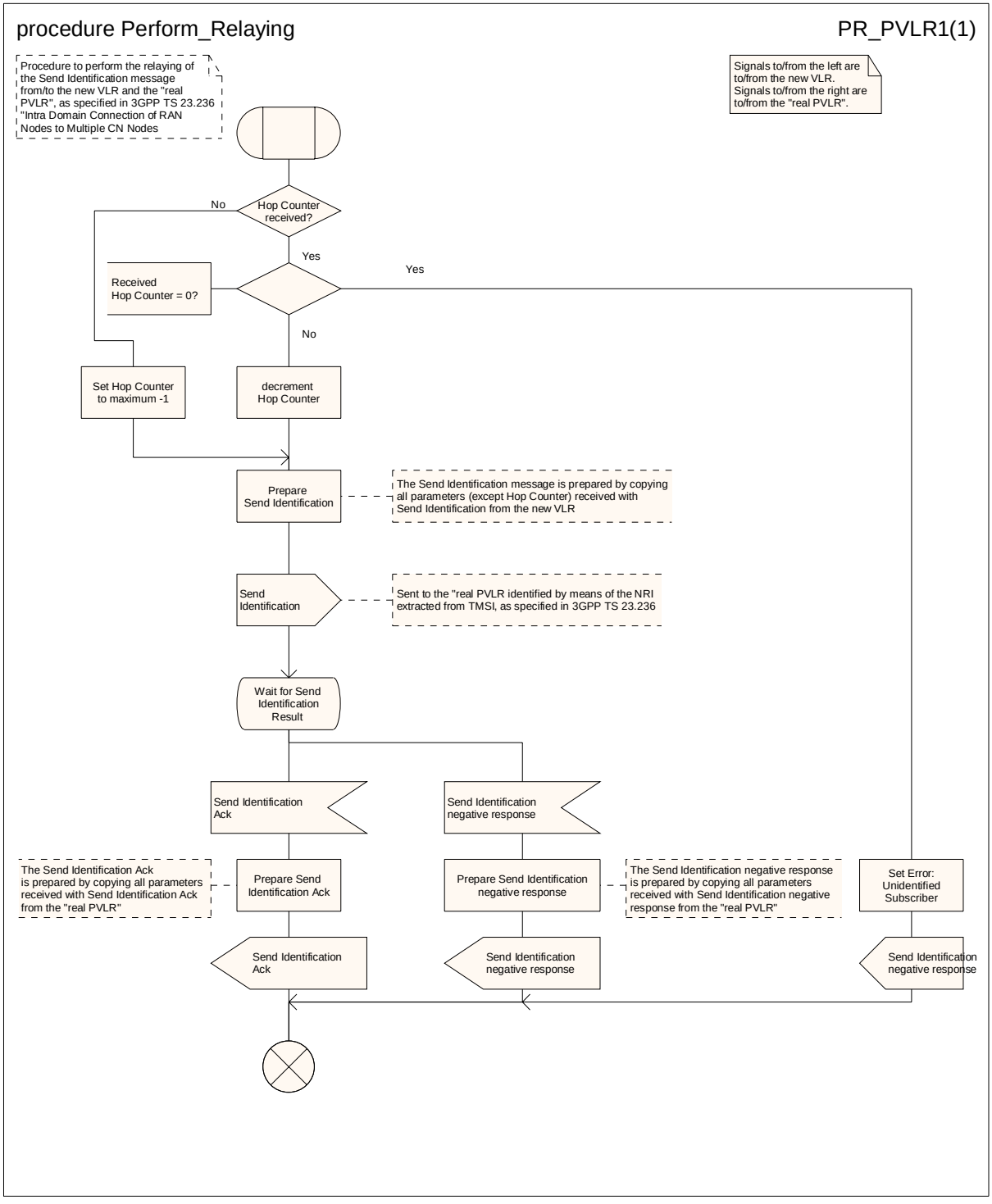


Figure 4.1.2.9 (sheet 1 of 1): Procedure Perform Relaying

3GPP TSG-CN WG4 Meeting #26 **Draft*N4-050446***

Sydney, Australia. 14th to 18th February 2005.

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.002** **CR** **745** ⌘**rev** **2** ⌘ Current version: **6.8.0** ⌘

*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:	⌘	Introduction of Hop Counter for Send Identification
Source:	⌘	CN4
Work item code:	⌘	TEI6
Date:	⌘	17/02/2005
Category:	⌘	**B**
Release:	⌘	Rel-6

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

Use one of the following releases:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	To prevent endless relaying of Send Identification messages in an IuFlex architecture.
Summary of change:	⌘	Introduce a Hop Counter to Send Identification
Consequences if not approved:	⌘	There is a risk of endless message relaying

Clauses affected:	⌘	8.1.4, 17.7.1			
Other specs affected:	⌘	**Y** / **N**	Other core specifications	⌘	23.012 CR 018
		X /	Other core specifications		
		/ **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.

8.1.4 MAP_SEND_IDENTIFICATION service

8.1.4.1 Definition

The MAP_SEND_IDENTIFICATION service is used between a VLR and a previous VLR to retrieve IMSI and authentication data for a subscriber registering afresh in that VLR.

It may also be used to send the MSC number from a VLR to a previous VLR.

The MAP_SEND_IDENTIFICATION service is a confirmed service using the service primitives defined in table 8.1/4.

8.1.4.2 Service primitives

Table 8.1/4: MAP_SEND_IDENTIFICATION

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

8.1.4.3 Parameter definitions and use

Invoke Id

See definition in clause 7.6.1.

TMSI

See definition in clause 7.6.2.

If multiple service requests are present in a dialogue then this parameter shall be present in every service request.

Number of requested vectors

A number indicating how many authentication vectors the new VLR is prepared to receive. The previous VLR shall not return more vectors than indicated by this parameter.

This parameter shall be present in the first (or only) request of the dialogue. If multiple service requests are present in a dialogue then this parameter shall not be present in any service request other than the first one

Segmentation prohibited indicator

This parameter indicates if the new VLR or SGSN allows segmentation of the response at MAP user level.

This parameter may be present only in the first request of the dialogue.

IMSI

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

If multiple service requests are present in a dialogue and the service succeeds then this parameter shall not be present in any service response other than the first one

MSC Number

This is the ISDN number assigned to the MSC currently serving the MS.

Authentication set

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

Current Security Context

See definition in clause 7.6.7. If the service succeeds, a list of either GSM or UMTS Security Context parameters can be returned.

Hop Counter

For the use of this parameter see 3GPP TS 23.012 [23].

User error

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

- unidentified subscriber.

Provider error

For definition of provider errors see clause 7.6.1.

17.7.1 Mobile Service data types

...

```
SendIdentificationArg ::= SEQUENCE {
    tmsi                              TMSI,
    numberOfRequestedVectors          NumberOfRequestedVectors          OPTIONAL,
    -- within a dialogue numberOfRequestedVectors shall be present in
    -- the first service request and shall not be present in subsequent service
requests.
    -- If received in a subsequent service request it shall be discarded.
    segmentationProhibited            NULL                              OPTIONAL,
    extensionContainer                ExtensionContainer                OPTIONAL,
    ...,
    msc-Number                        ISDN-AddressString                OPTIONAL,
    hopCounter                        [0] HopCounter                    OPTIONAL }
```

```
HopCounter ::= INTEGER (0..3)
```

...

3GPP TSG-CN WG4 Meeting #26 ***N4-050447***

Sydney, Australia. 14th to 18th February 2005.

CR-Form-v7.1

CHANGE REQUEST

⌘ **29.060** **CR** **529** ⌘ **rev** **1** ⌘ Current version: **6.7.0** ⌘

*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:	⌘	Introduction of Hop Counter to Identification Request and SGSN Context Request
Source:	⌘	CN4
Work item code:	⌘	TEI6
Date:	⌘	17/02/2005
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:

Ph2	*(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)*
Rel-7	*(Release 7)*

Reason for change:	⌘	To prevent endless relaying of Identification Request messages and SGSN Context Request messages in an IuFlex architecture.
Summary of change:	⌘	Introduce a Hop Counter to Identification Request and SGSN Context Request
Consequences if not approved:	⌘	There is a risk of endless message relaying.

Clauses affected:	⌘	7.5.1, 7.5.3, 7.7, 7.7.59(new)

	Y	N		
Other specs affected: ⌘		X	Other core specifications	⌘
		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.

7.5.1 Identification Request

If the MS, at GPRS Attach, identifies itself with P-TMSI and it has changed SGSN since detach, the new SGSN shall send an Identification Request message to the old SGSN to request the IMSI.

For Intra Domain Connection of RAN Nodes to Multiple CN Nodes, where the old SGSN belongs to an SGSN pool, the new SGSN cannot in the general case determine the old SGSN. The new SGSN shall in this case send the Identification Request message to an SGSN based on the old RAI, as usual. If an SGSN within an SGSN pool receives an Identification Request message for an MS that has been attached to another SGSN of the same SGSN pool, the SGSN shall:

a) include the source IP address of the received Identification Request message in the optional parameter 'SGSN Address for Control Plane' if the optional parameter 'SGSN Address for Control Plane' is not present in the received Identification Request message; and

b) decrement the Hop Counter value if the optional parameter 'Hop Counter' is present in the received Identification Request message; otherwise may include a Hop Counter with a value of max-1 where max is the maximum defined value for Hop Counter.

-The Identification Request message is then relayed to the old SGSN, keeping the other parts of the message unchanged. Received Identification Request messages with a Hop Counter value of 0 shall not be relayed; instead a system failure indication shall be returned to the new SGSN. The SGSN within an SGSN pool can determine if the received Identification Request message was meant for itself or for another SGSN of the SGSN pool by looking at the Network Resource Identifier contained in the P-TMSI parameter. See 3GPP TS 23.003 [2] for details on the coding of the P-TMSI and see 3GPP TS 23.236 [19] for details on SGSN pool.

Note that an SGSN relaying the Identification Request message shall not supervise the Identification Response message.

The P-TMSI and RAI is a P-TMSI and an RAI in the old SGSN. The P-TMSI Signature is conditionally provided by the MS to the new SGSN for identification checking purposes as defined in 3GPP TS 23.060 [4] and 3GPP TS 24.008 [5]. If the MS has provided the P-TMSI Signature, the new SGSN shall include this parameter in the Identification Request message.

The optional Private Extension contains vendor or operator specific information.

Table 24: Information Elements in an Identification Request

Information element	Presence requirement	Reference
Routeing Area Identity (RAI)	Mandatory	7.7.3
Packet TMSI	Mandatory	7.7.5
P-TMSI Signature	Conditional	7.7.9
SGSN Address for Control Plane	Optional	7.7.32
~~Private Extension~~Hop Counter	Optional	7.7.xx~~46~~
~~Hop Counter~~ Private Extension	Optional	7.7.46~~59~~

**********next modification**********

7.5.3 SGSN Context Request

The new SGSN shall send an SGSN Context Request to the old SGSN to get the MM and PDP Contexts for the MS.

For Intra Domain Connection of RAN Nodes to Multiple CN Nodes, where the old SGSN belongs to an SGSN pool, the new SGSN cannot in the general case determine the old SGSN. The new SGSN shall in this case send the SGSN Context Request message to an SGSN based on the old RAI, as usual. If an SGSN within an SGSN pool receives an SGSN Context Request message for an MS that has been attached to another SGSN of the same SGSN pool, the SGSN shall:
if the optional parameter 'Hop Counter' is present in the received SGSN Context Request message, decrement the Hop Counter value, otherwise may include a Hop Counter with a value of max-1 where max is the maximum

defined value for Hop Counter;
~~relay~~ the SGSN Context Request message is then relayed ~~unchanged~~ to the old SGSN, keeping the other parts of the message unchanged. Received SGSN Context Request messages with a Hop Counter value of 0 shall not be relayed; instead a system failure indication shall be returned to the new SGSN. The SGSN within an SGSN pool can determine if the received SGSN Context Request message was meant for itself or for another SGSN of the SGSN pool by looking at the Network Resource Identifier contained in the P-TMSI parameter, or alternatively in the TLLI parameter. See 3GPP TS 23.003 [2] for details on the coding of the P-TMSI and see 3GPP TS 23.236 [19] for details on SGSN pool.

Note that an SGSN relaying the SGSN Context Request message shall not supervise the SGSN Context Response message.

The MS is identified in the old SGSN by its old RAI and old TLLI/old P-TMSI values. The TLLI/P-TMSI and RAI is a foreign TLLI/P-TMSI and an RAI in the old SGSN. Exactly one of the TLLI, P-TMSI or IMSI information fields shall be present.

The old SGSN responds with an SGSN Context Response.

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

The new SGSN may include its SGSN number. If the old SGSN receives the SGSN number of the new SGSN it shall include this number when informing interworking core network nodes that there is a need to re-route previously sent requests against the new SGSN, e.g. in LCS the GMLC will use this SGSN number to re-activate the Location Request to the new SGSN (3GPP TS 23.271 [24])..

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

The MS Validated indicates that the new SGSN has successfully authenticated the MS. IMSI shall be included if MS Validated indicates 'Yes'.

The P-TMSI Signature is conditionally provided by the MS to the new SGSN for identification checking purposes as defined in 3GPP TS 23.060 [4] and 3GPP TS 24.008 [5]. If the MS has provided the P-TMSI Signature, the new SGSN shall include this parameter in the SGSN Context Request message.

The optional Private Extension contains vendor or operator specific information.

Table 26: Information Elements in a SGSN Context Request

Information element	Presence requirement	Reference
IMSI	Conditional	7.7.2
Routeing Area Identity (RAI)	Mandatory	7.7.3
Temporary Logical Link Identifier (TLLI)	Conditional	7.7.4
Packet TMSI (P-TMSI)	Conditional	7.7.5
P-TMSI Signature	Conditional	7.7.9
MS Validated	Optional	7.7.10
Tunnel Endpoint Identifier Control Plane	Mandatory	7.7.14
SGSN Address for Control Plane	Mandatory	7.7.32
~~Private Extension~~SGSN Number	Optional	7.7.47~~6~~
~~SGSN Number~~Hop Counter	Optional	7.7.~~47~~xx
~~Hop Counter~~Private Extension	Optional	7.7.4.6~~59~~

**********next modification**********

7.7 Information Elements

A GTP Signalling message may contain several information elements. The TLV (Type, Length, Value) or TV (Type, Value) encoding format shall be used for the GTP information elements. The information elements shall be sorted, with the Type fields in ascending order, in the signalling messages. The Length field contains the length of the information element excluding the Type and Length field.

For all the length fields, bit 8 of the lowest numbered octet is the most significant bit and bit 1 of the highest numbered octet is the least significant bit.

Within information elements, certain fields may be described as spare. These bits shall be transmitted with the value defined for them. To allow for future features, the receiver shall not evaluate these bits.

The most significant bit in the Type field is set to 0 when the TV format is used and set to 1 for the TLV format.

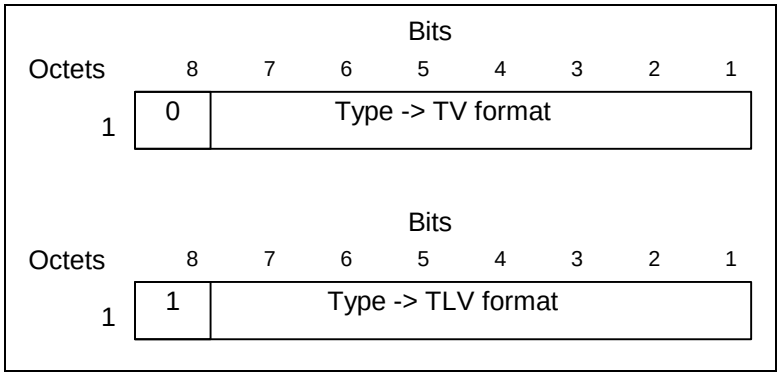

Figure 8: Type field for TV and TLV format

Table 37: Information Elements

IE Type Value	Format	Information Element	Reference
1	TV	Cause	7.7.1
2	TV	International Mobile Subscriber Identity (IMSI)	7.7.2
3	TV	Routeing Area Identity (RAI)	7.7.3
4	TV	Temporary Logical Link Identity (TLLI)	7.7.4
5	TV	Packet TMSI (P-TMSI)	7.7.5
6-7	Spare		
8	TV	Reordering Required	7.7.6
9	TV	Authentication Triplet	7.7.7
10	Spare		
11	TV	MAP Cause	7.7.8
12	TV	P-TMSI Signature	7.7.9
13	TV	MS Validated	7.7.10
14	TV	Recovery	7.7.11
15	TV	Selection Mode	7.7.12
16	TV	Tunnel Endpoint Identifier Data I	7.7.13
17	TV	Tunnel Endpoint Identifier Control Plane	7.7.14
18	TV	Tunnel Endpoint Identifier Data II	7.7.15
19	TV	Teardown Ind	7.7.16
20	TV	NSAPI	7.7.17
21	TV	RANAP Cause	7.7.18
22	TV	RAB Context	7.7.19
23	TV	Radio Priority SMS	7.7.20
24	TV	Radio Priority	7.7.21
25	TV	Packet Flow Id	7.7.22
26	TV	Charging Characteristics	7.7.23
27	TV	Trace Reference	7.7.24
28	TV	Trace Type	7.7.25
29	TV	MS Not Reachable Reason	7.7.25A
30	TV	Radio Priority LCS	7.7.25B

IE Type Value	Format	Information Element	Reference
117-126	Reserved for the GPRS charging protocol (see GTP' in 3GPP TS 32.215 [18])		
127	TV	Charging ID	7.7.26
128	TLV	End User Address	7.7.27
129	TLV	MM Context	7.7.28
130	TLV	PDP Context	7.7.29
131	TLV	Access Point Name	7.7.30
132	TLV	Protocol Configuration Options	7.7.31
133	TLV	GSN Address	7.7.32
134	TLV	MS International PSTN/ISDN Number (MSISDN)	7.7.33
135	TLV	Quality of Service Profile	7.7.34
136	TLV	Authentication Quintuplet	7.7.35
137	TLV	Traffic Flow Template	7.7.36
138	TLV	Target Identification	7.7.37
139	TLV	UTRAN Transparent Container	7.7.38
140	TLV	RAB Setup Information	7.7.39
141	TLV	Extension Header Type List	7.7.40
142	TLV	Trigger Id	7.7.41
143	TLV	OMC Identity	7.7.42
144	TLV	RAN Transparent Container	7.7.43
145	TLV	PDP Context Prioritization	7.7.45
146	TLV	Additional RAB Setup Information	7.7.45A
147	TLV	SGSN Number	7.7.47
148	TLV	Common Flags	7.7.48
149	TLV	APN Restriction	7.7.49
150	TLV	Radio Priority LCS	7.7.25B
151	TLV	RAT Type	7.7.50
152	TLV	User Location Information	7.7.51
153	TLV	MS Time Zone	7.7.52
154	TLV	IMEI(SV)	7.7.53
155	TLV	CAMEL Charging Information Container	7.7.54
156	TLV	MBMS UE Context	7.7.55
157	TLV	Temporary Mobile Group Identity (TMGI)	7.7.56
158	TLV	RIM Routing Address	7.7.57
159	TLV	MBMS Protocol Configuration Options	7.7.58
xxx	TLV	Hop Counter	7.7.~~59~~xx
239-250	Reserved for the GPRS charging protocol (see GTP' in 3GPP TS 32.215 [18])		
251	TLV	Charging Gateway Address	7.7.44
252-254	Reserved for the GPRS charging protocol (see GTP' in 3GPP TS 32.215 [18])		
255	TLV	Private Extension	7.7.46

**********next modification**********

7.7.59 Hop Counter

Where Intra Domain Connection of RAN Nodes to Multiple CN Nodes is applied, the Hop Counter ~~is~~may be used to prevent endless loops when relaying Identification Request messages and SGSN Context Request messages. The maximum value is operator specific and shall not be lower than 1.

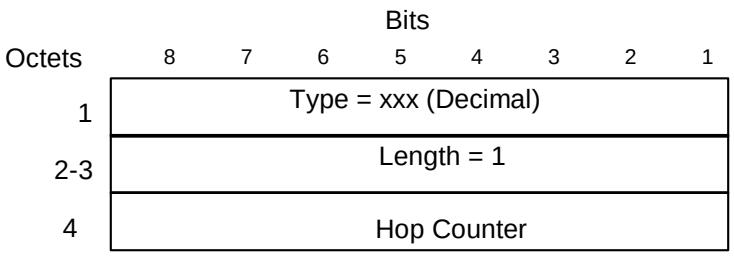

Figure 7.7.59.1: Hop Counter Information Element