

3GPP TSG CT Plenary Meeting #28
1st – 3rd June 2005 Quebec, Canada.

CP-050097

Source: TSG CT WG4
Title: Corrections on Work Item small Technical Enhancements and Improvements on Camel Rel-6
Agenda item: 9.24
Document for: APPROVAL

Doc-2nd-Level	Spec	CR #	Rev	Rel	Tdoc Title	CAT	C_Version
C4-050901	23.078	780	4	Rel-6	No Reply timer clarification	F	6.5.0
C4-050787	23.078	763	1	Rel-6	DP T_No_Answer	F	6.5.0
C4-050620	23.078	769		Rel-6	Correction to Outstanding Request Counter setting at IDP	F	6.5.0
C4-050614	23.078	765		Rel-6	Correction to Conditional triggering for SCUDIF calls	F	6.5.0
C4-050788	23.278	048	1	Rel-6	Removal of references to HLR for CAMEL control of IMS	F	6.0.0

CHANGE REQUEST

⌘ **23.078 CR 765** ⌘ rev - ⌘ Current version: **6.5.0** ⌘

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Correction to conditional triggering for SCUDIF call		
Source:	⌘ Ericsson		
Work item code:	⌘ TEI6	Date:	⌘ 13 April 2005
Category:	⌘ F Use <u>one</u> 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)	Release:	⌘ Rel-6 Use <u>one</u> 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:	⌘ The description of the conditional triggering of CAMEL services for SCUDIF calls is incomplete. TS 23.078 specifies the conditional triggering based on Basic Service. The Basic Service trigger condition entails that CAMEL service triggering shall take place when the Basic service of the call matches a stored Basic Service or is member of a stored Basic Service Group. This description does not take into account that a call may be established with <u>two Basic Services</u> . SCUDIF calls are established with two Basic Services: TS11 and BS30. Hence, it is not clear how the triggering check shall be performed for the SCUDIF call. This issue applies to conditional triggering check for DP Collected Info (in O-CSI) and for DP Terminating Attempt Authorised (in T-CSI and VT-CSI). The present CR proposes that for a SCUDIF call, the Basic Service trigger condition is fulfilled if one or both of the Basic Services is included in the Basic Service list (either specifically or as a member of a Basic Service Group).
Summary of change:	⌘ Correct the description of the Basic Service triggering check in section 4.2.
Consequences if not approved:	⌘ Inconsistent conditional triggering of SCUDIF calls. Conditional triggering is a useful mechanism that operators may use for triggering a CAMEL service for selected calls only. It is important that this mechanism is properly specified for SCUDIF calls. Otherwise, this may lead to unpredictable service behaviour for SCUDIF calls.

Clauses affected: ⌘ 4.2.1.2.1, 4.2.1.2.4

**Other specs
affected:**

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

⌘

Other comments: ⌘

***** *First modification* *****

4.2 Detection Points (DPs)

4.2.1 Definition and description

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4.2.1.2 Criteria

Criteria are the conditions that must be met in order for the gsmSSF to request instructions from the gsmSCF.

4.2.1.2.1 Criteria at DP Collected_Info

The criteria for a mobile originating call are checked in the originating MSC.

The criteria for a mobile forwarded call are checked in the forwarding MSC.

For early forwarded calls in the GMSC, the HLR may decide not to include the DP Collected_Info trigger criteria in the subscriber data sent to the GMSC if the trigger criteria for the call are not met.

For optimally routed late forwarded calls, the MSC may decide not to include the DP Collected_Info trigger criteria in the Resume Call Handling information flow sent to the GMSC, if the trigger criteria for the call are not met.

The following criteria are applicable for DP Collected_Info:

- Destination number triggering criterion: The HLR may store a list of up to 10 destination numbers and/or up to 3 number lengths. There is no restriction on the nature of address. There is no restriction on the numbering plan indicator. This criterion may be defined to be either "enabling" or "inhibiting".
- Basic service triggering criterion: The HLR may store a list of up to 5 basic service codes, each of which may represent an individual basic service or a basic service group. Compound basic service group codes, as defined in 3GPP TS 29.002 [34], are not allowed for conditional triggering. This list is a triggering list.
- Forwarding triggering criterion: The HLR may store an indicator that triggering shall occur only for a call which has been subject to the Call Forwarding supplementary service, Call Deflection supplementary service or CAMEL call forwarding. This criterion may be defined to be either "enabling" or "inhibiting".

For MO calls, triggering at DP Collected_Info shall be strictly based on the number received over the access network. No service selection information, such as * and # digits, or carrier selection information, dialled by the subscriber, shall be removed from the number before conditional triggering check takes place.

For MF calls at the VMSC, triggering at DP Collected_Info shall be strictly based on the number received over the access network (the Deflected-to-Number in the case of Call Deflection), the Forwarded-to-Number retained in the VLR or the Destination Routing Address received in the Connect information flow from the gsmSCF during a Terminating CAMEL Service at the VMSC.

No service selection information or carrier selection information shall be removed from the number before conditional triggering check takes place.

For MF calls at the GMSC, triggering at DP Collected_Info shall be strictly based on the Forwarded-to-Number received from HLR, on the Destination Routing Address received in the Connect information flow from the gsmSCF during a Terminating CAMEL Service or on the Forwarded-to-Number received in the Resume Call Handling information flow.

No service selection information or carrier selection information shall be removed from the number before conditional triggering check takes place.

One or more DP criteria may be applicable. All applicable triggering criteria must be satisfied before the dialogue is established with the gsmSCF.

If the destination number triggering criterion is enabling, then the gsmSSF may establish a dialogue with the gsmSCF if:

- the destination number matches one of the destination number strings defined in the list, or
- the length of the destination number matches one of the destination number lengths defined in the list.

In this test the destination number matches one of the destination number strings in the list if:

- the nature of address of destination number is the same as the nature of address of the destination number string (The numbering plan indicator is not compared);
- the destination number is at least as long as the destination number string in the list, and
- all the digits in the destination number string in the list match the leading digits of the destination number.

If the destination number triggering criterion is inhibiting, then the gsmSSF may establish a dialogue with the gsmSCF if:

- the destination number does not match any of the destination number strings defined in the list, and
- the length of the destination number does not match any of the destination number lengths defined in the list.

In this test the destination number matches one of the destination number strings in the list if:

- the nature of address of the destination number is the same as the nature of address of the destination number string (The numbering plan indicator is not compared);
- the destination number is at least as long as the destination number string in the list, and
- all the digits in the destination number string in the list match the leading digits of the destination number.

The basic service triggering criterion is met if the basic service for the call matches a stored individual basic service code or is a member of the group defined by a stored basic service group code. [For a SCUDIF call \(see 3GPP TS 23.172 \[27\]\), the basic service triggering criterion is met if one or both the preferred basic service and the less preferred basic service for the call match a stored individual basic service code or is a member of the group defined by a stored basic service group code.](#) For the purpose of this paragraph a general bearer service is a member of the corresponding bearer service group.

If the forwarding triggering criterion is enabling, then the gsmSSF may establish a dialogue with the gsmSCF only if the call has been subject to CAMEL call forwarding or the Call Forwarding supplementary service. If the forwarding triggering criterion is inhibiting, then the gsmSSF may establish a dialogue with the gsmSCF only if the call has not been subject to CAMEL call forwarding or the Call Forwarding supplementary service.

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4.2.1.2.4 Criteria at DP Terminating_Attempt_Authorised

The HLR may store a list of up to 5 basic service codes, each of which may represent an individual basic service or a basic service group. Compound basic service group codes, as defined in 3GPP TS 29.002 [34], are not allowed for conditional triggering. This list is a triggering list.

The criteria for DP Terminating_Attempt_Authorised are checked in the HLR for the GMSC or in the VLR for the MSC. The HLR shall only include T-CSI in the CAMEL subscription information sent to the GMSC if the criteria are met. The VLR shall only include VT-CSI in the CAMEL subscription information sent to the MSC if the criteria are met.

The basic service criterion is met if the basic service for the call matches a stored individual basic service code or is a member of the group defined by a stored basic service group code. [For a SCUDIF call \(see 3GPP TS 23.172 \[27\]\), the basic service triggering criterion is met if one or both the preferred basic service and the less preferred basic service for the call match a stored individual basic service code or is a member of the group defined by a stored basic service group code.](#) For the purpose of this paragraph a general bearer service is a member of the corresponding bearer service group.

***** End of document *****

CHANGE REQUEST

⌘ **23.078 CR 769** ⌘ rev - ⌘ Current version: **6.5.0** ⌘

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Correction to Outstanding Request Counter setting at IDP handling		
Source:	⌘ Ericsson		
Work item code:	⌘ TEI6	Date:	⌘ 13 april 2005
Category:	⌘ F Use <u>one</u> 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)	Release:	⌘ Rel-6 Use <u>one</u> 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: ⌘ Sheet 7 of Process CS_gsmSSF contains incomplete information regarding the setting of the Outstanding Request Counter (ORC). The task box immediately following the Int_InitialDP signal contains, amongst others, the following set of tasks:

For the leg on which the TDP occurs

ORC_Leg (legID) := 1

For all other legs of the CS

ORC_Leg (legID) := 0

The first task (For the leg on which the TDP occurs, ORC_Leg (legID) := 1) does not give an indication on which leg the TDP occurs. There is further in TS 23.078 no indication on which leg a TDP occurs.

A TDP always occurs on **leg 2**. Prior to the implementation of CR 733 on TS 23.078, above-referred task box contained the following tasks:

For the leg on which the TDP occurs

ORC_Leg (Leg 2) := 1

For all other legs of the CS

ORC_Leg (legID) := 0

Hence, the task box no longer indicates for which leg the TDP occurs and hence

for which leg the ORC shall be set to 1.

CR 733 on TS 23.078 changed the task “ORC_Leg (Leg 2) := 1” to “ORC_Leg (legID) := 1” and hence introduced the ambiguity. The reasoning of CR 733 is faulty; it argues that e.g. TDP Route Select Failure occurs on leg 1. That is incorrect. TDP Route Select Failure and other TDPs occur on leg 2. Consider e.g. the following rule that is specified in section 4.5.7.4:

- 11) The processing of a Connect with a LegID causes the number of required resumptions for that leg to be decremented by 1. The processing of a Connect without a LegID causes the number of resumptions for the LegID = 2 to be set to 0.

If TDP Route Select Failure would occur and gsmSCF responds with CAP Connect without Leg Id, then, according to rule 11 from section 4.5.7.4, the gsmSSF applies the Connect to Leg 2. This is also reflected in Process CS_gsmSSF.

Furthermore, CAP Initial DP does not have the ability to report a leg Id value to the gsmSCF.

The present CR proposes therefore that a sentence be added to section 4.5.7.4, indicating that a TDP always occurs on leg 2.

Summary of change: ⌘ Textual correction to section 4.5.7.4.

Consequences if not approved: ⌘ Ambiguity for designers for setting ORC value at IDP processing. gsmSSF or gsmSCF implementation may set the ORC counter for the wrong leg, resulting in hanging gsmSSF processes or hanging gsmSCF processes.

Clauses affected: ⌘ section 4.5.7.4

Other specs affected:

Y	N
⌘	X
⌘	X
⌘	X

Other core specifications ⌘
Test specifications ⌘
O&M Specifications ⌘

Other comments: ⌘

For information

Process CS_gsmSSF

5(62)

/* Invocation of CS_gsmSSF */

/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA_gsmSSF unless otherwise marked. */

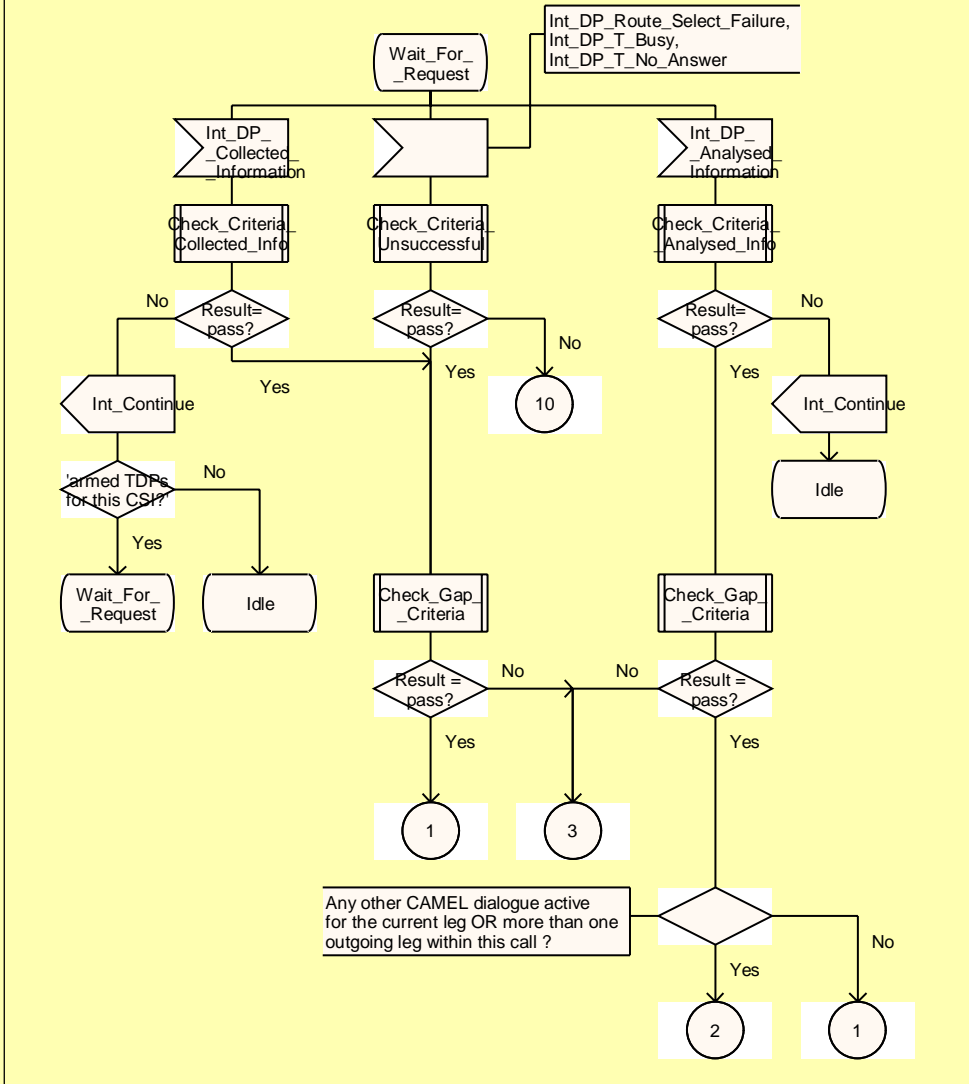


Figure 4.99-5: Process CS_gsmSSF (sheet 5)

Process CS_gsmSSF

6(62)

/* Invocation of CS_gsmSSF */

/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA_gsmSSF unless otherwise marked. */

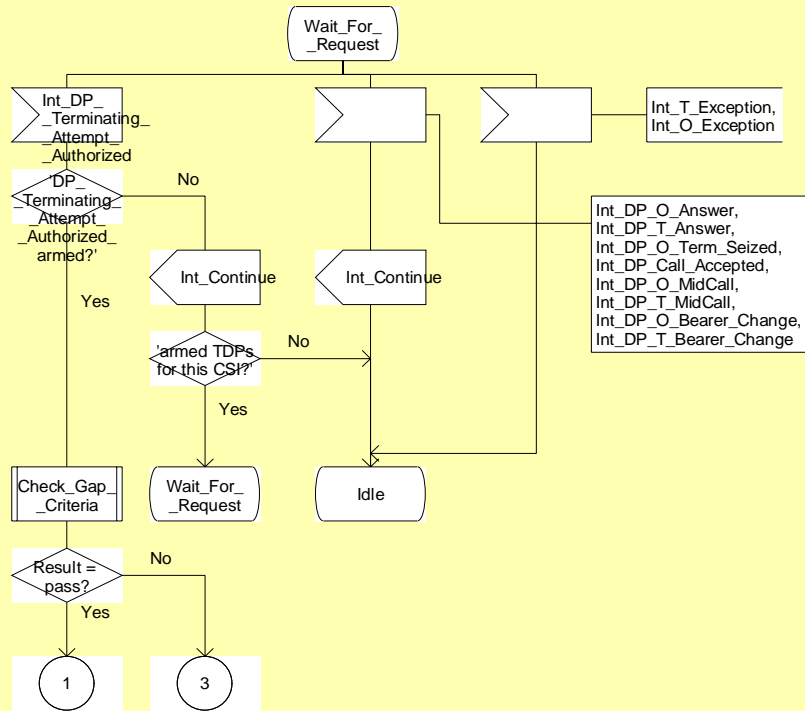


Figure 4.99-6: Process CS_gsmSSF (sheet 6)

Process CS_gsmSSF

7(62)

/* Invocation of CS_gsmSSF */

/* Signals to/from the left are to/from the MSC; signals to/from the right are to/from the process CSA_gsmSSF unless otherwise marked. */

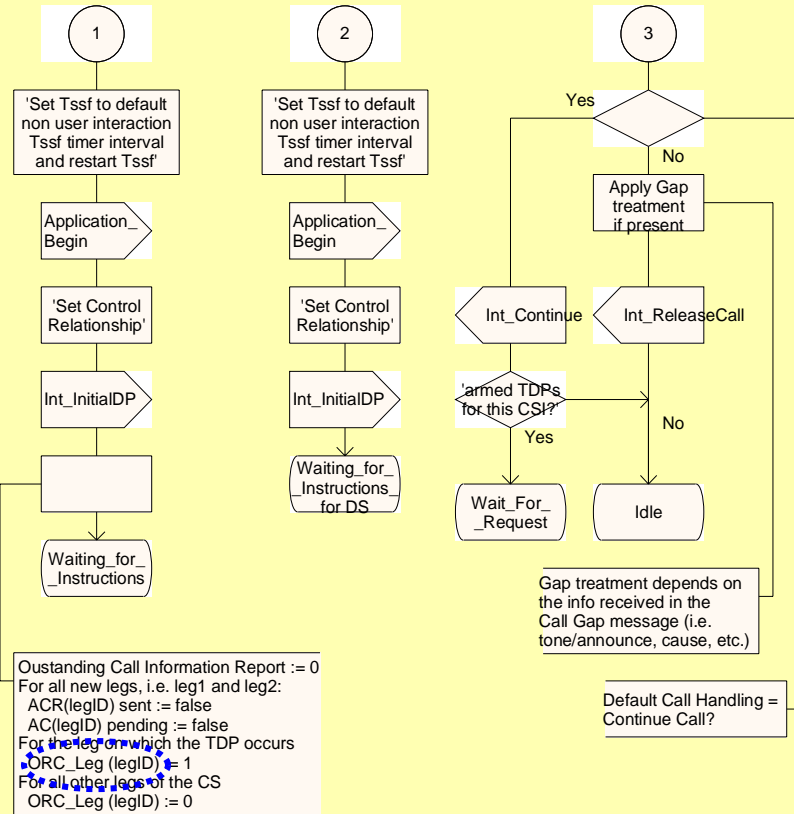


Figure 4.99-7: Process CS_gsmSSF (sheet 7)

***** First change *****

4.5.7 Handling of mobile calls in the gsmSSF

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4.5.7.4 Outstanding Request Counter and Rules for CAMEL

In the following the rules on handling of the 'outstanding requests' variables in the process CS_gsmSSF are given. They are storing the number of required resumptions.

- 1) There shall be one outstanding requests variable ORC_Leg (legID) per leg to handle TDP-R and EDP-R reports and ICA.
- 2) In addition there shall be one outstanding requests variable ORC_CS (CSID) per call segment to handle the CPH IFs.
- 3) A leg will only be resumed if the ORC_Leg (legID) variable for this leg and the ORC_CS (CSID) for the call segment containing the leg are 0.
- 4) Events that cause the suspension of the call processing are signalling events armed as TDP-Rs or EDP-Rs, or the processing of a CPH IF (Disconnect Leg, Split Leg or Move Leg) or Initiate Call Attempt sent by the gsmSCF.
 - a) For TDP-R or EDP-R events the number of required resumptions relative to the associated leg will be incremented by 1. [For TDP-R, the associated leg is always leg 2.](#)
 - b) For CPH IFs the number of required resumptions per call segment will be set to one if it is still 0. Otherwise the number of resumptions remains unchanged. For Split Leg the number of required resumptions for each of the source call segment and the target call segment will be set to one if it is still 0
 - c) For ICA the number of required resumptions relative to the associated leg will be set to 1.
- 5) In addition the CS_gsmSSF stores information about the events (DP with the associated leg, CPH) that require resumption and keep track of the order of events for TDP-Rs and EDP-Rs for each leg. The order of resumptions for a leg shall be the order in which the suspension events occurred for that leg.
- 6) For DP event resumption Continue with Argument with legID or Continue are valid. If not otherwise stated below, for each received resumption the number of required resumption for that leg will be decremented by 1 if it was a valid resumption for the event that has to be handled first. Decrementing of the outstanding requests variables does not go below 0.
- 7) For CPH resumption Continue with Argument with CSID is valid. On receipt of the resumption the number of required resumptions for that call segment will be set to 0.
- 8) For ICA resumption Continue with Argument with LegId is valid. On receipt of the resumption the number of required resumptions for that Leg will be set to 0.
- 9) If Continue with Argument with neither LegID nor CSID is received, then the number of resumptions required for the leg that was reported will be decremented by 1. If reporting is performed on more than one leg, then the related leg will be selected following the sequence of the reporting.
- 10) If Continue is received, then the number of resumptions required for the leg that was reported will be decremented by 1. If reporting is performed on more than one leg, then the related leg will be selected following the sequence of the reporting.
- 11) The processing of a Connect with a LegID causes the number of required resumptions for that leg to be decremented by 1. The processing of a Connect without a LegID causes the number of resumptions for the LegID = 2 to be set to 0.
- 12) The processing of Tssf expiry and of TC Abort causes the number of resumptions required to be set to 0 and the call processing to be resumed. All stored resumption events are discarded.
- 13) On receipt of a Disconnect Leg the number of resumptions required for the corresponding leg is set to 0.

14) If Release Call is used, nothing needs to be resumed.

***** *End of document* *****

CHANGE REQUEST

⌘ **23.078 CR 763** ⌘ rev **1** ⌘ 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:	⌘ Correction to DP T_No_Answer		
Source:	⌘ Siemens		
Work item code:	⌘ TEI6	Date:	⌘ 27/04/2005
Category:	⌘ F	Release:	⌘ Rel-6
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)	Ph2 (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)
			Rel-7 (Release 7)

Reason for change:	⌘ to align 23.078 with 23.018 (Process MT_GMSC)		
Summary of change:	⌘ Add to the description of DP T_No_Answer the indication that a no answer event is determined from a cause IE in the ISUP Release message		
Consequences if not approved:	⌘ incorrect triggering		

Clauses affected:	⌘ table 4.3						
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;"><input type="checkbox"/></td> <td style="padding: 2px;"><input checked="" type="checkbox"/></td> </tr> </table>	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Other core specifications	⌘
	Y	N					
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<input type="checkbox"/>	<input checked="" type="checkbox"/>	Test specifications	⌘				
<input type="checkbox"/>	<input checked="" type="checkbox"/>	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/](http://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.

Table 4.3: Description of T-BCSM DPs in the GMSC or VMSC

CAMEL Detection Point:	DP Type	Description:
DP Terminating_Attempt_Authorised	TDP-R	Indication that the T-CSI / VT-CSI is analysed.
DP T_Busy	TDP-R (note 2), EDP-N, EDP-R	Indication that: <ul style="list-style-type: none"> - a busy indication is received from the destination exchange, - Busy event is determined in the visited MSC, - Not reachable or call establishment failure event is determined from the HLR response or upon a cause IE in the ISUP Release message.
DP T_No_Answer	TDP-R (note 2), EDP-N, EDP-R	Indication that: <ul style="list-style-type: none"> - an application timer associated with the T_No_Answer DP expires, - a no answer event is determined from a cause IE in the ISUP Release message.
DP Call_Accepted	EDP-N, EDP-R	Indication that the called party is being alerted.
DP T_Answer	EDP-N, EDP-R	Call is accepted and answered by terminating party.
DP T_Mid_Call	EDP-N, EDP-R	Indication that a service/service feature is received from the terminating party (DTMF - note 3, note 4).
DP T_Change_Of_Position	EDP-N	Indication that the terminating party has changed position (note 5).
DP T_Disconnect	EDP-N, EDP-R	A disconnect indication is received from the terminating party or from the originating party.
DP T_Abandon	EDP-N, EDP-R	A disconnect indication is received from the originating party during the call establishment procedure.
DP T_Service_Change	EDP-N	Indication that the bearer service has changed.
NOTE 1: The DPs are defined in ITU-T Recommendation Q.1224 [44].		
NOTE 2: DP T_No_Answer and DP T_Busy shall be reported as TDP-R when there is no relationship to gsmSCF. If a relationship to gsmSCF is already open, it shall be reported as EDP-R or EDP-N if armed so.		
NOTE 3: DTMF is only applicable for the VMSC but not for the GMSC. DTMF is not applicable at the T_Alerting PIC.		
NOTE 4: Call Processing is suspended at DP T_Mid_Call if a Call Party Handling information flow is handled. However, the DP is not reported.		
NOTE 5: DP T_Change_Of_Position is applicable only for the Mobile Terminating Call in the VMSC.		

CHANGE REQUEST

⌘ **23.278 CR 048** ⌘ rev **1** ⌘ Current version: **6.0.0** ⌘

Proposed change affects: UICC apps ME Radio Access Network Core Network

Title:	⌘ Removal of references to HLR for CAMEL control of IMS		
Source:	⌘ Ericsson		
Work item code:	⌘ CAMEL	Date:	⌘ 27/04/2005
Category:	⌘ F	Release:	⌘ Rel-6
	Use <u>one</u> 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)		Use <u>one</u> 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:	⌘ The HLR appears in TS 23.278 as a node handling CAMEL functions for IMS. This is not correct. CAMEL subscription data for IMS is contained in HSS, not in HLR.
Summary of change:	⌘ References to HLR as a node containing subscription data for CAMEL control of IMS, have been removed in the document. The references to HLR in section 5 and 6 shall be retained. These references are needed since they apply to a document in Release 99 and there was no HSS in that release, only HLR.
Consequences if not approved:	⌘ The TS will be confusing. It will seem to be mandatory to implement IMS functions in the HLR part of the HSS, which is not the case. Implementing IMS functions in the HLR may have a higher cost and lower performance.

Clauses affected:	⌘ 3.1, 4.3, 4.4.1.4.1, 4.6.1.1, 4.7.4, 4.7.5.1.1, 4.7.5.2						
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <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;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></td> </tr> </table> Other core specifications	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⌘	
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<input type="checkbox"/>	<input checked="" type="checkbox"/>						
Other comments:	⌘						

>>>>>>>>>> First modified section <<<<<<<<<<<<

3.1 Definitions

Home Subscriber Server (HSS): Functional entity containing the subscription related information to support the network entities actually handling calls/sessions. For subscribers requiring CAMEL support, the HSS includes ~~somepartial-HLR~~ functionality [that was present in the HLR in previous 3GPP releases](#) for storing the information relevant to the current subscription regarding CAMEL Subscription Information for IMS. The HSS sends IM CAMEL Subscription Information data to the IM-SSF and CSE using a MAP interface.

IP Multimedia Service Switching Function (IM-SSF): CAMEL functional entity that provides the interworking between SIP session control and the CAMEL state models. The IM-SSF also provides the CAMEL interface to HSS for downloading the subscriber's CAMEL Subscription Information data for IMS.

IP Multimedia Basic Call State Model (IM-BCSM): IM-BCSM provides a high-level model of CSCF activities required to establish and maintain communication paths for users. As such, it identifies a set of basic call activities in a CSCF and shows how these activities are joined together to process a basic call.

IP Multimedia CAMEL Subscription Information (IM-CSI): IM-CSI identifies the subscriber as having IP Multimedia CAMEL services.

IP Multimedia session: IP Multimedia session and IP Multimedia call are treated as equivalent in this specification.

Originating IP Multimedia Basic Call State Model (O-IM-BCSM): originating half of the IM-BCSM. The O-IM-BCSM corresponds to that portion of the IM-BCSM associated with the originating party.

Originating IP Multimedia CAMEL Subscription Information (O-IM-CSI): O-IM-CSI identifies the subscriber as having originating IP Multimedia CAMEL services.

Terminating IP Multimedia Basic Call State Model (T-IM-BCSM): terminating half of the IM-BCSM. The T-IM-BCSM corresponds to that portion of the IM-BCSM associated with the terminating party.

Terminating IP Multimedia CAMEL Subscription Information (T-IM-CSI): T-IM-CSI identifies the subscriber as having terminating IP Multimedia CAMEL services.

>>>>>>>>>> End of first modified section <<<<<<<<<<<<

>>>>>>>>>> Second modified section <<<<<<<<<<<<

4.3.1 Arming/Disarming mechanism

A DP may be statically armed or dynamically armed.

The following arming rules apply:

- DP for a mobile originating call handling is statically armed in the IM-SSF as a result of O-IM-CSI and D-IM-CSI data delivery from the HSS. Likewise, DP for mobile terminating call handling is statically armed in the IM-SSF as a result of VT-IM-CSI data delivery from the HSS. Static arming of DPs in the IM-SSF occurs during the UE's registration in the IMS CN. Basically, when the IM-SSF is notified of the UE's initial registration, the IM-SSF queries the HSS for the subscriber's CAMEL Subscription Information via the Si interface.
- A DP is dynamically armed by the gsmSCF within the context of a CAMEL control relationship as a result of IM-SSF receiving the RequestReportBCSMEvent operation.
- A Request Report BCSM Event information flow for a detection point for a leg overwrites any previous Request Report BCSM Event information flow for that detection point for that leg.

The following disarming rules apply:

- A statically armed DP is disarmed when the IP Multimedia CSI data is withdrawn in the HSS/~~HLR~~. Only TDP-Rs can be disarmed using this mechanism.
- If an armed EDP is met, then it is disarmed.
- If an EDP is met that causes the release of the related leg, then all EDPs related to that leg are disarmed.
- If a call session is released, then all EDPs related to that call session are disarmed.
- If an EDP is met, then other EDPS are disarmed, in accordance with the implicit disarming rule table specified in TS 23.078 Rel-99 4 (refer to the section for "Rules for Implicit Disarming of Event Detection Points").

If an EDP is armed, it can be explicitly disarmed by the gsmSCF by means of the RequestReportBCSMEvent information flow.

>>>>>>>>>> End of second modified section <<<<<<<<<<<<

>>>>>>>>>> Third modified section <<<<<<<<<<<<

4.3.2 Criteria

Criteria are the conditions that must be met in order for the IM-SSF to request instructions from the gsmSCF.

DP criteria are checked in the IM-SSF. Criteria for originating DPs (i.e. Collected_Info, Analysed_Information, and Route_Select_Failure TDPs) are checked in the IM-SSF associated with the originating UE's S-CSCF. Criteria for terminating DPs (i.e. T_Busy and T_No_Answer) are checked in the IM-SSF associated with the terminating UE's S-CSCF.

Based on the Initial Filter Criteria information, the S-CSCF forwards the SIP message to the IM-SSF. The DP encountered is identified based on the SIP message received from the S-CSCF. Refer to table 4.2 and table 4.4 for mapping of SIP messages to CAMEL IM-BCSM Detection Points.

4.3.2.1 Criteria at Collected_Info

The following criteria are applicable for DP Collected_Info:

- Destination number triggering criterion: The ~~HLR~~-HSS may store a list of up to 10 destination numbers and/or up to 3 number lengths. There is no restriction on the nature of address. There is no restriction on the numbering plan indicator. This criterion may be defined to be either "enabling" or "inhibiting". This criterion does not match when the destination number received from the S-CSCF is not an ISDN number. In this case, a dialogue with the gsmSCF may or may not be established depending on whether the criterion is inhibiting or enabling respectively.

Triggering at DP Collected_Info shall be strictly based on the destination number received from the S-CSCF.

The destination number received from the S-CSCF shall not be modified before conditional triggering check takes place.

If the destination number triggering criterion is enabling, then the IM-SSF may establish a dialogue with the gsmSCF if:

- the destination number matches one of the destination number strings defined in the list; or
- the length of the destination number matches one of the destination number lengths defined in the list.

In this test the destination number matches one of the destination number strings in the list if:

- the nature of address of destination number is the same as the nature of address of the destination number string;
- the destination number is at least as long as the destination number string in the list; and
- all the digits in the destination number string in the list match the leading digits of the destination number.

If the destination number triggering criterion is inhibiting, then the IM-SSF may establish a dialogue with the gsmSCF if:

- the destination number does not match any of the destination number strings defined in the list; and
- the length of the destination number does not match any of the destination number lengths defined in the list.

In this test the destination number matches one of the destination number strings in the list if:

- the nature of address of destination number is the same as the nature of address of the destination number string;
- the destination number is at least as long as the destination number string in the list; and
- all the digits in the destination number string in the list match the leading digits of the destination number.

4.3.2.2 Criteria at DP Analysed_Information

4.3.2.2.1 General

The following criteria are applicable for DP Analysed_Information:

- Destination number triggering criterion: The ~~HLR~~-HSS may store a list of up to 10 destination numbers. There is no restriction on the nature of address. There is no restriction on the numbering plan indicator. This criterion does not match when the destination number received from the S-CSCF or the gsmSCF is not an ISDN number.

NOTE: The order in which the destination number criteria are checked in the IM-SSF is not determined. Hence, overlapping destination number criteria (e.g. use of "0800" and "0800123" for two different services) should be avoided, because they lead to unpredictable behaviour (i.e. either service might be triggered).

Triggering at DP Analysed_Info shall be based on the destination number received in the Connect operation from the gsmSCF during a Mobile Originating CAMEL Service.

4.3.2.2.2 Number comparison

The following procedure shall be performed for the comparison of the destination number triggering criterion and the address information in the given order.

1. The numbering plan indicators of both numbers are ignored.
2. The type of number/nature of address indicators of both numbers are compared. If there is a match of the type of number indicator, then the check shall be performed by comparing the digits as defined in step 6. If there is no match of the type of number the comparison procedure shall continue as follows.
3. If either or both of the address information and destination number triggering criterion includes a type of number/nature of address indicator other than "unknown", "national (significant) number" or "international number" then the destination number does not match the destination number triggering criterion. Otherwise the comparison procedure shall continue as follows.
4. If there is a number (address information or destination number triggering criterion) with type of number/nature of address "unknown" this number shall be translated based on the numbering plan of the serving entity in either of the following ways:
 - if the leading digits refer to an international prefix, those digits shall be removed and the type of number/nature of address shall be set to "international number".
 - if the leading digits refer to a national (trunk) prefix, those digits shall be removed and the type of number/nature of address shall be set to "national (significant) number".

If the leading digits refer neither to an international prefix nor to a national (trunk) prefix, then the destination number does not match the destination number triggering criterion.

If there is a match of the type of number/nature of address indicator after this number modification, then the check shall be performed by comparing the digits as defined in step 6, otherwise the comparison procedure shall continue as follows.

5. If the type of number/nature of address of the address information or of the destination number triggering criterion is "national (significant) number" this number shall be translated based on the numbering plan of the serving entity to international format by adding the country code of the serving entity to the number string. After this modification both numbers shall be in international format and shall be checked by comparing the digits as defined in step 6.
6. If the number digits of the address information are compared with the number digits of the destination number triggering criterion, then there is a match if:
 - the destination number is at least as long as the destination number string of the destination number triggering criterion; and
 - all the digits in the destination number string of the destination number triggering criterion match the leading digits of the destination number.

The check described in this clause shall be repeated for every number contained in the destination number triggering criterion of the D-IM-CSI until a match is recognised and DP Analysed_Info is triggered, or until all the destination numbers have been checked without a match being recognised. In the latter case DP Analysed_Info is not triggered.

4.3.2.3 Criteria at DP Route_Select_Failure

The [HLR](#)-[HSS](#) may store a list of up to 5 cause values.

The following criteria are applicable for DP Route_Select_Failure:

- Release cause code.

The trigger criteria is met if the cause code received from the terminating party's network (could be a PSTN or an IMS network) is equal to at least one of the cause codes in the trigger criteria list.

If a O-IM-BCSM was already invoked and there is a relationship with the gsmSCF at that moment, then no additional relationship shall be initiated.

4.3.2.4 Criteria at DP T_Busy and T_No_Answer

The HSS may store a list of up to 5 cause values.

The triggering is based on the release cause code received from terminating UE's P-CSCF.

The following criteria are applicable for DP T_Busy and T_No_Answer:

- Release cause code.

The trigger criteria are met if the cause code received from the terminating UE's P-CSCF is equal to at least one of the cause codes in the trigger criteria list.

If trigger criteria are satisfied, then the corresponding Service Logic shall be invoked.

>>>>>>>>>> End of third modified section <<<<<<<<<<<

>>>>>>>>>> Fourth modified section <<<<<<<<<<<<

4.4 Description of CAMEL Subscriber Data

4.4.1 IP Multimedia CAMEL Subscription Information (IM-CSI)

...

4.4.1.4 Other CAMEL Data

4.4.1.4.1 gsmSCF address list for CSI

The gsmSCF address list for CSI indicates a list of gsmSCF addresses to which Notification on Change of Subscriber Data is to be sent. In order to provide Notification on Change of Subscriber Data to the IM-SSF, the IM-SSF address shall be included in the gsmSCF address list.

The IM-SSF address is added to the address list for notification in the HSS ~~HLR~~ as described in subclause 4.6.1.2.

The IM-SSF shall handle the receipt of the Notification on Change of Subscriber Data using the same procedure as that of a gsmSCF.

>>>>>>>>>> End of fourth modified section <<<<<<<<<<<<

>>>>>>>>>> Fifth modified section <<<<<<<<<<<<

4.6 Procedures for IM-SSF Application Server

...

4.6.1 Overall SDL Architecture

...

4.6.1.1 Handling of Registration and De-registration in the IM-SSF

During the UE registration, the HSS shall send the filter criteria for the IM-SSF to the S-CSCF if the subscriber is provisioned with IP Multimedia CAMEL Subscription Information data at the HSS.

- The HSS shall include the IMSI data for the subscriber within the Service Information element of the filter criteria for IM-SSF. The IMSI shall be used for querying the HSS ~~HLR~~ for CAMEL Subscription Information data via a MAP interface.

The CAMEL service provider determines the actual format of the data sent within the Service Information element of the filter criteria (e.g. IMSI). The actual format is transparent to the S-CSCF i.e. CAMEL service information is not processed, analysed, or evaluated by the S-CSCF. It is, however, known to the IM-SSF, gsmSCF, and the HSS (for provisioning of the service information data).

If a registration/de-registration request matches the filter criteria of the IM-SSF, the S-CSCF informs the IM-SSF of the request by performing a third party registration/de-registration i.e. a SIP REGISTER message is sent from the S-CSCF to the IM-SSF.

General handling of IP Multimedia registration, re-registration, de-registration and receipt of initial filter criteria at the S-CSCF is specified in 3GPP TS 23.228 [6] and 23.218 [5].

The process and the procedures specific to CAMEL are specified in this subclause:

- Process Register_IM_SSF;
- Procedure CAMEL_IMCN_Register;
- Procedure CAMEL_IMCN_DeRegister.

>>>>>>>>>> End of fifth modified section <<<<<<<<<<<<

>>>>>>>>>> Sixth modified section <<<<<<<<<<<<

4.6.1.2 Handling of Notify Subscriber Data Change

When the HSS/HLR updates the CSI for a subscriber in the IP Multimedia CN subsystem, the HSS/HLR shall send a Notify Subscriber Data Change to the IM-SSF if all of the following conditions are true:

- The IM CSI data is marked with the Notification Flag
- The IM-SSF address is included in the gsmSCF address list

The IM-SSF address shall be added in the gsmSCF address list at the HSS/HLR for notification of IM-CSI updates if one of the following conditions occurs:

- a. The HSS/HLR is notified of the subscriber's registration at the S-CSCF (via Cx interface), and the subscriber is provisioned with IM CSI data.
- b. Operator provisions HSS/HLR subscriber data with IMS CAMEL service while the subscriber is currently registered in the IMS network i.e. one or more IM CSI data is added to the subscriber's profile in the HSS/HLR.
- c. The HSS/HLR is notified of mobile termination for an unregistered subscriber (via Cx interface), and the subscriber is provisioned with IM CSI data

The IM-SSF address shall be deleted from the gsmSCF address list when the HSS/HLR initiates, or is notified of, the UE's deregistration.

The IM-SSF address in the gsmSCF address list may be changed when the HSS/HLR receives a notification of a registration for a UE with a S-CSCF name different from the previously assigned S-CSCF name (i.e. re-registration from HSS/HLR point of view). The HSS/HLR shall overwrite the existing IM-SSF address with the IM-SSF address associated with the new S-CSCF name.

The HSS/HLR procedure for sending the Notify Subscriber Data Change to the IM-SSF is the same procedure used for notifying the gsmSCFs in the Circuit Switched CN. This procedure is described in Procedure CAMEL_NSDC_HLR specified in 3GPP TS 23.078 Rel-99[4].

The process specific to IM-SSF's handling of the Notify Subscriber Data Change is specified in this subclause:

- Process Update_CSI

Process Update_CSI

1(1)

Process in IM-SSF when notified of a change of subscriber IM CSI data from the HSS.

Signals signals to/from the right are to/from the HSS.

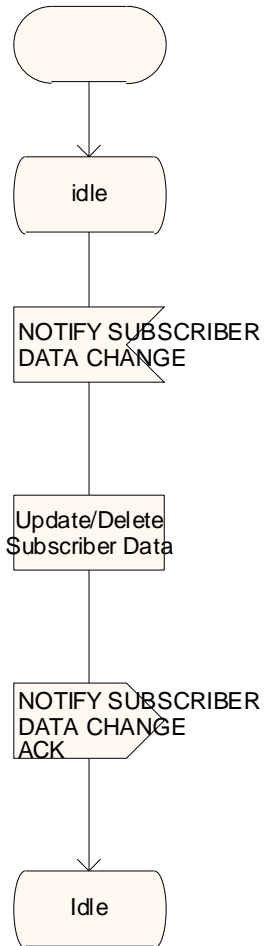


Figure 4.12: Process Update_CSI (sheet 1)

>>>>>>>>>> End of sixth modified section <<<<<<<<<<<

>>>>>>>>>> Seventh modified section <<<<<<<<<<<<

4.7.4 IM-SSF to HSS information flows

4.7.4.1 Any Time Subscription Interrogation request

4.7.4.1.1 Description

This IF is used by the IM-SSF to request subscription information from the HSS~~HLR~~. For example, the IM-SSF shall send this as a result of receiving a third party SIP registration from the S-CSCF (over the ISC interface). The IM-SSF shall also send the MAP ATSI request when a SIP INVITE message on a MT session for an unregistered subscriber is received.

4.7.4.1.2 Information Elements

Information element name	Status	Description
gsmSCF Address	M	This IE shall indicate the address of the interrogating IM-SSF.
Requested Info	M	This IE indicates the type of subscriber information being requested. This shall consist of the CAMEL Subscription Information; the CAMEL Subscription Information is described in a table below.
Subscriber Identity	M	This IE identifies the subscriber for which the information is requested. The identity shall be an IMSI.

CAMEL subscription information contains the following information elements:

Information element name	Status	Description
Additional Requested CAMEL Subscription Info	M	This IE shall contain one of the following: O-IM-CSI/VT-IM-CSI/D-IM-CSI

4.7.4.2 Notify Subscriber Data Change ack

4.7.4.2.1 Description

This IF is used to respond to the HSS~~HLR~~'s notification of the change of subscriber data.

4.7.4.2.2 Information Elements

This IF contains no information elements.

>>>>>>>>>> End of seventh modified section <<<<<<<<<<<<

>>>>>>>>> Eighth modified section <<<<<<<<<<<

4.7.5 HSS to IM-SSF information flows

4.7.5.1 Any Time Subscription Interrogation ack

4.7.5.1.1 Description

This IF is used by the HSS~~HLR~~ to provide the requested subscriber's IM-CSI data to the IM-SSF.

>>>>>>>>> End of eighth modified section <<<<<<<<<<<

>>>>>>>>>> Ninth modified section <<<<<<<<<<<

4.7.5.2 Notify Subscriber Data Change

4.7.5.2.1 Description

This IF is used by the HSS/~~HLR~~ to notify to the IM-SSF of the change of subscriber IM CSI data. This IF is sent at each time subscriber IM CSI data is changed.

4.7.5.2.2 Information Elements

Information element name	Status	Description
IMSI	M	The IMSI is used to identify the subscriber.
MSISDN	C	This shall consist of the subscriber's MSISDN if available. If no MSISDN is available, the parameter shall be set with a dummy MSISDN value.
CAMEL Subscription Information	M	The CAMEL Subscription Information IE is used to indicate the modified or deleted CAMEL Subscription Information data. This IE is described in a table below.

CAMEL Subscription Information Modified contains the following information elements:

Information element name	Status	Description
O-IM-CSI	S	See subclause 4.4.1.1. It shall be present if it was modified.
D-IM-CSI	S	See subclause 4.4.1.2. It shall be present if it was modified.
VT-IM-CSI	S	See subclause 4.4.1.3. It shall be present if it was modified.
Specific CSI Deleted List	S	This IE indicates that one or more specific elements of IMS CAMEL Subscription Information have been deleted from the HSS/ HLR . It shall indicate any of the following; <ul style="list-style-type: none"> - O-IM-CSI (with TDP criteria for O-IM-CSI); - D-IM-CSI; - VT-IM-CSI with TDP criteria for VT-IM-CSI; This IE shall be present if IM CSI is/are deleted.

>>>>>>>>>> End of Ninth modified section <<<<<<<<<<<

3GPP TSG-CT WG4 Meeting #27
 Cancun, MEXICO. 25th to 29th April 2005.

C4-050901

CR-Form-v7.1

CHANGE REQUEST

⌘ **23.078 CR 780** ⌘ rev **4** ⌘ 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:	⌘ NoReply Timer clarification		
Source:	⌘ Lucent Technologies, Cingular		
Work item code:	⌘ CAMEL	Date:	⌘ 25/04/2005
Category:	⌘ F	Release:	⌘ Rel-6
	Use <u>one</u> 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 <u>one</u> 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:	⌘ At the CN2 WG meeting #32 in Atlanta (USA), the procedure CAMEL_Start_TNRy was changed to indicate that the TNRy received from the gsmSCF is used only once. This change, which resolved ambiguity on this procedure was approved. However, the text information in TS 23.078 needs further clarification. Also, a warning note in the RRBCSM IE table still indicates that “the behaviour of the gsmSSF is unpredictable” in the case where an overriding RRBE operation does not contain a TNRy timer and the previous RRBE contained a TNRy timer.
Summary of change:	⌘ Added an example to clarify that TNRy timer from the gsmSCF is used only once, and also removed the warning note as the SDL are normative and sufficient to describe the handling of the TNRy timer.
Consequences if not approved:	⌘ Possible inter-operability problems.

Clauses affected:	⌘ section 4.5.2.1.12, section 4.6.2.19										
Other specs affected:	<table border="1" style="display: inline-table; border-collapse: collapse;"> <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;"> </td> <td style="text-align: center;">X</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 ⌘ Test specifications ⌘ O&M Specifications ⌘	Y	N		X		X		X		
Y	N										
	X										
	X										
	X										
Other comments:	⌘ For reference of previous Std CR on this issue, refer to N2-040160, CR 689 (TSG CN WG2 Meeting #32, Atlanta, USA, 16 th – 20 st Feb 2004).										

-- First modified section --

4.5.2.1.12 Procedure CAMEL_Start_TNRy

The recommended value range [in the gsmSSF](#) for the default TNRy timer for CAMEL handling is 10 seconds to 3 minutes.

The CSE provided TNRy value is applied only once per outgoing leg. The decision "TNRy received?" decision box goes to "No" branch if the TNRy duration has been used for once and no new timer value has been received since previous call of this procedure.

The task box "Cancel TNRy received" ensures that the gsmSCF provided timer is applied only once per call leg. [The task box prevents the use of previously received timer value from the gsmSCF in subsequent calls \(e.g. as in the case of a follow-on call\).](#)

[For example: The gsmSCF arms O_No_Answer EDP and also sent a TNRy timer duration. The call fails and EDP O_No_Answer is reported to the gsmSCF. The gsmSCF sends a Connect \(i.e. follow-on call\), and also arms EDP O_No_Answer, but this time, with no TNRy timer duration included. The gsmSSF does not use the TNRy timer previously provided by the gsmSCF. Instead, the network's default TNRy timer is used if available for the follow-on call.](#)

Procedure CAMEL_Start_TNRy

1(1)

Prodedure in MSC to start the timer TNRy

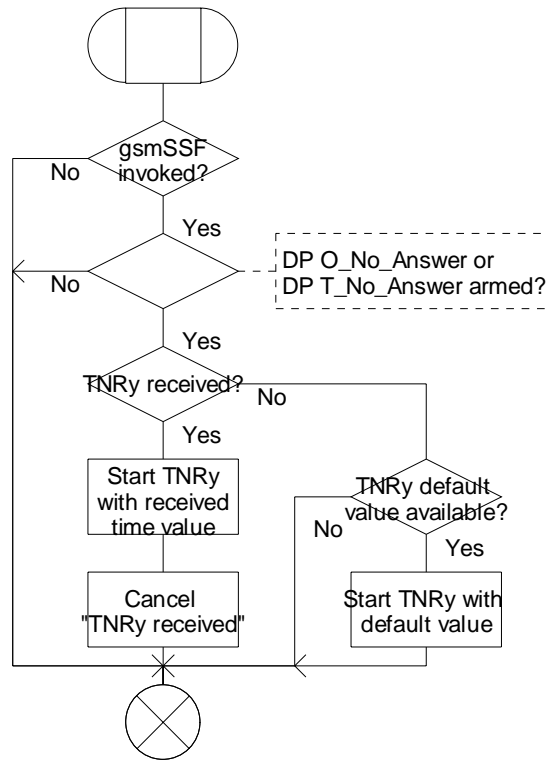


Figure 4.25-1: Procedure CAMEL_Start_TNRy (sheet 1)

-- Second modified section --

4.6.2.19 Request Report BCSM Event

4.6.2.19.1 Description

This IF is used to request the gsmSSF to monitor for a call-related event, then send a notification back to the gsmSCF when the event is detected (see Event Report BCSM).

4.6.2.19.2 Information Elements

Information element name	MO	MF	MT	VT	NC	NP	Description
BCSM Event	M	M	M	M	M	M	This IE specifies the event or events for which a report is requested.

BCSM Event contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Event type	M	M	M	M	M	M	This IE specifies the type of event for which a report is requested.
Leg ID	C	C	C	C	C	M	This IE indicates the party in the call for which the event shall be armed or disarmed.
Monitor Mode	M	M	M	M	M	M	If this IE is "interrupted" then the event shall be reported as a request, if this IE is "notify and continue" then the event shall be reported as a notification, if this IE is "transparent" then the event shall not be reported.
DP Specific Criteria	O	O	O	O	O	O	This IE is described in a table below.
Automatic Rearm	O	O	O	O	-	-	This IE indicates that the detection point shall be automatically rearmed by the gsmSSF when it is encountered. This IE may be present only if the Event Type is O_Mid_Call, T_Mid_Call, O_Change_Of_Position, T_Change_Of_Position, O_Service_Change or T_Service_Change and the Monitor Mode is "notify and continue". The MF and MT cases apply for O_Service_Change or T_Service_Change DPs only.

DP Specific Criteria contains the following information elements:

Information element name	MO	MF	MT	VT	NC	NP	Description
Application Timer	O	O	O	O	O	O	This IE carries additional timer duration information (timer values for No_Answer event) required for arming the No_Answer EDPs in the gsmSSF. The TNRY timer (value defined between 10 seconds and 40 seconds) shall be shorter than the network no answer timer.
Mid Call Control Info	O	-	-	O	-	-	This IE is described in a table below. This IE carries the criterion for the detection and reporting of the mid-call event. If this IE is absent, then mid-call triggering shall take place when the first digit has been entered by the user.
Change of Position Control Info	O	-	-	O	-	-	This IE is described in a table below. It carries the list of criteria for the reporting of

Information element name	MO	MF	MT	VT	NC	NP	Description
							the change of position event. If the DP Specific Criteria IE is absent, then the criteria for any change of position shall be regarded as fulfilled.
<p>NOTE If a Request Report BCSM Event information flow overwrites previous Request Report BCSM Event information flow which contained Application Timer IE for No_Answer DP, the behaviour of the gsmSSF is unpredictable.</p>							

(The rest of the IE table remains unchanged...)

-- End of modified sections --