

**3GPP TSG CN Plenary Meeting #18**  
**4<sup>th</sup> - 6<sup>th</sup> December 2002. New Orleans, USA.**

**NP-020530**

**Source:** TSG CN WG2  
**Title:** CRs to Rel-5 WI IMS-CAMEL, Pack1  
**Agenda item:** 8.1  
**Document for:** APPROVAL

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**Introduction:**

This document contains 10 CRs on Rel-5 WI IMS-CAMEL. These CRs have been agreed by TSG CN WG2 and are forwarded to TSG CN Plenary meeting #18 for approval.

<b>Spec</b>	<b>CR</b>	<b>Rev</b>	<b>Doc-2nd-Level</b>	<b>Phase</b>	<b>Subject</b>	<b>Cat</b>	<b>Ver_C</b>
23.278	002		N2-020826	Rel-5	Correction and improvement in the registration procedures	F	5.0.0
23.278	005		N2-020829	Rel-5	Correction and improvement in CSI update	F	5.0.0
23.278	006		N2-020830	Rel-5	Clarification in the case multiple RRBs are sent for a DP	F	5.0.0
23.278	008		N2-020865	Rel-5	Remove support of SCI operation from imcnSSF SDL process	F	5.0.0
23.278	009		N2-020866	Rel-5	Removal of ETC processing from IM-SSF SDL Procedures	F	5.0.0
29.278	002	1	N2-020916	Rel-5	ASN.1 syntax basic corrections for IMS CAMEL	F	5.0.0
23.278	010	1	N2-020933	Rel-5	Correction of InitialDP MediaType parameter	F	5.0.0
29.278	001	1	N2-020934	Rel-5	Correction of ASN.1 definition for the InitialDP MediaType parameter	F	5.0.0
23.278	001	2	N2-020941	Rel-5	Correction and improvement in the overall SDL architecture	F	5.0.0
23.278	007	1	N2-020945	Rel-5	Inconsistent description on ACR: time information	F	5.0.0

## CHANGE REQUEST

⌘ **23.278 CR 002** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

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

<b>Title:</b>	⌘ Correction and improvement in the registration procedures		
<b>Source:</b>	⌘ Siemens AG		
<b>Work item code:</b>	⌘ IMS-CAMEL	<b>Date:</b>	⌘ 18/09/2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ When IM-SSF receives the first indication of SIP: REGISTER, the IM-SSF should process this request by its own: IM-SSF is not invoked by any other processes or procedures. The entry of SIP: REGISTER shall be the process.
<b>Summary of change:</b>	⌘ The existing procedure, CAMEL_IMCN_Register_Init, is replaced by the process Register_IM_SSF, as proposed in CR 23.278-001. Small editorial modification also included.
<b>Consequences if not approved:</b>	⌘ Registration of UE is not possible.

<b>Clauses affected:</b>	⌘ 5										
<b>Other specs affected:</b>	<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>	Y	N	⌘	X	⌘	X	⌘	X	Other core specifications	⌘
Y	N										
⌘	X										
⌘	X										
⌘	X										
		Test specifications									
		O&M Specifications									
<b>Other comments:</b>	⌘ This CR is written on the assumption that CR 23.278-001 is approved. CR editor's note: Re-numbering and re-formatting the figure numbers needed throughout the whole document.										

### 5.1.1 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 TS 23.228 and 23.218.

The [process and the](#) procedures specific to CAMEL are specified in this subclause:

- [Process Register IM SSF:](#)

~~Procedure CAMEL\_IMCN\_Register\_Init~~

- [Procedure CAMEL\\_IMCN\\_Register;](#)

- [Procedure CAMEL\\_IMCN\\_DeRegister.](#)

#### 5.1.1.1 Procedure CAMEL\_IMCN\_Register

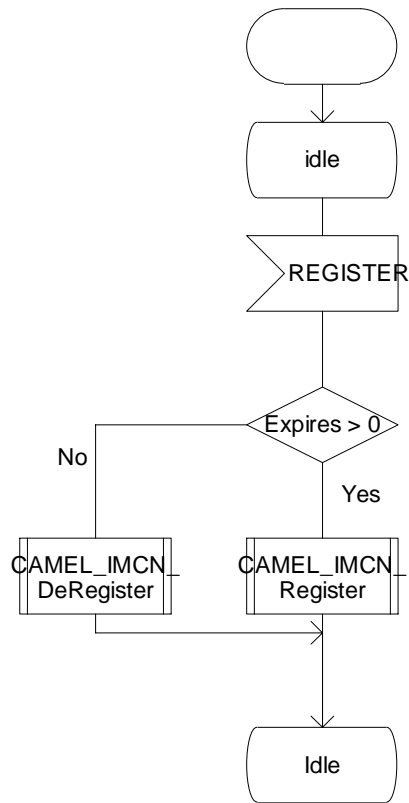
When querying the HSS for the subscriber's IM CSI data, the IM-SSF does not have to wait for the HSS's response on the first query before the subsequent queries are done. i.e Sending of multiple Any Time Interrogation operations can be done in parallel. However, the IM-SSF shall wait for all the responses from the HSS before it shall send a SIP response message to the S-CSCF.

### Process Register\_IM\_SSF

1(1)

Process in IM-SSF for handling receipt of a SIP REGISTER method from the S-CSCF.

/\* Signals to/from the left are to/from the the S-CSCF. \*/



**Figure 5.xa: Process Register\_IM\_SSF (sheet 1)**

procedure CAMEL\_IMCN\_Register\_Init

1(1)

Procedure in IM-SSF for handling receipt of a SIP REGISTER method from the S-CSCF.

Signals to/from the left are to/from the S-CSCF.

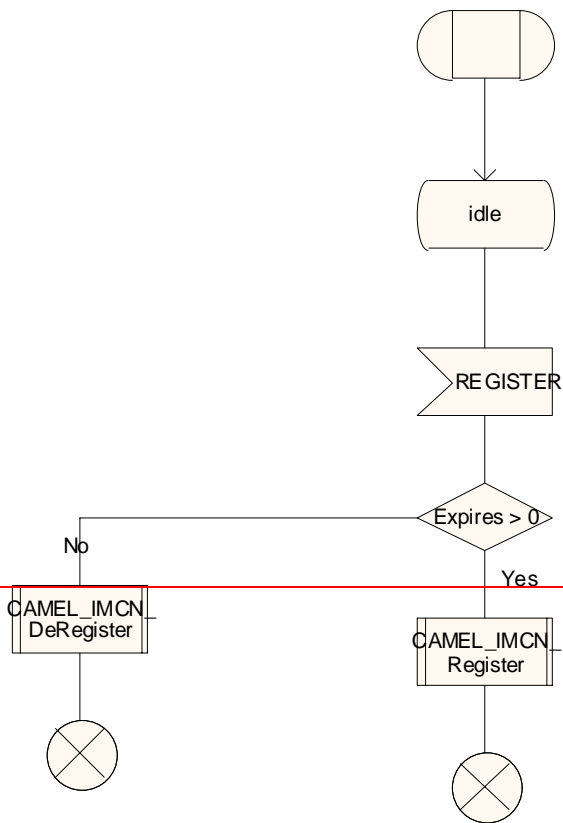


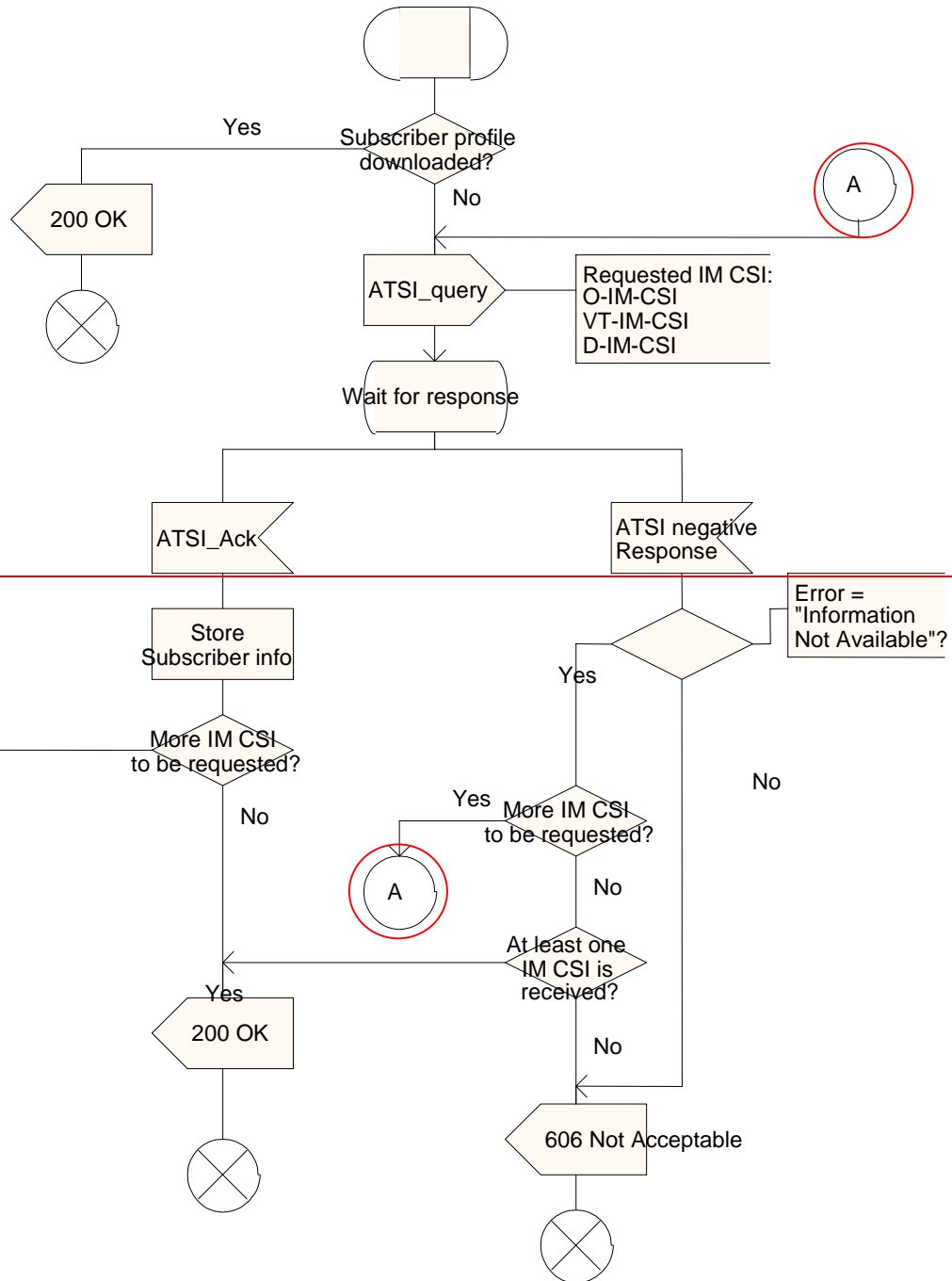
Figure 5.1.1.1a: Procedure CAMEL\_IMCN\_Register\_Init (sheet 1)

### procedure CAMEL\_IMCN\_Register

1(1)

Procedure in IM-SSF when notified of a UE's registration in the IM CN.

Signals to/from the left are to/from the S-CSCF, and signals to/from the right are to/from the HSS.



### procedure CAMEL\_IMCN\_Register

1(1)

Procedure in IM-SSF when notified of a UE's registration in the IM CN.

Signals to/from the left are to/from the S-CSCF, and signals to/from the right are to/from the HSS.

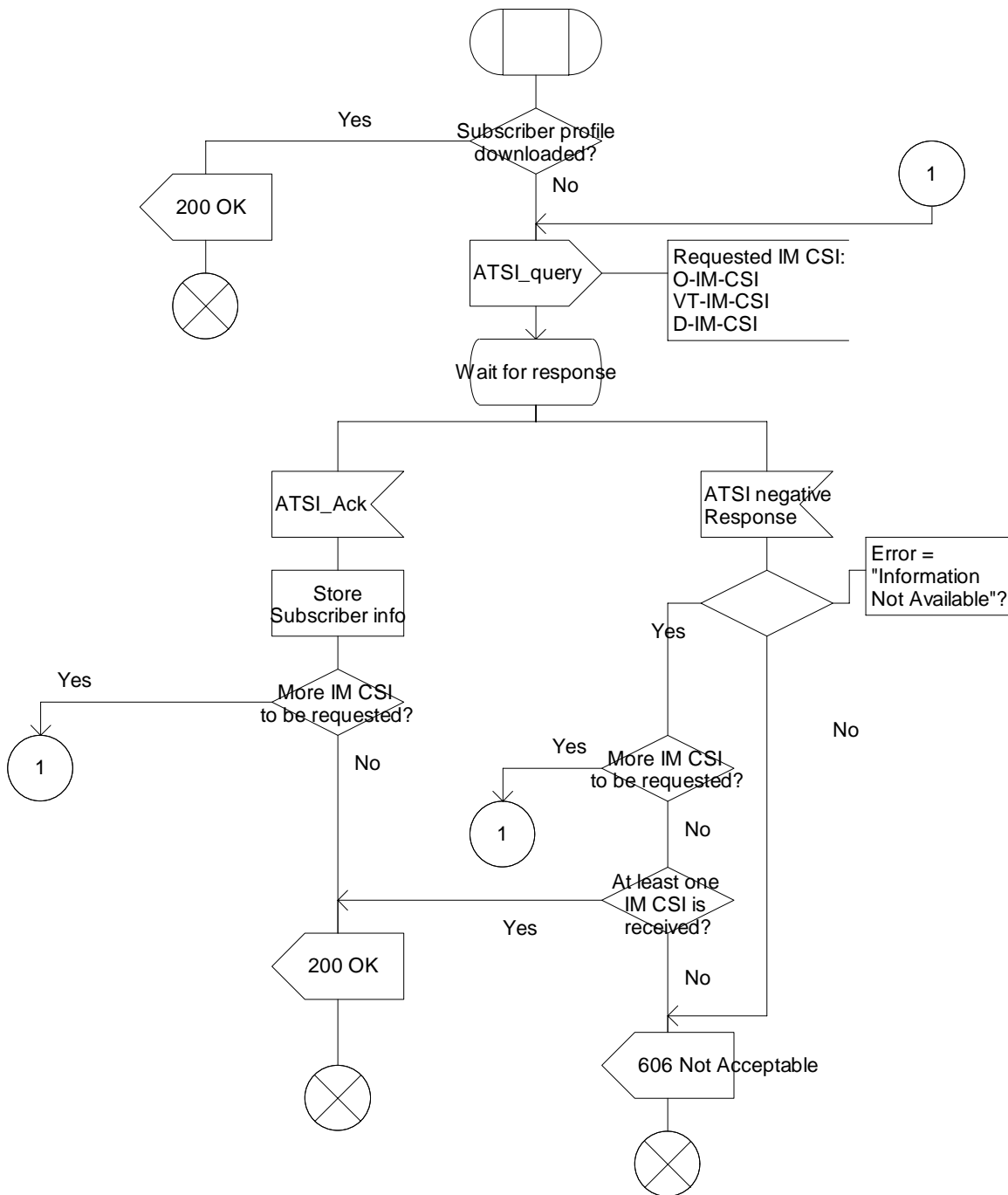


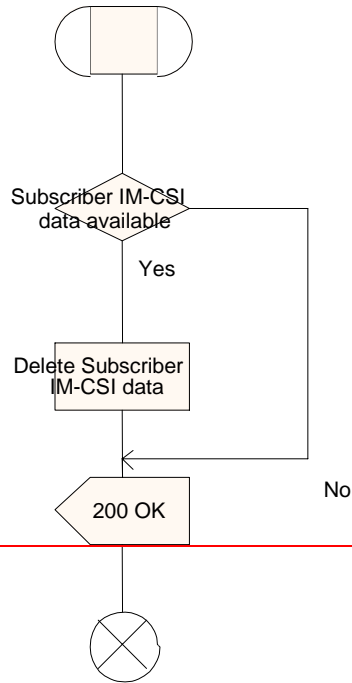
Figure 5.1.1.2a: Procedure CAMEL\_IMCN\_Register (sheet 1)

### procedure CAMEL\_IMCN\_DeRegister

1(1)

Procedure in IM-SSF when notified of  
of a UE's de-Registration.

Signals to/from the left are  
to /from the S-CSCF.





### procedure CAMEL\_IMCN\_DeRegister

1(1)

Procedure in IM-SSF when notified of a UE's de-Registration.

Signals to/from the left are to /from the S-CSCF.

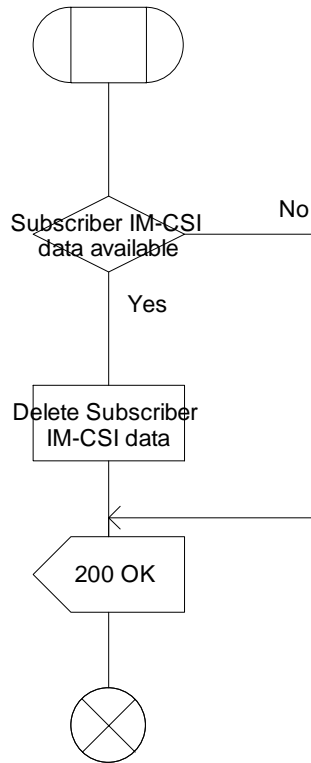


Figure 5.z5a: Procedure CAMEL\_IMCN\_DeRegister (sheet 1)

## CHANGE REQUEST

⌘ **23.278 CR 005** ⌘ rev **-** ⌘ Current version: **5.0.0** ⌘

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

<b>Title:</b>	⌘ Correction and improvement in CSI update		
<b>Source:</b>	⌘ Siemens AG		
<b>Work item code:</b>	⌘ IMS-CAMEL	<b>Date:</b>	⌘ 18/09/2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ When IM-SSF receives the notification of subscriber data change from HSS, the IM-SSF should process this request by its own: IM-SSF is not invoked by any other processes or procedures. The entry of NSDC shall be the process.
<b>Summary of change:</b>	⌘ The existing procedure, CAMEL_IMCN_HSS_Update, is replaced by the process Update_CSI, as proposed in CR 23.278-001. Small editorial modification also included.
<b>Consequences if not approved:</b>	⌘ CSI update upon receiving NSDC is not possible.

<b>Clauses affected:</b>	⌘ 5.1.2										
<b>Other specs affected:</b>	<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>	Y	N	⌘	X	⌘	X	⌘	X	Other core specifications	⌘
Y	N										
⌘	X										
⌘	X										
⌘	X										
		Test specifications									
		O&M Specifications									
<b>Other comments:</b>	⌘ This CR is written on the assumption that CR 23.278-001 is approved. CR editor's note: Re-numbering and re-formatting the figure numbers needed throughout the whole document.										

## 5.1.2 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 TS 23.078 Rel-99 [11].

The ~~procedures~~ [process](#) specific to IM-SSF's handling of the Notify Subscriber Data Change is specified in this subclause:

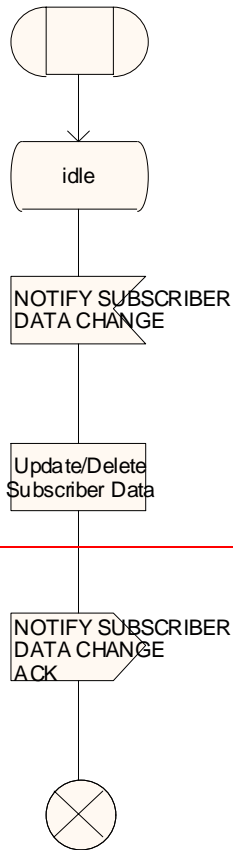
- ~~Procedure CAMEL\_IMCN\_HSS\_Update\_CSI~~ [Process Update\\_CSI](#).

### procedure CAMEL\_IMCN\_CSI\_Update

1(1)

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

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



### 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.

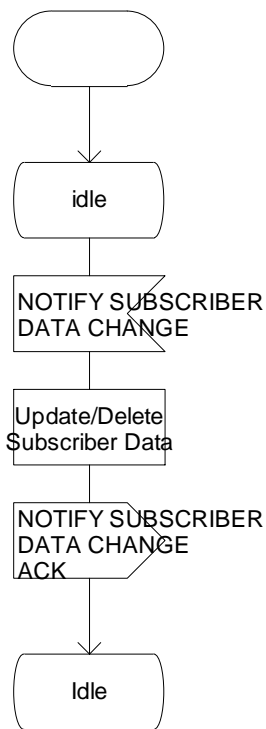


Figure 5.1.2.1a: Procedure CAMEL\_IMCN\_HSS\_Update\_CSI Process Update\_CSI (sheet 1)



\*\*\* First modified part \*\*\*

### 4.3.1 Arming/Disarming mechanism

A DP may be statically armed or dynamically armed.

The following arming rules apply:

- DPs 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, DPs 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 [11] (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.

CR editor's note: Above style should be corrected appropriately (NO -> Normal, B2 -> B1).

\*\*\* Next modified part \*\*\*

### 5.2.2.12 Request Report BCSM Event

#### 5.2.2.12.1 Description

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

#### 5.2.2.12.2 Information Elements

Information element name	Status	Description
BCSM Event	M	This IE specifies the event or events of which a report is requested.

BCSM Event contains the following information:

Information element name	Status	Description
Event type	M	This IE specifies the type of event of which a report is requested.
Leg ID	C	This IE indicates the party in the call for which the event shall be reported.
Monitor Mode	M	When this IE is "interrupted", the event shall be reported as a request, if it is "notifyAndContinue", the event shall be reported as a notification, if the IE is "transparent", the event shall not be reported.
DP Specific Criteria	O	This IE is described in the next table.

DP Specific Criteria is defined as:

Information element name	Status	Description
Application Timer	O	This IE carries additional timer duration information (timer values for No Answer event) required for arming No_Answer EDPs in the IM-SSF. The TNRY timer (value defined between 10 s and 40 s) shall be shorter than the network no answer timer.
<b>NOTE</b>		<a href="#">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 IM-SSF is unpredictable.</a>



CR-Form-v7

## CHANGE REQUEST

⌘ **23.278 CR** 008 ⌘ rev ⌘ Current version: **5.0.0** ⌘

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

<b>Title:</b>	⌘ Remove support of SCI operation from imcnSSF SDL process		
<b>Source:</b>	⌘ Lucent Technologies		
<b>Work item code:</b>	⌘ IMS-CAMEL	<b>Date:</b>	⌘ 13/09/2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ The imcnSSF SDL Process indicates support of the CAP Send Charging Information operation when it should not.
<b>Summary of change:</b>	⌘ Process imcnSSF is modified to remove the procedure for receipt of CAP Send Charging Information message from the gsmSCF (sheet 21).
<b>Consequences if not approved:</b>	⌘ Incorrect specification.

<b>Clauses affected:</b>	⌘ 5.1.5						
<b>Other specs affected:</b>	<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"/>	⌘	
Y	N						
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	<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> Test specifications	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⌘	
Y	N						
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	<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> O&M Specifications	Y	N	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⌘	
Y	N						
<input type="checkbox"/>	<input checked="" type="checkbox"/>						
<b>Other comments:</b>	⌘ The figure numbers for the Process imcnSSF shall be updated/renumbered as a result of removing sheet 21. Renumbering of the figures shall be done as an editorial change before the plenary if this change request is approved.						

\*\*\*\* First modified section \*\*\*\*

Process imcnSSF

21(30)

/\* Invocation of imcnSSF in MO, MT call case. \*/

/\* Signals to/from the right are to/from the gsmSCF. \*/

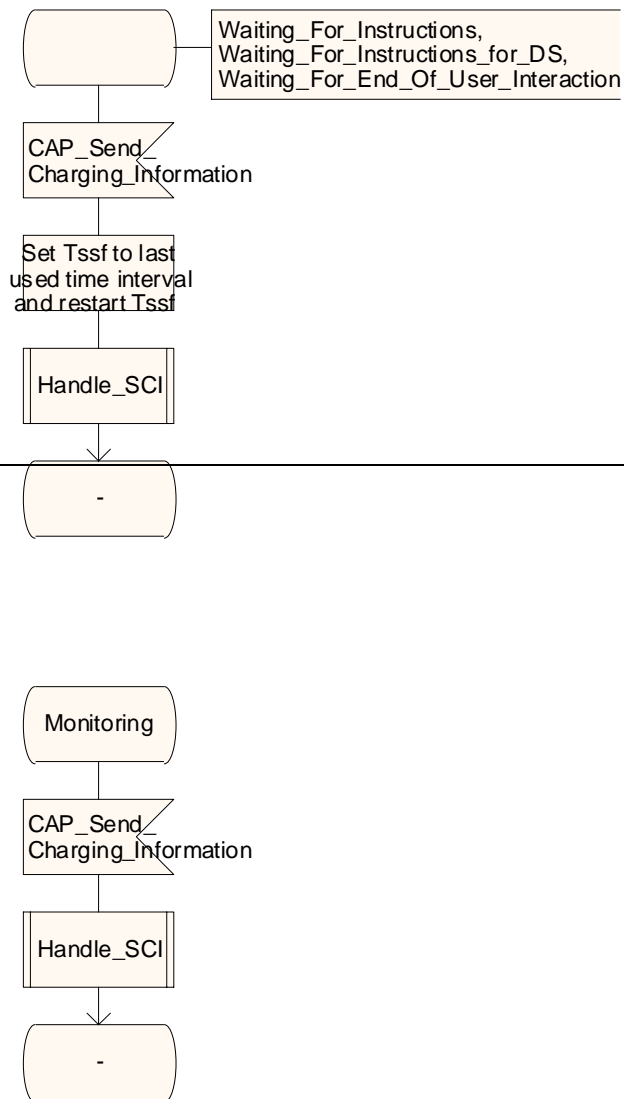


Figure 5.1.5.1.1u: Process imcnSSF (sheet 21)

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

## CHANGE REQUEST

⌘ **23.278 CR 009** ⌘ rev  ⌘ Current version: **5.0.0** ⌘

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

<b>Title:</b>	⌘ Removal of ETC processing from IM-SSF SDL Procedures		
<b>Source:</b>	⌘ Lucent Technologies		
<b>Work item code:</b>	⌘ IMS-CAMEL	<b>Date:</b>	⌘ 23/08/2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories: <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ The IM-SSF SDL Procedures indicates support for the CAP EstablishTemporaryConnection (ETC) operation when it should not.
<b>Summary of change:</b>	⌘ The following IM-SSF SDL procedures are modified to not include processing of the ETC operation: <ul style="list-style-type: none"> <li>- Figure 5.1.3.2c: Procedure CAMEL_IMCN_MO_OCSI_INIT (sheet 3)</li> <li>- Figure 5.1.3.3c: Procedure CAMEL_IMCN_MO_DCSI_INIT (sheet 3)</li> <li>- Figure 5.1.3.5c: Procedure CAMEL_IMCN_MO_BYE (sheet 3)</li> <li>- Figure 5.1.3.6g: Procedure CAMEL_IMCN_MO_ResponseCode (sheet 7)</li> <li>- Figure 5.1.3.8c: Procedure CAMEL_OCH_IMCN1 (sheet 3)</li> <li>- Figure 5.1.4.3c: Procedure CAMEL_IMCN_MT_BYE (sheet 3)</li> <li>- Figure 5.1.4.4f: Procedure CAMEL_IMCN_MT_ResponseCode (sheet 6)</li> </ul>
<b>Consequences if not approved:</b>	⌘ Incorrect specification.

<b>Clauses affected:</b>	⌘ 5.1.3 and 5.1.4										
<b>Other specs affected:</b>	<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> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input checked="" type="checkbox"/></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"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	⌘	
Y	N										
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<b>Other comments:</b>	⌘										



**\*\*\*\* First modified section (5.1.3) \*\*\*\***

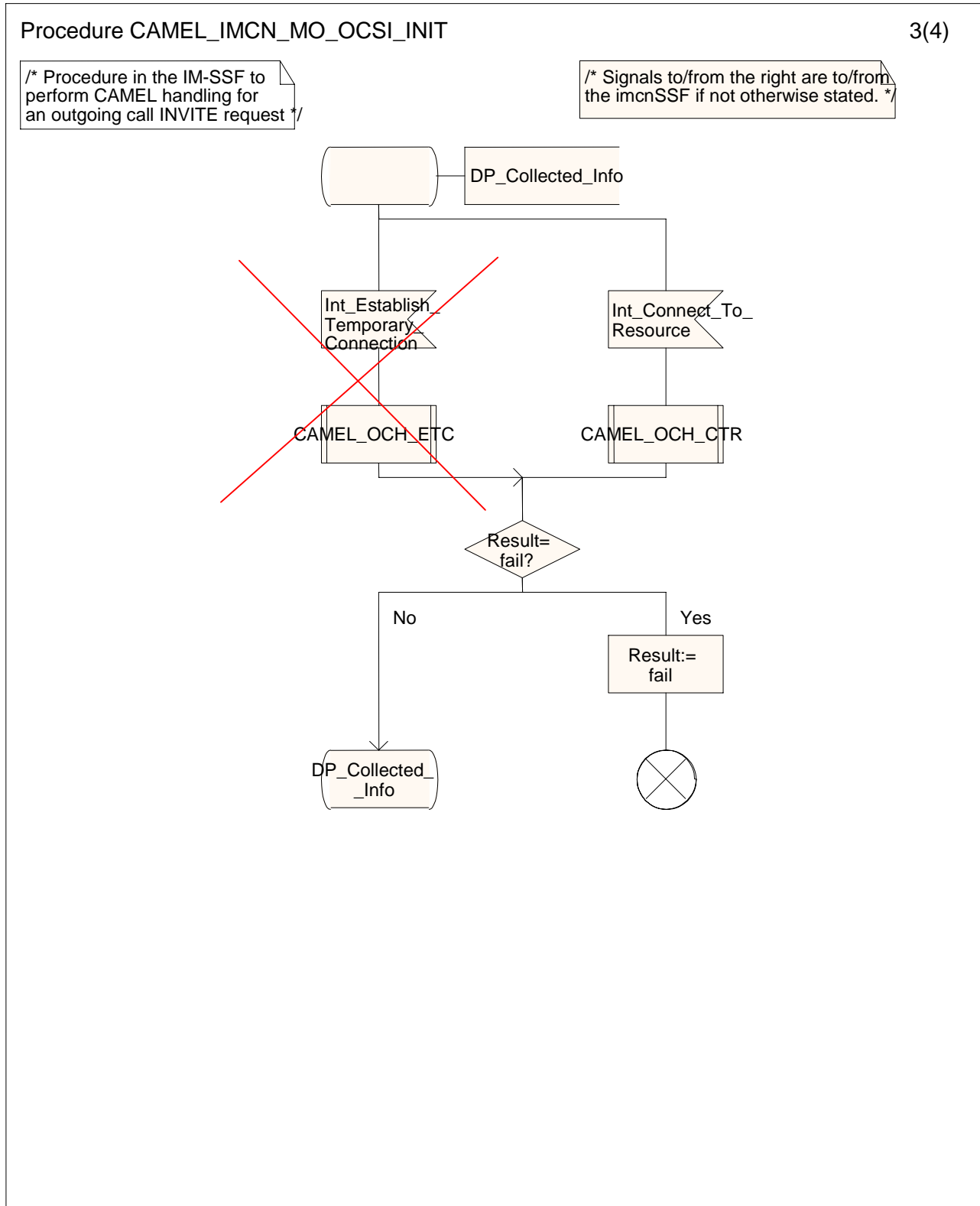


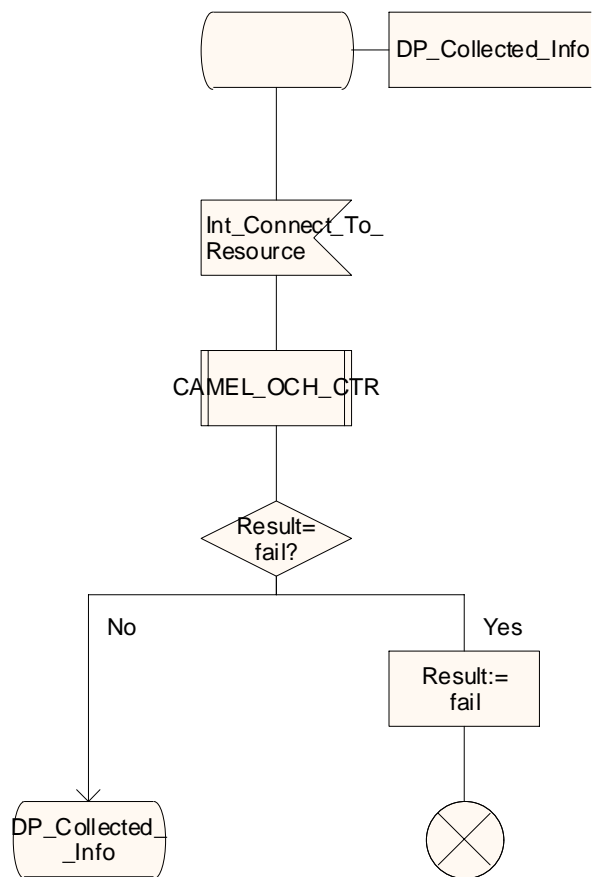
Figure 5.1.3.2c: Procedure CAMEL\_IMCN\_MO\_OCSI\_INIT (sheet 3)

### Procedure CAMEL\_IMCN\_MO\_OCSI\_INIT

3(4)

/\* Procedure in the IM-SSF to perform CAMEL handling for an outgoing call INVITE request \*/

/\* Signals to/from the right are to/from the imcnSSF if not otherwise stated. \*/



(modified) Figure 5.1.3.2c: Procedure CAMEL\_IMCN\_MO\_OCSI\_INIT (sheet 3)

procedure CAMEL\_IMCN\_MO\_DCSI\_INIT

3(3)

/\* Procedure in the IM-SSF to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the right are to/from the imcnSSF if not otherwise stated. \*/

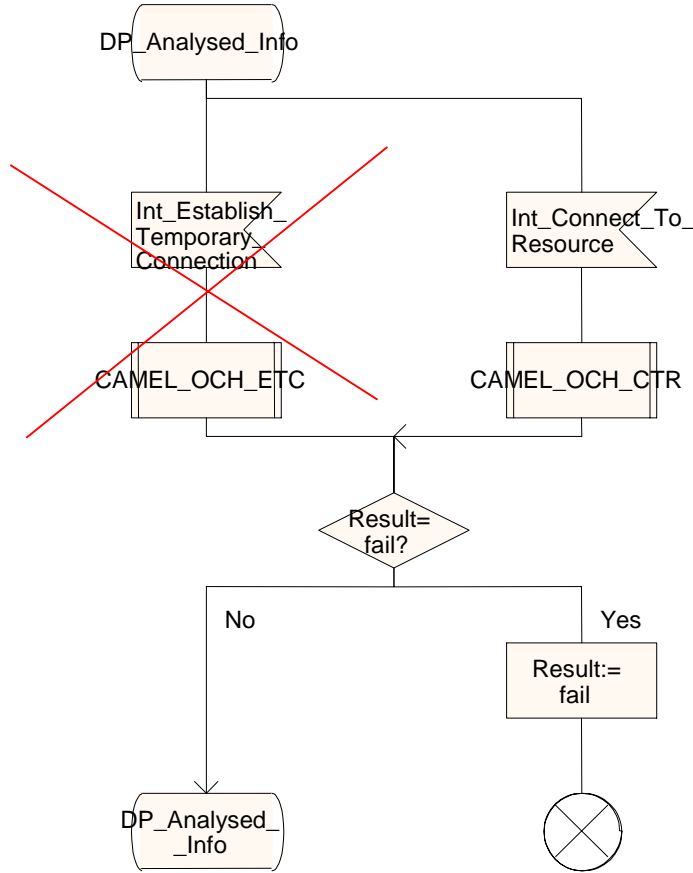


Figure 5.1.3.3c: Procedure CAMEL\_IMCN\_MO\_DCSI\_INIT (sheet 3)

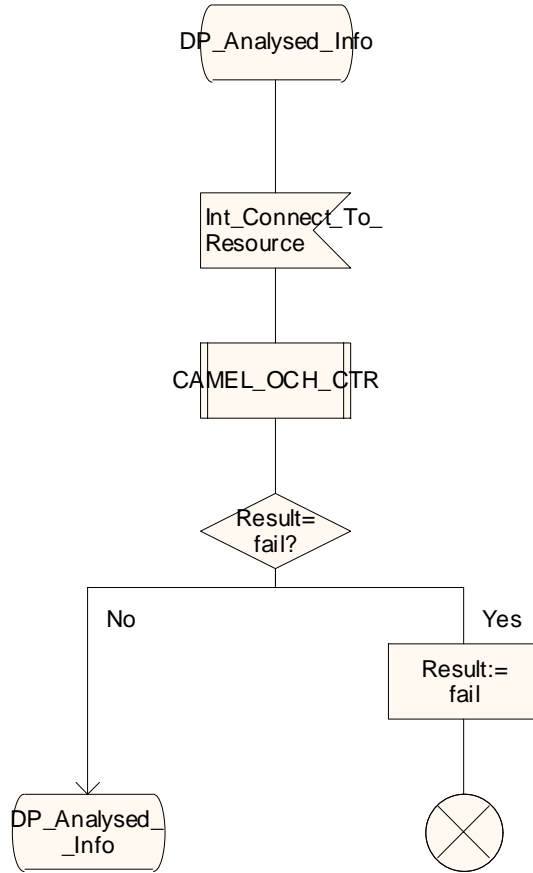


procedure CAMEL\_IMCN\_MO\_DCSI\_INIT

3(3)

/\* Procedure in the IM-SSF to perform CAMEL handling for a subscribed Dialed Service \*/

/\* Signals to/from the right are to/from the imcnSSF if not otherwise stated. \*/



(modified) Figure 5.1.3.3c: Procedure CAMEL\_IMCN\_MO\_DCSI\_INIT (sheet 3)

procedure CAMEL\_IMCN\_MO\_BYE

3(3)

/\* Procedure in the IM-SSF to handle an outgoing call on the BYE request from caller or callee \*/

Signals to/from the right are to/from the imcnSSF if not otherwise stated.

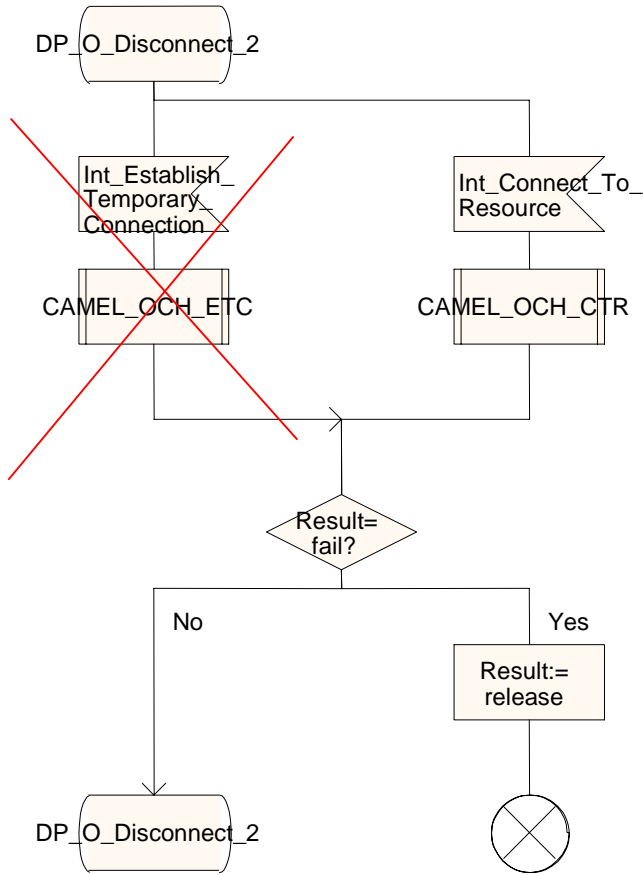


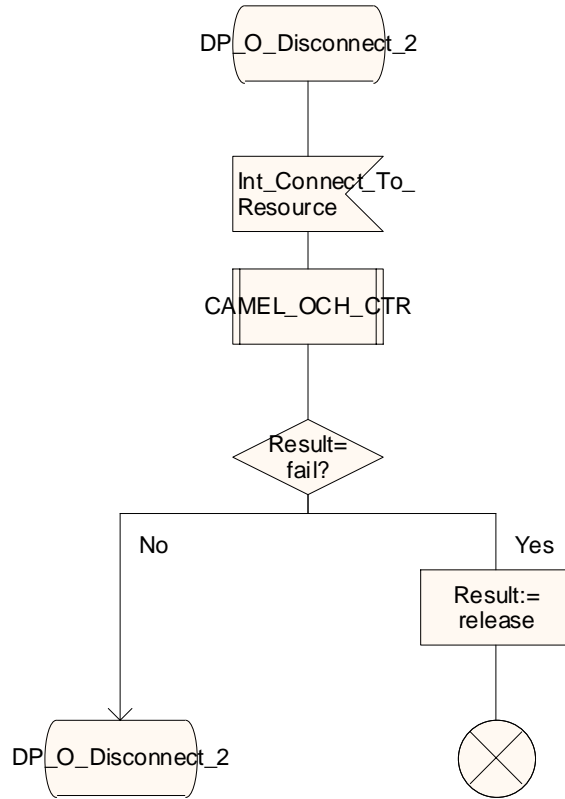
Figure 5.1.3.5c: Procedure CAMEL\_IMCN\_MO\_BYE (sheet 3)

procedure CAMEL\_IMCN\_MO\_BYE

3(3)

/\* Procedure in the IM-SSF to handle an outgoing call on the BYE request from caller or callee\*/

Signals to/from the right are to/from the imcnSSF if not otherwise stated.



(modified) Figure 5.1.3.5c: Procedure CAMEL\_IMCN\_MO\_BYE (sheet 3)

procedure CAMEL\_IMCN\_MO\_ResponseCode

7(7)

/\* Procedure in the IM-SSF to handle an outgoing call on the response code received\*/

Signals to/from the right are to/from the imcnSSF if not otherwise stated.

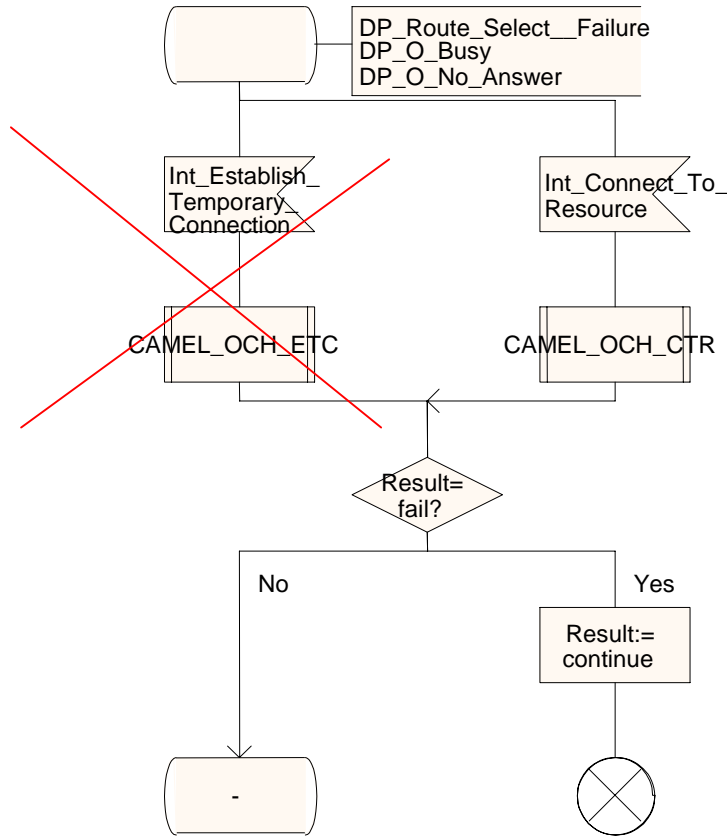


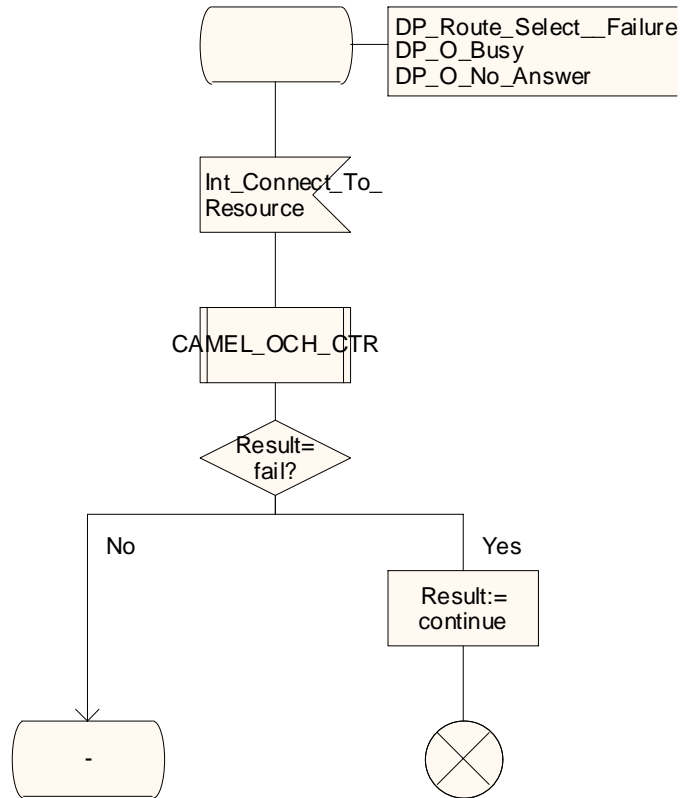
Figure 5.1.3.6g: Procedure CAMEL\_IMCN\_MO\_ResponseCode (sheet 7)

procedure CAMEL\_IMCN\_MO\_ResponseCode

7(7)

/\* Procedure in the IM-SSF to handle an outgoing call on the response code received\*/

Signals to/from the right are to/from the imcnSSF if not otherwise stated.



(modified) Figure 5.1.3.6g: Procedure CAMEL\_IMCN\_MO\_ResponseCode (sheet 7)

Procedure CAMEL\_OCH\_IMCN1

3(3)

/\* Procedure in the IM-SSF in the case of CAMEL handling to connect a call at DP Busy, Route select failure. \*/

Signals to/from the right are to/from the imcnSSF if not otherwise stated.

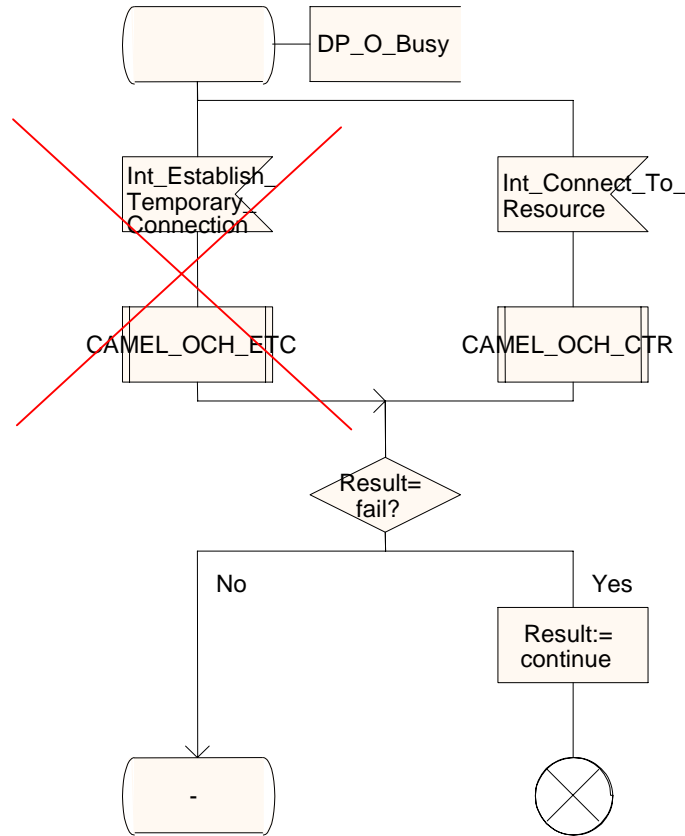


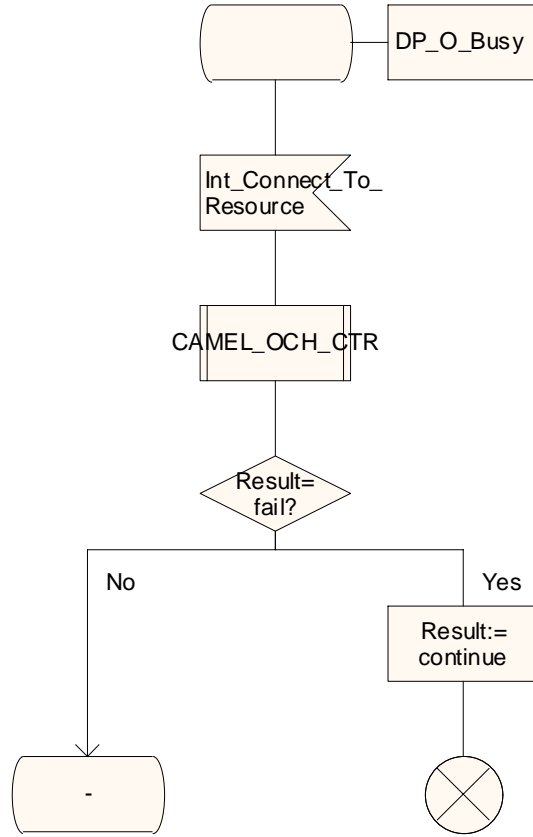
Figure 5.1.3.8c: Procedure CAMEL\_OCH\_IMCN1 (sheet 3)

### Procedure CAMEL\_OCH\_IMCN1

3(3)

/\* Procedure in the IM-SSF in the case of CAMEL handling to connect a call at DP Busy, Route select failure. \*/

Signals to/from the right are to/from the imcnSSF if not otherwise stated.



(modified) Figure 5.1.3.8c: Procedure CAMEL\_OCH\_IMCN1 (sheet 3)

**\*\*\*\* Next modified section (5.1.4) \*\*\*\***

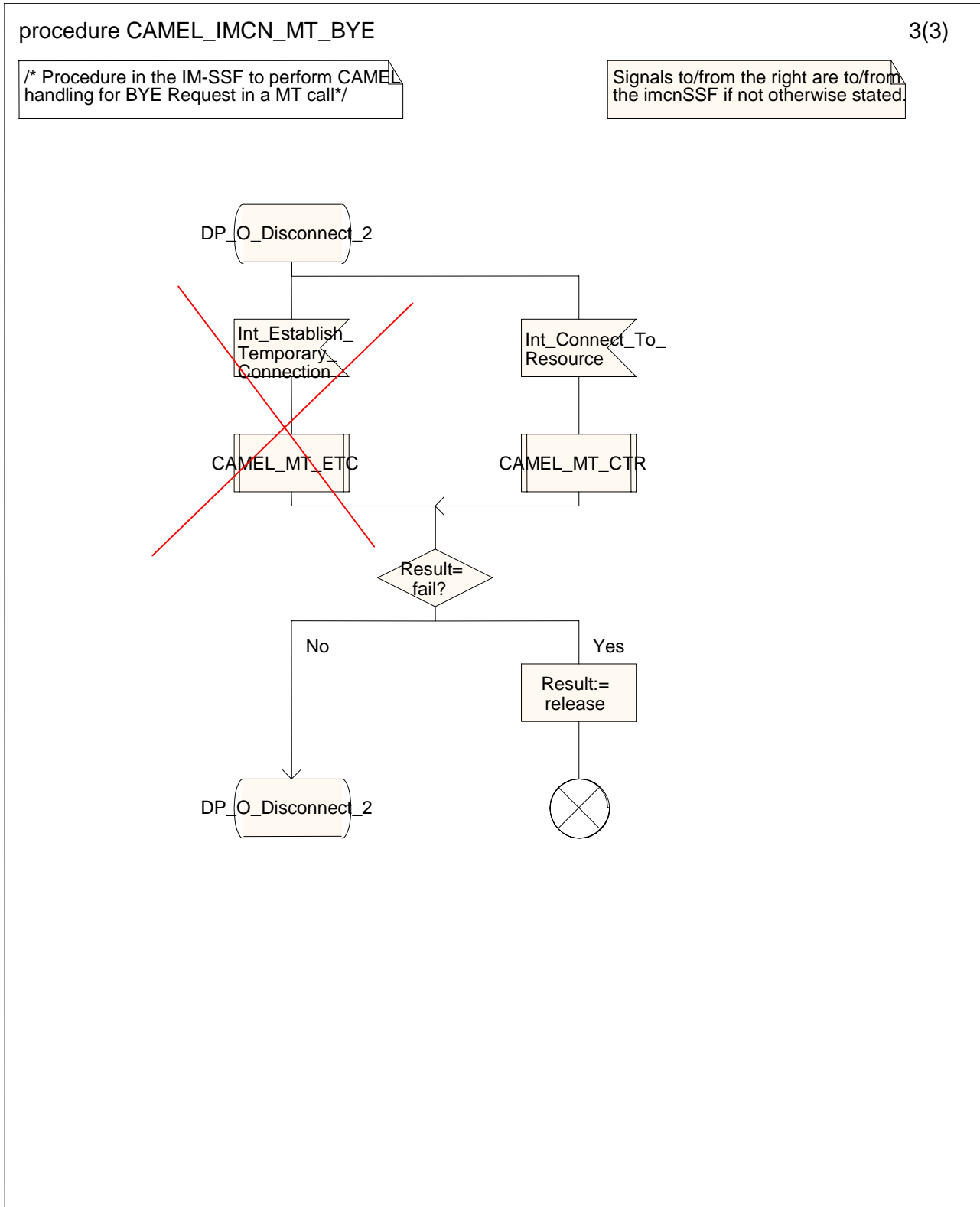


Figure 5.1.4.3c: Procedure CAMEL\_IMCN\_MT\_BYE (sheet 3)

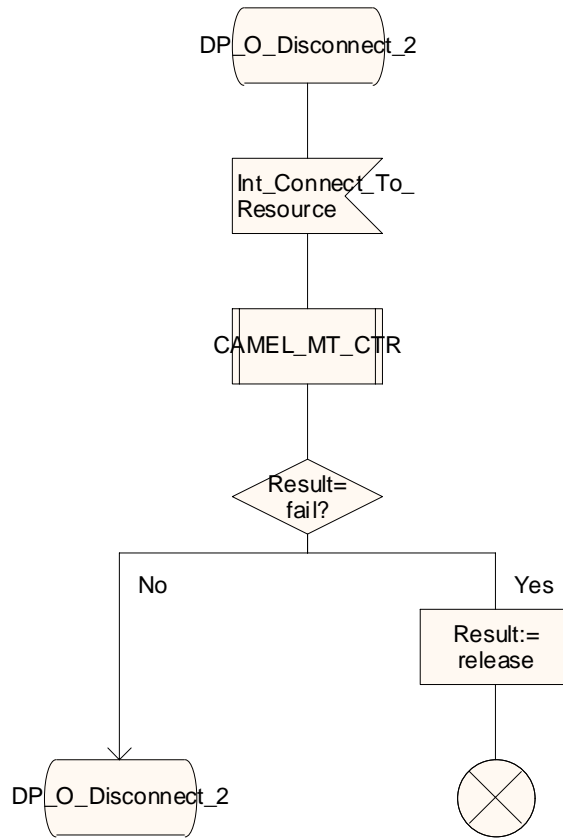


procedure CAMEL\_IMCN\_MT\_BYE

3(3)

/\* Procedure in the IM-SSF to perform CAMEL handling for BYE Request in a MT call\*/

Signals to/from the right are to/from the imcnSSF if not otherwise stated.



(modified) Figure 5.1.4.3c: Procedure CAMEL\_IMCN\_MT\_BYE (sheet 3)

procedure CAMEL\_IMCN\_MT\_ResponseCode

6(6)

/\* Procedure in the IM-SSF to handle an incoming call on the response code received\*/

Signals to/from the right are to/from the imcnSSF if not otherwise stated.

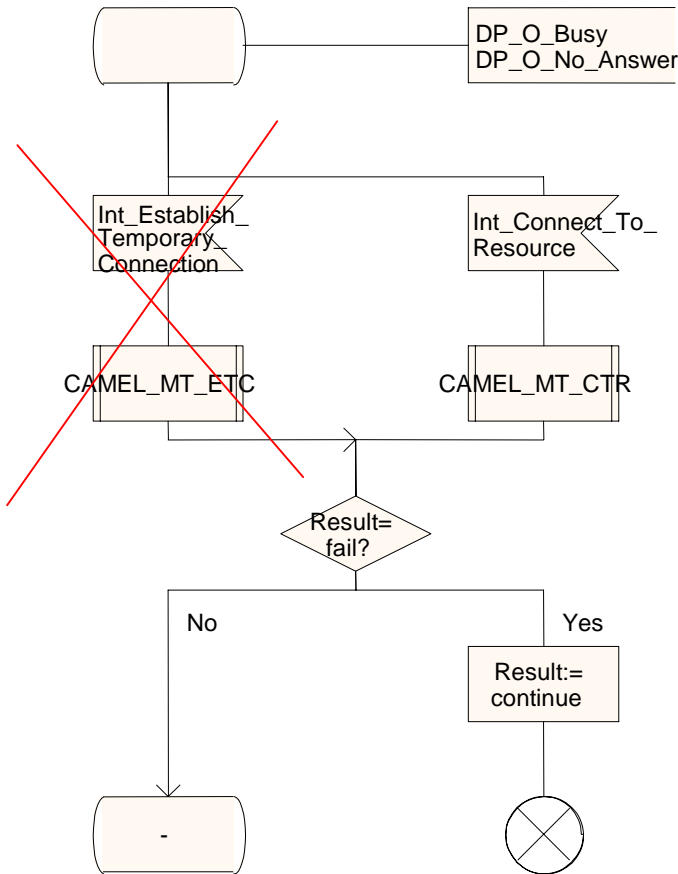


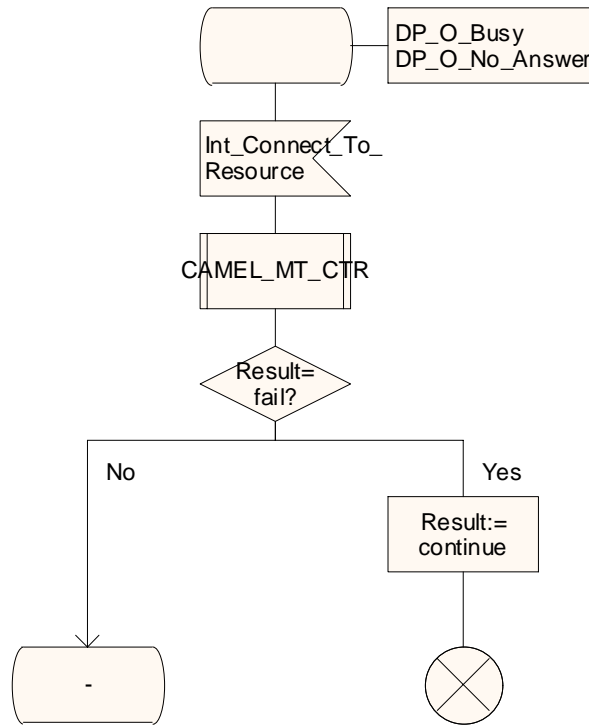
Figure 5.1.4.4f: Procedure CAMEL\_IMCN\_MT\_ResponseCode (sheet 6)

procedure CAMEL\_IMCN\_MT\_ResponseCode

6(6)

/\* Procedure in the IM-SSF to handle an incoming call on the response code received\*/

Signals to/from the right are to/from the imcnSSF if not otherwise stated.



(modified) Figure 5.1.4.4f: Procedure CAMEL\_IMCN\_MT\_ResponseCode (sheet 6)

\*\*\*\* End of modified section \*\*\*\*



## CHANGE REQUEST

⌘ **29.278 CR 002** ⌘ rev **1** ⌘ Current version: **5.0.0** ⌘

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

<b>Title:</b>	⌘ ASN.1 syntax basic corrections for IMS CAMEL		
<b>Source:</b>	⌘ Alcatel		
<b>Work item code:</b>	⌘ IMS-CAMEL	<b>Date:</b>	⌘ 24/09/2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-5
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

**Reason for change:** ⌘ Syntactic and basic corrections of the 29.278 ASN.1 modules.

Detailed corrections on 29.278 modules and notes:

- inclusion of "callGap" operation in the definition part. This operation is referred to in the packages part later on.
- The connectToResource operation does not have a argument. It does not to have a bound.
- For the modules "CS1-DataTypes" and "CS2-datatypes " it is proposed to use the same module identifier as in Rel 99 29.078, i.e. "ccitt" component name instead of "itu-t".
- Inclusion of necessary import statements.
- use correct spelling for spaces, hyphen, soft-hyphen, underlines, etc.
- use correct object identifier values in references
- wrong type-case (lowercase/uppercase) characters for some identifiers
- some import of non defined and non used names
- missing call cap operation and argument definitions
- missing IMS-PARAMETERS-BOUNDS
- spelling mistakes (superfluous or missing characters)
- missing comma
- wrong parameterised type( "{}" is too much, or imsCAPSpecificBoudSet is missing)

- SsfToScfGenericReturnable OPERATION set is missing  
 - further corrections

Please note that due to the short lines of text in this CR, soft line breaks may appear in the ASN.1 modules without the ASN.1 comment sign "--" at the start of the second part of the line.

**Summary of change:** ⌘ Correction of all above indicated errors.  
 Note: The text between the 29.278 clause headers 5 and 6 are the modified modules. The marked up changes are applicable to the 29.278 text.

**Consequences if not approved:** ⌘ The ASN.1 is ambiguous in itself. Syntax errors and spelling errors in the ASN.1 which the implementers must fix manually.

**Clauses affected:** ⌘ ASN.1 modules of clauses 5 and 6.

	Y	N		
<b>Other specs affected:</b>		X	Other core specifications	⌘
		X	Test specifications	
		X	O&M Specifications	

**Other comments:** ⌘

**— First modified modules —**

## 5 CAP Types for CAMEL/IMS interworking

```

--5 CAP Types for CAMEL/IMS interworking
--5.1 Data types
CAP-IMS-datatypes {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-IMS-datatypes(62) version1(0)}
-- This module contains the data type definitions used for CAMEL/IMS interworking.

DEFINITIONS IMPLICIT TAGS ::= BEGIN

IMPORTS

    imsClasses
    FROM CAP-IMS-object-identifiers {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-
network(1) modules(3) cap-IMS-object-identifiers(100) version1(0)}

    IMS-PARAMETERS-BOUND
    FROM CAP-IMS-classes imsClasses
    ;

CldClgPartyURL {IMS-PARAMETERS-BOUND : imsBound} ::= OCTET STRING (SIZE(
    imsBound.&minCldClgPartyURLLength .. imsBound.&maxCldClgPartyURLLength))
-- Indicates the SIP URL identifying the called and calling party numbers. Refer to RFC2806[45] for
encoding.

MediaType ::= INTEGER
-- The valid values for Media Type are for further study.

SIPCallId {IMS-PARAMETERS-BOUND : imsBound} ::= OCTET STRING (SIZE(
    imsBound.&minSipCallIdLength .. imsBound.&maxSipCallIdLength))

END

--5.2 Classes
CAP-IMS-classes {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-IMS-classes(64) version1(0)}
-- This module contains the class definitions used specifically for CAMEL/IMS interworking.

DEFINITIONS ::= BEGIN

IMPORTS

    iMSSF-gsmSCF-Protocol
    FROM CAP-IMS-object-identifiers {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-IMS-object-identifiers(100) version1(0)}

    capImssfToScfGeneric
    FROM CAP-IMSSF-gsmSCF-pkgs-contracts-acis iMSSF-gsmSCF-Protocol
    ;

IMS-PARAMETERS-BOUND ::= CLASS
{
    &minCldClgPartyURLLength                INTEGER,
    &maxCldClgPartyURLLength                INTEGER,
    &minSipCallIdLength                     INTEGER,
    &maxSipCallIdLength                     INTEGER
}

WITH SYNTAX
{
    MINIMUM-FOR-CLDCLG-PARTY-URL            &minCldClgPartyURLLength
    MAXIMUM-FOR-CLDCLG-PARTY-URL            &maxCldClgPartyURLLength
    MINIMUM-FOR-SIP-CALL-ID                 &minSipCallIdLength
    MAXIMUM-FOR-SIP-CALL-ID                 &maxSipCallIdLength
}

ims-CAPspecificBoundSet IMS-PARAMETERS-BOUND ::=
{
    MINIMUM-FOR-CLDCLG-PARTY-URL            1
    MAXIMUM-FOR-CLDCLG-PARTY-URL            100
    MINIMUM-FOR-SIP-CALL-ID                 1
}

```

```

    }
    MAXIMUM-FOR-SIP-CALL-ID 30
}

END

--5.3 Object Identifiers (IDs)
CAP-IMS-object-identifiers {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-IMS-object-identifiers(110) version1(0)}

DEFINITIONS ::= BEGIN

-- This module assigns new object identifiers for Modules, Packages, Contracts and AC's
-- used by CAP for IMS.

IMSdatatypes OBJECT IDENTIFIER ::=
    {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cap-IMS-datatypes(5262) version1(0)}

IMSclasses OBJECT IDENTIFIER ::=
    {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    capCAP-IMS-classes(54) version1(0)}

IMSSF-gsmSCF-Operations OBJECT IDENTIFIER ::=
    {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cap-IMSSF-gsmSCF-ops-args(101) version1(0)}

IMSSF-gsmSCF-Protocol OBJECT IDENTIFIER ::=
    {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3)
    cap-IMSSF-gsmSCF-pkgs-contracts-acs(102) version1(0)}
id-CAPIOE OBJECT IDENTIFIER ::=
    {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) capImsoE(25)}

id-acIE OBJECT IDENTIFIER ::= {id-CAPIOE ac(3)}
id-contractIE OBJECT IDENTIFIER ::= {id-CAPIOE contract(26)}

-- IM-SSF/gsmSCF AC
id-ac-CAP-IMSSF-scfGenericAC OBJECT IDENTIFIER ::= {id-acIE 4}

-- IM-SSF/gsmSCF Contracts
id-CAPImssfToScfGeneric OBJECT IDENTIFIER ::= {id-contractIE 3}

END

```

— Next modified modules —

## 6 IP Multimedia Subsystem Call Control

```

--6 IP Multimedia Subsystem Call Control
--6.1 IM-SSF - gsmSCF Interface
--6.1.1 Operations and arguments
CAP-IMSSF-gsmSCF-ops-args {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-IMSSF-gsmSCF-ops-args(111) version1(0)}

DEFINITIONS IMPLICIT TAGS ::= BEGIN

-- This module contains the operations and operation arguments used for the
-- IM-SSF - gsmSCF interface, for the control of IP Multimedia call sessions.

-- Table 2.1.1 lists the specifications that contain the modules used by CAP.

IMPORTS

    errortypes,
    datatypes,
    operationcodes,
    classes,
    tc-Messages,
    ros-InformationObjects
FROM CAP-object-identifiers {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-object-identifiers(100) version3(2)}

    IMSdatatypes,
    IMSclasses
FROM CAP-IMS-object-identifiers {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-IMS-object-identifiers(110) version1(0)}

OPERATION
FROM Remote-Operations-Information-Objects ros-InformationObjects

```



```

    CallingPartysCategory,
    HighLayerCompatibility,
    RedirectionInformation,
    ServiceKey
| FROM CS1-DataTypes {itu-tccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
modules(0) cs1-datatypes(2) version1(0)}

    MiscCallInfo
| FROM CS2-datatypes {itu-tccitt(0) identified-organization(4) etsi(0) inDomain(1) in-network(1)
cs2(20) modules(0) in-cs2-datatypes (0) version1(0)}

    Ext-BasicServiceCode,
    IMSI,
    ISDN-AddressString
| FROM MAP-CommonDataTypes {itu-tccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-Network(1) modules(3) map-CommonDataTypes(18) version6(6)}

    CUG-Index,
    CUG-Interlock,
    CUG-Info,
    LocationInformation,
    SubscriberState
| FROM MAP-MS-DataTypes {itu-tccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-Network(1) modules(3) map-MS-DataTypes(11) version6(6)}

    CallReferenceNumber,
    SuppressionOfAnnouncement
| FROM MAP-CH-DataTypes {itu-tccitt(0) identified-organization(4) etsi(0) mobileDomain(0)
gsm-Network(1) modules(3) map-CH-DataTypes(13) version6(6)}

PARAMETERS-BOUND
FROM CAP-classes classes

    IMS-PARAMETERS-BOUND
FROM CAP-IMS-classes imSclasses

    opcode-activityTest,
    opcode-applyCharging,
    opcode-applyChargingReport,
    opcode-callGap,
    opcode-callInformationReport,
    opcode-callInformationRequest,
    opcode-cancel,
    opcode-connect,
    opcode-connectToResource,
    opcode-continue,
    opcode-continueWithArgument,
    opcode-disconnectForwardConnection,
    opcode-eventReportBCSM,
    opcode-furnishChargingInformation,
    opcode-initialDP,
    opcode-releaseCall,
    opcode-requestReportBCSMEvent,
    opcode-resetTimer
| FROM CAP-operationcodes operationcodes

    AChBillingChargingCharacteristics {},
    AdditionalCallingPartyNumber {},
    AlertingPattern,
    AssistingSSPIPRoutingAddress {},
    BCSMEvent,
    BearerCapability {},
    CalledPartyNumber {},
    CalledPartyBCDNumber {},
    CallingPartyNumber {},
    CallResult {},
    Carrier,
    Cause {},
    CGEncountered,
    ChargeNumber {},
    ControlType,
    CorrelationID {},
    DestinationRoutingAddress {},
    EventSpecificInformationBCSM {},
    EventTypeBCSM,
    Extensions {},
    FCIBillingChargingCharacteristics {},
    GapCriteria {},
    GapIndicators,
    GapTreatment,
    GenericNumbers {},
    InvokeID,
    IPRoutingAddress {},
    IPSSPCapabilities {},
    leg1,
    LocationNumber {},
    MonitorMode,
    NAOliInfo,
    OCSIApplicable,

```

```

OriginalCalledPartyID {},
ReceivingSideID,
RedirectingPartyID {},
RequestedInformationList {},
RequestedInformationTypeList,
ScfID {},
SCIBillingChargingCharacteristics {},
SendingSideID,
ServiceInteractionIndicatorsTwo,
TimeAndTimezone {},
TimerID,
TimerValue
| FROM CAP-datatypes {itu-tccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1)
modules(3) cap-datatypes(52) version3(2)}

CalledPartyURL {},
CallingPartyURL {},
ClcClgPartyURL {},
MediaType {},
SIPCallId {},
OriginalCalledPartyURL {},
RedirectingPartyURL {},
DestinationRoutingAddressURL {}
FROM CAP-IMS-datatypes imsdatatypescap-ims-datatypes

cancelFailed,
eTCFailed,
missingCustomerRecord,
missingParameter,
parameterOutOfRange,
requestedInfoError,
systemFailure,
taskRefused,
unexpectedComponentSequence,
unexpectedDataValue,
unexpectedParameter,
unknownLegID
| FROM CAP-errortypes {itu-tccitt(0) identified-organization(4) etsi(0) mobileDomain(0) umts-
network(1) modules(3) cap-errortypes(51) version3(2)}

;

activityTest OPERATION ::= {
  RETURN RESULT TRUE
  CODE opcode-activityTest
}
-- Direction: gsmSCF -> IM-SSF, Timer: Tat
-- This operation is used to check for the continued existence of a relationship
-- between the gsmSCF andIM-SSF. If the relationship is
-- still in existence, then the IM-SSF will respond. If no reply is received,
-- then the gsmSCF will assume that the IM-SSF has failed
-- in some way.

applyCharging {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT ApplyChargingArg {bound}
  RETURN RESULT FALSE
  ERRORS {missingParameter |
unexpectedComponentSequence |
unexpectedParameter |
unexpectedDataValue |
parameterOutOfRange |
systemFailure |
taskRefused|
unknownLegID}
  CODE opcode-applyCharging
}
-- Direction: gsmSCF -> IM-SSF, Timer: Tac
-- This operation is used for interacting from the gsmSCF with the IM-SSF charging mechanisms.
-- The ApplyChargingReport operation provides the feedback from the IM-SSF to the gsmSCF.

ApplyChargingArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  aChBillingChargingCharacteristics [0] AchBillingChargingCharacteristics {bound},
  partyToCharge [2] SendingSideID DEFAULT sendingSideID : leg1,
  extensions [3] Extensions {bound} OPTIONAL,
  ...
}

-- The partyToCharge parameter indicates the party in the call to which the ApplyCharging operation
-- shall be applied.

applyChargingReport {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT ApplyChargingReportArg {bound}
  RETURN RESULT FALSE
  ERRORS {missingParameter |
unexpectedComponentSequence |
unexpectedParameter |

```

```

                unexpectedDataValue |
                parameterOutOfRange |
                systemFailure |
                taskRefused}
        CODE          opcode-applyChargingReport
    }
-- Direction: IM-SSF -> gsmSCF, Timer: Tacr
-- This operation is used by the IM-SSF to report to the gsmSCF the occurrence of a
-- specific charging event as requested by the gsmSCF using the ApplyCharging operation.
ApplyChargingReportArg {PARAMETERS-BOUND : bound} ::= CallResult {bound}

callGap {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT          CallGapArg {bound}
    RETURN RESULT     FALSE
    ALWAYS RESPONDS  FALSE
    CODE              opcode-callGap
}
-- Direction: IM-SSF -> gsmSSF, Timer: Tcg
-- This operation is used to request the IM-SSF to reduce the rate at which specific service
-- requests are sent to the gsmSCF.
CallGapArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    gapCriteria        [0] GapCriteria {bound},
    gapIndicators      [1] GapIndicators,
    controlType        [2] ControlType,
    gapTreatment        [3] GapTreatment {bound} OPTIONAL,
    extensions         [4] Extensions {bound} OPTIONAL,
    ...
}
-- OPTIONAL denotes network operator optional. If gapTreatment is not present, the IM-SSF will
-- use a default treatment depending on network operator implementation.

callInformationReport {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT          CallInformationReportArg {bound}
    RETURN RESULT     FALSE
    ALWAYS RESPONDS  FALSE
    CODE              opcode-callInformationReport
}
-- Direction: IM-SSF -> gsmSCF, Timer: Tcirp
-- This operation is used to send specific call information for a single call party to the gsmSCF as
-- requested by the gsmSCF in a previous CallInformationRequest.
CallInformationReportArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    requestedInformationList [0] RequestedInformationList {bound},
    extensions               [2] Extensions {bound} OPTIONAL,
    legID                    [3] ReceivingSideID OPTIONAL,
    ...
}

callInformationRequest {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT          CallInformationRequestArg {bound}
    RETURN RESULT     FALSE
    ERRORS            {missingParameter |
                      parameterOutOfRange |
                      requestedInfoError |
                      systemFailure |
                      taskRefused |
                      unexpectedComponentSequence |
                      unexpectedDataValue |
                      unexpectedParameter |
                      unknownLegID}
    CODE              opcode-callInformationRequest
}
-- Direction: gsmSCF -> IM-SSF, Timer: Tcirq
-- This operation is used to request the IM-SSF to record specific information about a single
-- call party and report it to the gsmSCF (with a CallInformationReport operation).
CallInformationRequestArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    requestedInformationTypeList [0] RequestedInformationTypeList,
    extensions                   [2] Extensions {bound} OPTIONAL,
    legID                        [3] SendingSideID OPTIONAL,
    ...
}
-- OPTIONAL denotes network operator optional.

cancel OPERATION ::= {
    ARGUMENT          CancelArg
    RETURN RESULT     FALSE
    ERRORS            {cancelFailed |
                      missingParameter |
                      taskRefused}
    CODE              opcode-cancel
}
-- Direction: gsmSCF -> IM-SSF, Timer: Tcan
-- This operation cancels the correlated previous operation or all previous requests. The following
-- operations can be canceled: PlayAnnouncement, PromptAndCollectUserInformation.
CancelArg ::= CHOICE {

```

```

    invokeID          [0] InvokeID,
    allRequests       [1] NULL
  }
-- The InvokeID has the same value as that which was used for the operation to be cancelled.
| connect {PARAMETERS-BOUND : bound, IMS-PARAMETERS-BOUND : imsBound} OPERATION ::= {
  ARGUMENT          ConnectArg {bound, imsBound}
  RETURN RESULT     FALSE
  ERRORS            {missingParameter |
                    parameterOutOfRange |
                    systemFailure |
                    taskRefused |
                    unexpectedComponentSequence |
                    unexpectedDataValue |
                    unexpectedParameter}
  CODE              opcode-connect
}
-- Direction: gsmSCF-> IM-SSF, Timer: Tcon
-- This operation is used to request the IM-SSF to perform the call processing actions
-- to route or forward a call to a specified destination.
| ConnectArg {PARAMETERS-BOUND : bound, IMS-PARAMETERS-BOUND : imsBound-} ::= SEQUENCE {
  destinationRoutingAddress [0] DestinationRoutingAddress {bound} OPTIONAL,
  alertingPattern [1] AlertingPattern OPTIONAL,
  originalCalledPartyID [6] OriginalCalledPartyID {bound} OPTIONAL,
  extensions [10] Extensions {bound} OPTIONAL,
  carrier [11] Carrier {bound} OPTIONAL,
  callingPartysCategory [28] CallingPartysCategory OPTIONAL,
  redirectingPartyID [29] RedirectingPartyID {bound} OPTIONAL,
  redirectionInformation [30] RedirectionInformation OPTIONAL,
  genericNumbers [14] GenericNumbers {bound} OPTIONAL,
  serviceInteractionIndicatorsTwo [15] ServiceInteractionIndicatorsTwo OPTIONAL,
  chargeNumber [19] ChargeNumber {bound} OPTIONAL,
  cug-Interlock [31] CUG-Interlock OPTIONAL,
  cug-OutgoingAccess [32] NULL OPTIONAL,
  suppressionOfAnnouncement [55] SuppressionOfAnnouncement OPTIONAL,
  oCSIApplicable [56] OCSIApplicable OPTIONAL,
  naOliInfo [57] NAOliInfo OPTIONAL,
  ...,
  connectArgExtension [58] ConnectArgExtension {imsBound} OPTIONAL
}
-- The following parameters in ConnectArg are not use for IMS:
-- carrier
-- alertingPattern
-- genericNumbers
-- serviceInteractionIndicatorsTwo
-- chargeNumber
-- cug-Interlock
-- cug-OutgoingAccess
-- suppressionOfAnnouncement
-- oCSIApplicable
-- naOliInfo

ConnectArgExtension {IMS-PARAMETERS-BOUND : imsBound} ::= SEQUENCE {
  destinationRoutingAddressURL [0] CldClgPartyURL {imsBound} OPTIONAL,
  originalCalledPartyURL [1] CldClgPartyURL {imsBound} OPTIONAL,
  redirectingPartyURL [2] CldClgPartyURL {imsBound} OPTIONAL,
  ...
}
| connectToResource {PARAMETERS-BOUND : bound} OPERATION ::= {
  RETURN RESULT FALSE
  ALWAYS RESPONDS FALSE
}
| CODE opcode-connectToResource
}
-- Direction: gsmSCF ->IM-SSF, Timer: Tctr
-- This operation is used to connect a call from the IM-SSF to the MRFC via S-CSCF.
-- Refer to clause 9 for a description of the procedures associated with this operation.

continue OPERATION ::= {
  RETURN RESULT FALSE
  ALWAYS RESPONDS FALSE
  CODE opcode-continue
}
-- Direction: gsmSCF -> IM-SSF, Timer: Tcue
-- This operation is used to request the IM-SSF to proceed with call processing at the
-- DP at which it previously suspended call processing to await gsmSCF instructions
-- (i.e. proceed to the next point in call in the BCSM). The IM-SSF continues call
-- processing without substituting new data from gsmSCF.

continueWithArgument {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT          ContinueWithArgumentArg {bound}
  RETURN RESULT     FALSE
  ERRORS            {missingParameter |
                    parameterOutOfRange |

```

```

                unexpectedComponentSequence |
                unexpectedDataValue |
                unexpectedParameter}
CODE          opcode-continueWithArgument
}

-- Direction: gsmSCF -> IM-SSF, Timer: Tcwa
-- This operation is used to request the IM-SSF to proceed with call processing at the
-- DP at which it previously suspended call processing to await gsmSCF instructions
-- (i.e. proceed to the next point in call in the BCSM). The IM-SSF continues call
-- processing with the modified call setup information as received from the gsmSCF.

ContinueWithArgumentArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    alertingPattern [1] AlertingPattern OPTIONAL,
    extensions [6] Extensions {bound} OPTIONAL,
    serviceInteractionIndicatorsTwo [7] ServiceInteractionIndicatorsTwo OPTIONAL,
    callingPartysCategory [12] CallingPartysCategory OPTIONAL,
    genericNumbers [16] GenericNumbers {bound} OPTIONAL,
    cug-Interlock [17] CUG-Interlock OPTIONAL,
    cug-OutgoingAccess [18] NULL OPTIONAL,
    chargeNumber [50] ChargeNumber {bound} OPTIONAL,
    carrier [52] Carrier {bound} OPTIONAL,
    suppressionOfAnnouncement [55] SuppressionOfAnnouncement OPTIONAL,
    naOliInfo [56] NAOliInfo OPTIONAL,
    ...
}

-- The following parameters in ConnectArg are not use for IMS:
-- carrier
-- alertingPattern
-- genericNumbers
-- serviceInteractionIndicatorsTwo
-- chargeNumber
-- cug-Interlock
-- cug-OutgoingAccess
-- suppressionOfAnnouncement
-- naOliInfo

disconnectForwardConnection OPERATION ::= {
    RETURN RESULT FALSE
    ERRORS {systemFailure |
            taskRefused |
            unexpectedComponentSequence}
CODE      opcode-disconnectForwardConnection
}

-- Direction: gsmSCF -> IM-SSF, Timer: Tdfc
-- This operation is used to disconnect a connection to a
-- resource. Refer to clause 9 for a description of the procedures associated with this operation.

eventReportBCSM {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT EventReportBCSMArg {bound}
    RETURN RESULT FALSE
    ALWAYS RESPONDS FALSE
    CODE      opcode-eventReportBCSM
}

-- Direction: IM-SSF -> gsmSCF, Timer: Terb
-- This operation is used to notify the gsmSCF of a call-related event (e.g. BCSM
-- events such as busy or no answer) previously requested by the gsmSCF in a
-- RequestReportBCSMEvent operation.

EventReportBCSMArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
    eventTypeBCSM [0] EventTypeBCSM,
    eventSpecificInformationBCSM [2] EventSpecificInformationBCSM {bound} OPTIONAL,
    legID [3] ReceivingSideID OPTIONAL,
    miscCallInfo [4] MiscCallInfo DEFAULT {messageType request},
    extensions [5] Extensions {bound} OPTIONAL,
    ...
}

furnishChargingInformation {PARAMETERS-BOUND : bound} OPERATION ::= {
    ARGUMENT FurnishChargingInformationArg {bound}
    RETURN RESULT FALSE
    ERRORS {missingParameter |
            taskRefused |
            unexpectedComponentSequence |
            unexpectedDataValue |
            unexpectedParameter}
CODE      opcode-furnishChargingInformation
}

-- Direction: gsmSCF -> IM-SSF, Timer: Tfci
-- This operation is used to request the IM-SSF to generate, register a call record
-- or to include some information in the default call record.
-- The registered call record is intended for off line charging of the call.

FurnishChargingInformationArg {PARAMETERS-BOUND : bound} ::=
FCIBillingChargingCharacteristics{bound}

initialDP {PARAMETERS-BOUND : bound, IMS-PARAMETERS-BOUND : imsBound} OPERATION ::= {
    ARGUMENT InitialDPArg {bound, imsBound}
}

```

```

RETURN RESULT FALSE
ERRORS        {missingCustomerRecord |
               missingParameter |
               parameterOutOfRange |
               systemFailure |
               taskRefused |
               unexpectedComponentSequence |
               unexpectedDataValue |
               unexpectedParameter}
CODE          opcode-initialDP
}
-- Direction: gsmSSF -> gsmSCF, Timer: Tidp
-- This operation is used after a TDP to indicate request for service.

InitialDPArg {PARAMETERS-BOUND : bound, IMS-PARAMETERS-BOUND : imsBound} ::= SEQUENCE {
  serviceKey                [0] ServiceKey ,
  calledPartyNumber         [2] CalledPartyNumber {bound} OPTIONAL,
  callingPartyNumber        [3] CallingPartyNumber {bound} OPTIONAL,
  callingPartysCategory     [5] CallingPartysCategory OPTIONAL,
  cGEncountered             [7] CGEncountered OPTIONAL,
  iPSSPCapabilities        [8] IPSSPCapabilities {bound} OPTIONAL,
  locationNumber           [10] LocationNumber {bound} OPTIONAL,
  originalCalledPartyID     [12] OriginalCalledPartyID {bound} OPTIONAL,
  extensions                [15] Extensions {bound} OPTIONAL,
  highLayerCompatibility    [23] HighLayerCompatibility OPTIONAL,
  additionalCallingPartyNumber [25] AdditionalCallingPartyNumber {bound} OPTIONAL,
  bearerCapability          [27] BearerCapability {bound} OPTIONAL,
  eventTypeBCSM             [28] EventTypeBCSM OPTIONAL,
  redirectingPartyID        [29] RedirectingPartyID {bound} OPTIONAL,
  redirectionInformation    [30] RedirectionInformation OPTIONAL,
  cause                     [17] Cause {bound} OPTIONAL,
  serviceInteractionIndicatorsTwo [32] ServiceInteractionIndicatorsTwo OPTIONAL,
  carrier                   [37] Carrier {bound} OPTIONAL,
  cug-Index                 [45] CUG-Index OPTIONAL,
  cug-Interlock             [46] CUG-Interlock OPTIONAL,
  cug-OutgoingAccess        [47] NULL OPTIONAL,
  IMSI                      [50] IMSI OPTIONAL,
  subscriberState           [51] SubscriberState OPTIONAL,
  locationInformation       [52] LocationInformation OPTIONAL,
  ext-basicServiceCode      [53] Ext-BasicServiceCode OPTIONAL,
  callReferenceNumber       [54] CallReferenceNumber OPTIONAL,
  iMSSFAddress              [55] ISDN-AddressString OPTIONAL,
  calledPartyBCDNumber      [56] CalledPartyBCDNumber {bound} OPTIONAL,
  timeAndTimezone           [57] TimeAndTimezone {bound} OPTIONAL,
  gsm-ForwardingPending     [58] NULL OPTIONAL,
  initialDPArgExtension     [59] InitialDPArgExtension {imsBound} OPTIONAL,
  ...
}
-- The following parameters in InitialDPArg are not used for IMS:
-- locationNumber
-- highLayerCompatibility
-- additionalCallingPartyNumber
-- bearerCapability
-- serviceInteractionIndicatorsTwo
-- carrier
-- cug-Index
-- cug-Interlock
-- cug-OutgoingAccess
-- locationInformation
-- ext-basicServiceCode
-- callReferenceNumber,
-- calledPartyBCDNumber
-- gsm-ForwardingPending

InitialDPArgExtension {IMS-PARAMETERS-BOUND : imsBound} ::= SEQUENCE {
  gsmcAddress                [0] ISDN-AddressString OPTIONAL,
  mediaType                  [1] MediaType OPTIONAL,
  sipCallId                  [2] SIPCallId {imsBound} OPTIONAL,
  calledPartyURL             [3] CldClgPartryURL {imsBound} OPTIONAL,
  callingPartyURL            [4] CldClgPartryURL {imsBound} OPTIONAL,
  originalCalledPartyURL     [5] CldClgPartryURL {imsBound} OPTIONAL,
  redirectingPartyURL        [6] CldClgPartryURL {imsBound} OPTIONAL,
  ...
}
-- The gsmcAddress parameter in InitialDPArgExtension is not used for IMS.

releaseCall {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT ReleaseCallArg {bound}
  RETURN RESULT FALSE
  ALWAYS RESPONDS FALSE
  CODE opcode-releaseCall
}
-- Direction: gsmSCF ->?IM-SSF, Timer: Trc
-- This operation is used to tear down an existing call at any phase of the call for all parties
-- involved in the call.

ReleaseCallArg {PARAMETERS-BOUND : bound} ::= Cause {bound}
-- A default value of decimal 31 (normal unspecified) shall be given.

```

```

requestReportBCSMEvent {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT      RequestReportBCSMEventArg {bound}
  RETURN RESULT FALSE
  ERRORS        {missingParameter |
                 parameterOutOfRange |
                 systemFailure |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter |
                 unknownLegID}
  CODE          opcode-requestReportBCSMEvent
}
-- Direction: gsmSCF -> IM-SSF, Timer: Trrb
-- This operation is used to request the IM-SSF to monitor for a call-related event
-- (e.g. BCSM events such as busy or no answer), then send a notification back to the gsmSCF when
-- the event is detected.
-- NOTE:
--   Every EDP must be explicitly armed by the gsmSCF via a RequestReportBCSMEvent operation.
--   No implicit arming of EDPs at the IM-SSF after reception of any operation (different
--   from RequestReportBCSMEvent) from the gsmSCF is allowed.

RequestReportBCSMEventArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  bcsmevents [0] SEQUENCE SIZE(1..bound.&numOfBCSMEvents) OF BCSMEVENT,
  extensions [2] Extensions {bound} OPTIONAL,
  ...
}
-- Indicates the BCSM related events for notification.

resetTimer {PARAMETERS-BOUND : bound} OPERATION ::= {
  ARGUMENT      ResetTimerArg {bound}
  RETURN RESULT FALSE
  ERRORS        {missingParameter |
                 parameterOutOfRange |
                 taskRefused |
                 unexpectedComponentSequence |
                 unexpectedDataValue |
                 unexpectedParameter}
  CODE          opcode-resetTimer
}
-- Direction: gsmSCF -> IM-SSF, Timer: Trt
-- This operation is used to request the IM-SSF to refresh an application timer in the IM-SSF.

ResetTimerArg {PARAMETERS-BOUND : bound} ::= SEQUENCE {
  timerID       [0] TimerID DEFAULT tssf,
  timervalue    [1] TimerValue,
  extensions     [2] Extensions {bound} OPTIONAL,
  ...
}

END

--6.1.2 IM-SSF/gsmSCF packages, contracts and ACs
--6.1.2.1 IM-SSF/gsmSCF ASN.1 module
CAP-IMSSF-gsmSCF-pkgs-contracts-acs {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-IMSSF-gsmSCF-pkgs-contracts-acs(112) version1(0)}

DEFINITIONS ::= BEGIN

-- This module specifies the Operation Packages, Contracts, Application Contexts
-- and Abstract Syntaxes used for the IM-SSF - gsmSCF interface used for the control of
-- IP Multimedia call sessions.

-- Table 2.1.1 lists the specifications that contain the modules used by CAP.

IMPORTS

    PARAMETERS-BOUND,
    @cAPSpecificBoundSet
FROM CAP-classes classes

    IMS-PARAMETERS-BOUND
FROM CAP-IMS-classes IMSclasses

    CONTRACT,
    OPERATION-PACKAGE,
    OPERATION
FROM Remote-Operations-Information-Objects ros-InformationObjects

    TCMessage {}
FROM TCAPMessages tc-Messages

    APPLICATION-CONTEXT,
    dialogue-abstract-syntax
FROM TC-Notation-Extensions tc-NotationExtensions

    activityTest,
    applyCharging {},

```

```

    applyChargingReport {},
    callGap {},
    callInformationReport {},
    callInformationRequest {},
    cancel ,
    connect {},
    connectToResource-{},
    continue,
    continueWithArgument {},
    disconnectForwardConnection,
    eventReportBCSM {},
    furnishChargingInformation {},
    initialDP {},
    releaseCall {},
    requestReportBCSMEvent {},
    resetTimer {}
FROM CAP-IMSSF-gsmSCF-ops-args imSSF-gsmSCF-Operations

    playAnnouncement {},
    promptAndCollectUserInformation {},
    specializedResourceReport
FROM CAP-gsmSCF-gsmSRF-ops-args gsmSCF-gsmSRF-Operations

    specializedResourceControlPackage {}
FROM CAP-gsmSCF-gsmSRF-pkgs-contracts-acs gsmSCF-gsmSRF-Protocol

    id-as-gsmSSF-scfGenericAS,
    id-package-scfActivation,
    id-package-genericDisconnectResource,
    id-package-nonAssistedConnectionEstablishment,
    id-package-connect,
    id-package-callHandling,
    id-package-bcsmEventHandling,
    id-package-ssfCallProcessing,
    id-package-timer,
    id-package-billing,
    id-package-charging,
    id-package-trafficManagement,
    id-package-callReport,
    id-package-signallingControl,
    id-package-activityTest,
    id-package-cancel,
    classes,
    ros-InformationObjects,
    tc-Messages,
    tc-NotationExtensions,
    gsmSCF-gsmSRF-Operations,
    gsmSCF-gsmSRF-Protocol
FROM CAP-object-identifiers {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-object-identifiers(100) version3(2)}

    id-ac-CAP-IMSSF-scfGenericAC,
    id-CAPImssfToScfGeneric,
    IMSClasses,
    IMSSF-gsmSCF-Operations
FROM CAP-IMS-object-identifiers {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0)
umts-network(1) modules(3) cap-IMS-object-identifiers(110) version4(3)}

;

-- Application Contexts

cap-IMSSF-scfGenericAC APPLICATION-CONTEXT ::= {
    CONTRACT                capImssfToScfGeneric
    DIALOGUE MODE           structured
    ABSTRACT SYNTAXES       {dialogue-abstract-syntax |
                             gsmSSF-scfGenericAbstractSyntax-}
    APPLICATION CONTEXT NAME id-ac-CAP-IMSSF-scfGenericAC}

-- Contracts

capImssfToScfGeneric_CONTRACT ::= {
-- dialogue initiated by IM-SSF with InitialDP Operation
    INITIATOR CONSUMER OF
        {scfActivationPackage {cAPSpecificBoundSet,
                               ims-CAPSpecificBoundSet}}
    RESPONDER CONSUMER OF
        {activityTestPackage |
         bcsmEventHandlingPackage {cAPSpecificBoundSet} |
         billingPackage {cAPSpecificBoundSet} |
         callHandlingPackage {cAPSpecificBoundSet} |
         callReportPackage {cAPSpecificBoundSet} |
         cancelPackage |
         chargingPackage {cAPSpecificBoundSet} |
         connectPackage {cAPSpecificBoundSet,
                        ims-CAPSpecificBoundSet} |
         genericDisconnectResourcePackage |
         nonAssistedConnectionEstablishmentPackage {cAPSpecificBoundSet} |

```



```

| ----- signallingControlPackage {cAPSpecificBoundSet} |
| specializedResourceControlPackage {cAPSpecificBoundSet} |
| sscfCallProcessingPackage {cAPSpecificBoundSet} |
| timerPackage {cAPSpecificBoundSet} |
| trafficManagementPackage {cAPSpecificBoundSet}}
ID id-CAPImssfToScfGeneric
}

-- Operation Packages

| scfActivationPackage {PARAMETERS-BOUND : bound, IMS-PARAMETERS-BOUND : imsBound} OPERATION-PACKAGE
| ::= {
|   CONSUMER INVOKES {initialDP {bound, imsBound}}
|   ID id-package-scfActivation}
| genericDisconnectResourcePackage OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {disconnectForwardConnection}
|   ID id-package-genericDisconnectResource}
| nonAssistedConnectionEstablishmentPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {connectToResource {bound}}
|   ID id-package-nonAssistedConnectionEstablishment}
| connectPackage {PARAMETERS-BOUND : bound, IMS-PARAMETERS-BOUND : imsBound} OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {connect {bound, imsBound}}
|   ID id-package-connect}
| callHandlingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {releaseCall {bound}}
|   ID id-package-callHandling}
| bcsmEventHandlingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {requestReportBCSMEvent {bound}}
|   SUPPLIER INVOKES {eventReportBCSM {bound}}
|   ID id-package-bcsmEventHandling}
| sscfCallProcessingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {continueWithArgument {bound} | continue}
|   ID id-package-sscfCallProcessing}
| timerPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {resetTimer {bound}}
|   ID id-package-timer}
| billingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {furnishChargingInformation {bound}}
|   ID id-package-billing}
| chargingPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {applyCharging {bound}}
|   SUPPLIER INVOKES {applyChargingReport {bound}}
|   ID id-package-charging}
| trafficManagementPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {callGap {bound}}
|   ID id-package-trafficManagement}
| callReportPackage {PARAMETERS-BOUND : bound} OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {callInformationRequest {bound}}
|   SUPPLIER INVOKES {callInformationReport {bound}}
|   ID id-package-callReport}
| activityTestPackage OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {activityTest}
|   ID id-package-activityTest}
| cancelPackage OPERATION-PACKAGE ::= {
|   CONSUMER INVOKES {cancel}
|   ID id-package-cancel}

-- Abstract Syntaxes

gsmSSF-scfGenericAbstractSyntax ABSTRACT-SYNTAX ::= {
  GenericSSF-gsmSCF-PDUs
  IDENTIFIED BY id-as-gsmSSF-scfGenericAS-}
GenericSSF-gsmSCF-PDUs ::= TCMMessage {{SsfToScfGenericInvokable},
  {SsfToScfGenericReturnable}}
SsfToScfGenericInvokable OPERATION ::= {
  activityTest |
  applyCharging {cAPSpecificBoundSet} |
  applyChargingReport {cAPSpecificBoundSet} |
  callInformationReport {cAPSpecificBoundSet} |
  callInformationRequest {cAPSpecificBoundSet} |
  cancel |
  connect {cAPSpecificBoundSet, ims-CAPSpecificBoundSet} |
  continueWithArgument {cAPSpecificBoundSet} |
  connectToResource {cAPSpecificBoundSet} |
  disconnectForwardConnection |
  eventReportBCSM {cAPSpecificBoundSet} |
  furnishChargingInformation {cAPSpecificBoundSet} |
  initialDP {cAPSpecificBoundSet, ims-CAPSpecificBoundSet} |
  releaseCall {cAPSpecificBoundSet} |
  requestReportBCSMEvent {cAPSpecificBoundSet} |
  resetTimer {cAPSpecificBoundSet} |
  sendChargingInformation {cAPSpecificBoundSet} |
  playAnnouncement {cAPSpecificBoundSet} |
  promptAndCollectUserInformation {cAPSpecificBoundSet} |
  specializedResourceReport
}

```

```
SsfToScfGenericReturnable OPERATION ::= {  
  activityTest |  
  applyCharging {cAPSpecificBoundSet} |  
  applyChargingReport {cAPSpecificBoundSet} |  
  callGap {cAPSpecificBoundSet} |  
  callInformationRequest {cAPSpecificBoundSet} |  
  cancel |  
  connect {cAPSpecificBoundSet, ims-CAPSpecificBoundSet} |  
  connectToResource |  
  continue |  
  continueWithArgument {cAPSpecificBoundSet} |  
  disconnectForwardConnection |  
  furnishChargingInformation {cAPSpecificBoundSet} |  
  initialDP {cAPSpecificBoundSet, ims-CAPSpecificBoundSet} |  
  releaseCall {cAPSpecificBoundSet} |  
  requestReportBCSMEvent {cAPSpecificBoundSet} |  
  resetTimer {cAPSpecificBoundSet} |  
  playAnnouncement {cAPSpecificBoundSet} |  
  promptAndCollectUserInformation {cAPSpecificBoundSet}  
}
```

END

— End of CR —

CR-Form-v7

## CHANGE REQUEST

⌘ **23.278 CR 010** ⌘ rev **1** ⌘ Current version: **5.0.0** ⌘

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

<b>Title:</b>	⌘ Correction of InitialDP MediaType parameter		
<b>Source:</b>	⌘ Lucent Technologies		
<b>Work item code:</b>	⌘ IMS-CAMEL	<b>Date:</b>	⌘ 26/09/2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ This CR introduces the modifications needed to the stage 2 specification to make the Information Flow description for the Media Type IE consistent with the modified ASN.1 definition in 29.278 per tdoc N2-020867 (stage 3 CR).
<b>Summary of change:</b>	⌘ The proposed changes are as follows: 1. Rename the IE from "Media Type" to "Media Type Info List". 2. Indicate in the text description that the value for this IE shall use the same value received in the Media Description field(s) of the SIP message from the S-CSCF.
<b>Consequences if not approved:</b>	⌘ Inconsistent description from stage 2 specification.

<b>Clauses affected:</b>	⌘ 5.2.1.5.2										
<b>Other specs affected:</b>	<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;">X</td> <td style="text-align: center;"> </td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> <tr> <td style="text-align: center;"> </td> <td style="text-align: center;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ 29.278 - CR 001
Y	N										
X											
	X										
	X										
		Test specifications									
		O&M Specifications									
<b>Other comments:</b>	⌘										

**\*\*\*\* First modified section \*\*\*\***

The Initial DP IE description for Media Type IE shall be modified as follows:

5.2.1.5 Initial DP

5.2.1.5.1 Description

This IF is generated by the IM-SSF when a trigger is detected at a DP in the BCSM, to request instructions from the gsmSCF

5.2.1.5.2 Information Elements

Information element name	IM_Orig	IM_Term	Description
Media Type_Info List	M	M	This IE indicates the media <b>types</b> associated with the SIP call session. This IE shall contain the media description(s) received from the S-CSCF.

CR-Form-v7

## CHANGE REQUEST

⌘ **29.278 CR 001** ⌘ rev **1** ⌘ Current version: **5.0.0** ⌘

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

<b>Title:</b>	⌘ Correction of ASN.1 definition for the InitialDP MediaType parameter		
<b>Source:</b>	⌘ Lucent Technologies.		
<b>Work item code:</b>	⌘ IMS-CAMEL	<b>Date:</b>	⌘ 26/09/2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-5
	<i>Use one of the following categories:</i> <b>F</b> (correction) <b>A</b> (corresponds to a correction in an earlier release) <b>B</b> (addition of feature), <b>C</b> (functional modification of feature) <b>D</b> (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.		<i>Use one of the following releases:</i> <b>2</b> (GSM Phase 2) <b>R96</b> (Release 1996) <b>R97</b> (Release 1997) <b>R98</b> (Release 1998) <b>R99</b> (Release 1999) <b>Rel-4</b> (Release 4) <b>Rel-5</b> (Release 5) <b>Rel-6</b> (Release 6)

**Reason for change:** ⌘ The MediaType parameter in InitialDP is currently defined as an integer value but the mapping of the integer value to the media names (e.g. "audio", "video", etc) has not been defined for this parameter. Since the IM-SSF sends this info to the gsmSCF without additional processing based on the value of the media type, the MediaType parameter sent in the IDP can be changed to use the same text format used in the SIP message. Redefining the MediaType parameter to be a text string instead of an integer value will eliminate the need for additional specifications on how the integer value maps to the actual media type.

**Summary of change:** ⌘

Background info:

The SIP INVITE message received at the IM-SSF includes the media description within the SDP (Session Description Protocol) data. The media description begins with the "m=" line and is in the following format:

m=<media name> <port#> <transport protocol> <media format>

Examples:

m=audio 49170 RTP/AVP 0

m=video 51372 RTP/AVP 31

m=application 32416 udp wb

The first sub-field is the media type, followed by sub-fields pertaining to the transport address to be used for that specific media. The current valid media defined by IETF are as follows: "audio", "video", "application", "data" and "control", but this list is likely to be extended as new technology for communications develops. For descriptions of the different media, please refer to IETF draft-ietf-mmusic-sdp-new-10.txt .

Furthermore, a SIP message may indicate more than one media description ( i.e. more than one "m=" line). Also refer to IETF draft-ietf-mmusic-sdp-new-10.txt for

discussion of use of multiple media in the SIP message.

Proposed Changes:

This CR includes the following proposed changes to 29.278:

1. The ASN.1 definition for the MediaType parameter shall be changed from type INTEGER to a list of upto 5 OCTET STRING SIZE (1-50) data type.

Please note that there is no particular reason for choosing a maximum list of upto 5 media types. The current number of valid media is 5; hence, "5" has been chosen as the upper boundary for this list.

2. Text will be added to indicate that value for the media type parameter is based on the value of the media description parameter received in the SIP message. Also, a reference to IETF draft-ietf-mmusic-sdp-new-10.txt shall be added for encoding of the parameter.

Ex.

If in the SIP INVITE message the following is received:

m=audio 49170 RTP/AVP 0

then the Media Type parameter in InitialDP shall be set to the text string "audio 49170 RTP/AVP 0".

3. Rename MediaType parameter to MediaTypeInfoList.

4. Add the IETF draft-ietf-mmusic-sdp-new-10.txt to the list of References. Since this is a draft version, an editor's note shall be added to indicate that this is just a draft. This is the approach that has been used in other 3GPP specifications such as 3GPP TS 24.229.

**Consequences if not approved:** ☼ Incorrect definition of the media type parameter.

**Clauses affected:** ☼ 2, 5.1, 5.2, 6.1.1, 9.15.1.1

	Y	N		
<b>Other specs affected:</b>	X		Other core specifications	☼ 23.278 – CR 010r1
		X	Test specifications	
		X	O&M Specifications	

**Other comments:** ☼

**\*\*\*\* First modified section \*\*\*\***

## 2 References

( add the following references:)

- [11] 3GPP TS 29.078: " Customised Applications for Mobile network Enhanced Logic (CAMEL) - Phase 3; CAMEL Application Part (CAP) Specification – Release 99".
- [12] draft-ietf-mmusic-sdp-new-10 (May 2002): "SDP: Session Description Protocol"

Editor's note: The above document cannot be formally referenced until it is published as an RFC.

## 5.1 Data types

CAP-IMS-datatypes {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3) cap-IMS-datatypes(62) version1(0)}

-- This module contains the data type definitions used for CAMEL/IMS interworking.

DEFINITIONS IMPLICIT TAGS ::= BEGIN

(...unchanged specification ...)

```

MediaType ::= INTEGER
The valid values for Media Type are for further study.
MediaTypeInfo {IMS-PARAMETERS-BOUND : imsBound} ::= OCTET STRING
(SIZE(imsBound.&minMediaTypeInfoLength .. imsBound.&maxMediaTypeInfoLength))
-- This parameter contains the Media Type data in the first subfield, followed by
-- the port number, transport protocol, and media format subfields.
-- Example: "<media type> <port#> <transport protocol> <media format>"
-- "audio 49170 RTP/AVP 0"
-- For valid media type values and encoding of the parameter, refer to the
-- Media Description parameter found in IETF SDP specification [12].

```

```

MediaTypeInfoList {IMS-PARAMETERS-BOUND : imsBound} ::= SEQUENCE SIZE (1..5) OF
MediaTypeInfo {imsBound}

```

(...unchanged specification ...)

END

## 5.2 Classes

CAP-IMS-classes {itu-t(0) identified-organization(4) etsi(0) mobileDomain(0) umts-network(1) modules(3) cap-IMS-classes(64) version1(0)}

-- This module contains the class definitions used specifically for CAMEL/IMS interworking.

DEFINITIONS ::= BEGIN

(...unchanged specification ...)

```

IMS-PARAMETERS-BOUND ::= CLASS
{
    &minCldClgPartyURLLength          INTEGER,
    &maxCldClgPartyURLLength          INTEGER,
    &minMediaTypeInfoLength           INTEGER,
    &maxMediaTypeInfoLength           INTEGER,
    &minSipCallIdLength               INTEGER,
    &maxSipCallIdLength               INTEGER
}

```

```

}
WITH SYNTAX
{
    MINIMUM-FOR-CLDCLG-PARTY-URL &minCldClgPartyURLLength
    MAXIMUM-FOR-CLDCLG-PARTY-URL &maxCldClgPartyURLLength
    MINIMUM-FOR-MEDIA-TYPE-INFO &minMediaTypeInfoLength
    MAXIMUM-FOR-MEDIA-TYPE-INFO &maxMediaTypeInfoLength
    MINIMUM-FOR-SIP-CALL-ID &minSipCallIdLength
    MAXIMUM-FOR-SIP-CALL-ID &maxSipCallIdLength
}

ims-CAPSpecificBoundSet IMS-PARAMETERS-BOUND ::=
{
    MINIMUM-FOR-CLDCLG-PARTY_URL 1
    MAXIMUM-FOR-CLDCLG-PARTY_URL 100
    MINIMUM-FOR-MEDIA-TYPE-INFO 1
    MAXIMUM-FOR-MEDIA-TYPE-INFO 50
    MINIMUM-FOR-SIP-CALL-ID 1
    MAXIMUM-FOR-SIP-CALL-ID 30
}

END

```

## 6.1.1 Operations and arguments

(...unchanged specification ...)

```

    CalledPartyURL {},
    CallingPartyURL {},
    MediaType MediaTypeInfoList {},
    SIPCallId {},
    OriginalCalledPartyURL {},
    RedirectingPartyURL {},
    DestinationRoutingAddressURL {}
FROM CAP-IMS-datatypes cap-IMS-datatypes

```

(...unchanged specification ...)

```

InitialDPArgExtension {IMS-PARAMETERS-BOUND : imsBound} ::= SEQUENCE {
    gsmcAddress [0] ISDN-AddressString OPTIONAL,
    mediaTypeInfoList [1] MediaTypeInfoList -
-OPTIONAL,
    sipCallId [2] SIPCallId {imsBound} OPTIONAL,
    calledPartyURL [3] CldClgPartryURL {imsBound} OPTIONAL,
    callingPartyURL [4] CldClgPartryURL {imsBound} OPTIONAL,
    originalCalledPartyURL [5] CldClgPartryURL {imsBound} OPTIONAL,
    redirectingPartyURL [6] CldClgPartryURL {imsBound} OPTIONAL,
    ....
}

```

## 9.15 InitialDP procedure

### 9.15.1 General description

This operation is sent by the IM-SSF after detection of a TDP-R in the BCSM, to request the gsmSCF for instructions to complete the call.

#### 9.15.1.1 Parameters

(...unchanged specification ...)



-mediaTypeInfoList:

This parameter indicates the media type (e.g. video, audio, application or data) associated with the SIP session. call (e.g. video, audio, application or data).

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

CR-Form-v7

## CHANGE REQUEST

⌘ **23.278 CR 001** ⌘ rev **2** ⌘ Current version: **5.0.0** ⌘

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

<b>Title:</b>	⌘ Correction and improvement in the overall SDL architecture		
<b>Source:</b>	⌘ Siemens AG		
<b>Work item code:</b>	⌘ IMS-CAMEL	<b>Date:</b>	⌘ 27/09/2002
<b>Category:</b>	⌘ <b>F</b>	<b>Release:</b>	⌘ Rel-5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	<b>F</b> (correction)		2 (GSM Phase 2)
	<b>A</b> (corresponds to a correction in an earlier release)		R96 (Release 1996)
	<b>B</b> (addition of feature),		R97 (Release 1997)
	<b>C</b> (functional modification of feature)		R98 (Release 1998)
	<b>D</b> (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	⌘ Figures in subclause 5.1 "Overall SDL Architecture" do not reflect the actual SDLs intended to be used in this specification. The figures should provide the readers with the basic information of which SDLs in the following subclauses shall be referred and how they relate.
<b>Summary of change:</b>	⌘ Provide the actual SDLs which are used in this specification.
<b>Consequences if not approved:</b>	⌘ Difficulty in understanding overall structure.

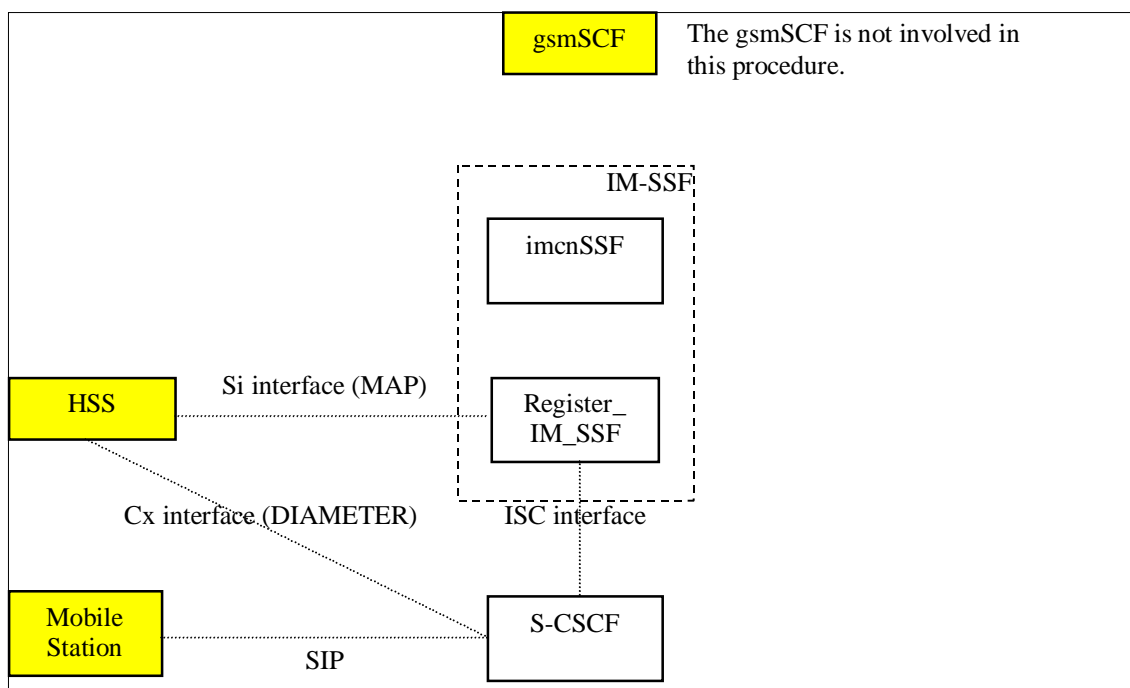
<b>Clauses affected:</b>	⌘ 5.1										
<b>Other specs affected:</b>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;"> </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>	Y	N		X		X		X	Other core specifications	⌘
Y	N										
	X										
	X										
	X										
		Test specifications									
		O&M Specifications									
<b>Other comments:</b>	⌘ CR editor's note: Re-numbering and re-formatting the figure numbers needed throughout the whole document.										

## 5 Procedures for IM-SSF Application Server

The SDLs in this specification illustrate how CAMEL modifies the normal multimedia call. They do not attempt to show all the details of multimedia handling in all the modes that support CAMEL.

The text in this clause is a supplement to the definition in the SDL diagrams; it does not duplicate the information in the SDL diagrams.

### 5.1 Overall SDL Architecture



**Figure 5.1.1: SIP Registration into IM-SSF**

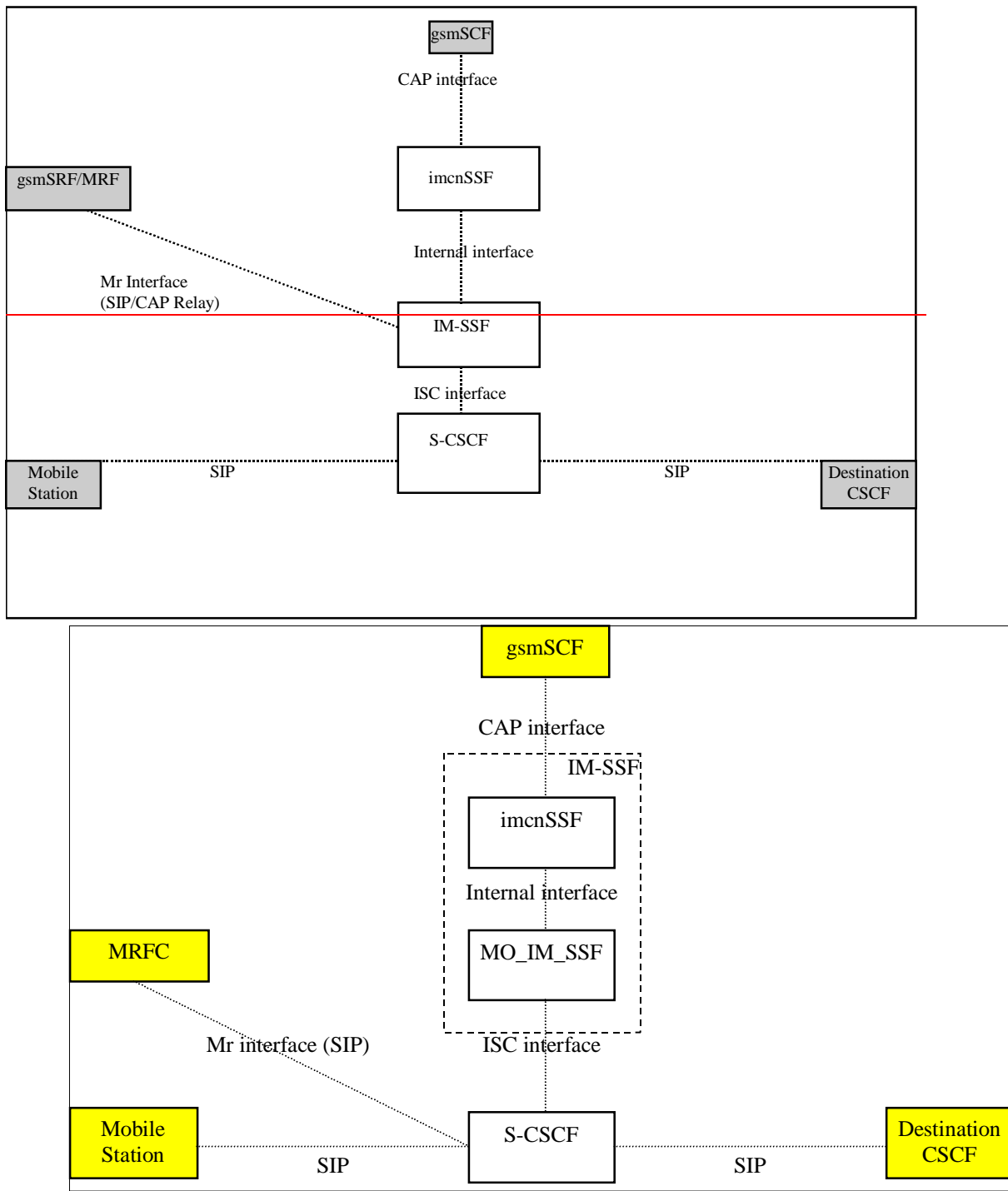
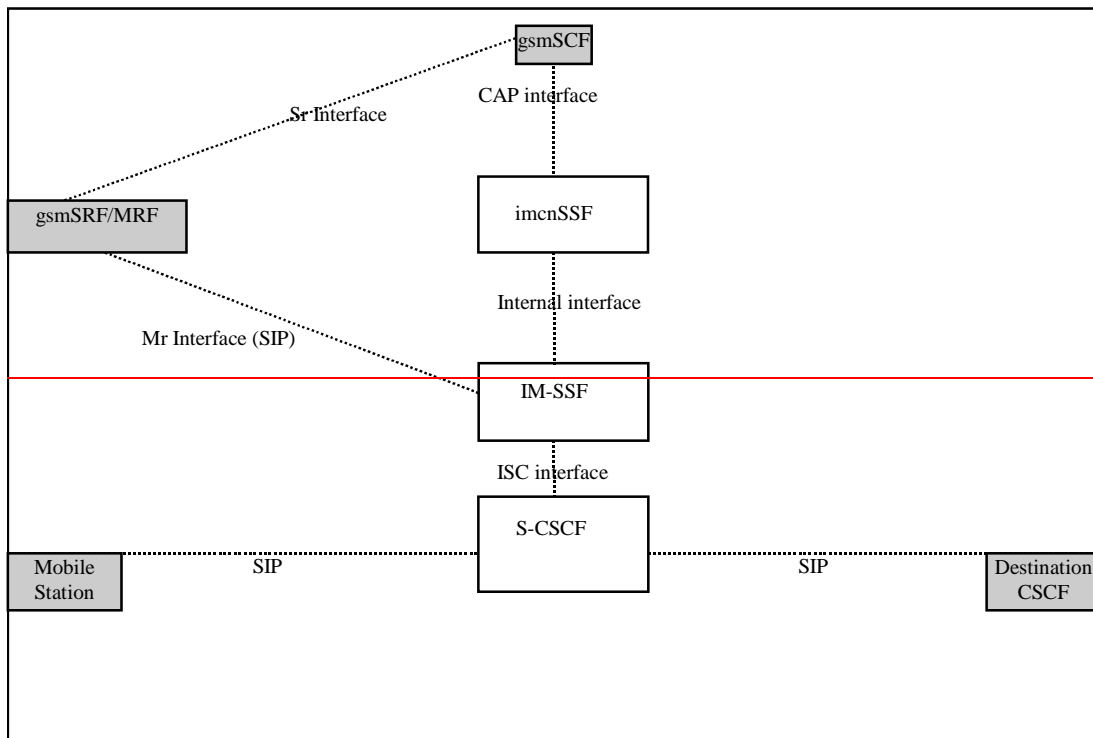
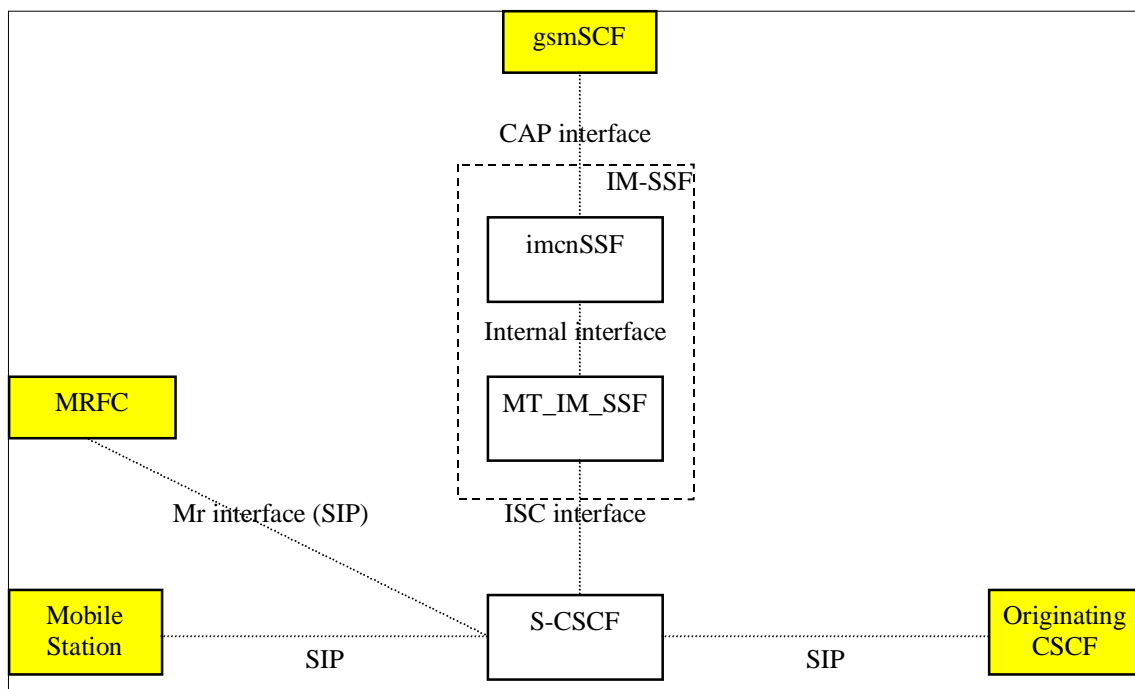


Figure 5.1.12: **Outgoing Originating Case (IM-SSF relay)**



**Figure 5.1.2: Outgoing Case (direct path gsmSCF to gsmSRF/MRFC)**



**Figure 5.1.3: Terminating Case**

## CHANGE REQUEST

# **23.278 CR 007** # rev **1** # Current version: **5.0.0** #

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

<b>Title:</b>	#	Inconsistent description on ACR: time information	
<b>Source:</b>	#	Siemens AG	
<b>Work item code:</b>	#	IMS-CAMEL	<b>Date:</b> # 27/09/2002
<b>Category:</b>	#	<b>F</b>	<b>Release:</b> # Rel-5
		Use <u>one</u> of the following categories:	Use <u>one</u> of the following releases:
		<b>F</b> (correction)	2 (GSM Phase 2)
		<b>A</b> (corresponds to a correction in an earlier release)	R96 (Release 1996)
		<b>B</b> (addition of feature),	R97 (Release 1997)
		<b>C</b> (functional modification of feature)	R98 (Release 1998)
		<b>D</b> (editorial modification)	R99 (Release 1999)
		Detailed explanations of the above categories can be found in 3GPP <a href="#">TR 21.900</a> .	Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

<b>Reason for change:</b>	#	CR 29.078-128r3 (N2-000675 at CN2#15 Paris) was approved to solve a problem which did not cover the scenario where a tariff switch occurs before the supervised call is answered. At that time, only the solution to the stage 3 was given. The stage 3 was at the later time used as the basis of the draft 29.278. However, the stage 2 description was left unchanged at the time of drafting 23.278.
<b>Summary of change:</b>	#	Correct the description in the stage 2 to align with the stage 3. Also modify to meet the requirement for IMS/CAMEL (remove temporary connection, replace gsmSRF by MRFC)
<b>Consequences if not approved:</b>	#	Inconsistent between the stage 2 and the stage 3. No correct solution could be identified. Different implementation could occur.

<b>Clauses affected:</b>	#	5.2.1.2										
<b>Other specs affected:</b>	#	<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="width: 20px; text-align: center;">Y</td> <td style="width: 20px; text-align: center;">N</td> </tr> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> </table> Other core specifications # <span style="background-color: yellow; display: inline-block; width: 100px; height: 1em;"></span> <table border="1" style="display: inline-table; vertical-align: middle;"> <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> Test specifications <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="text-align: center;">#</td> <td style="text-align: center;">X</td> </tr> </table> O&M Specifications	Y	N	#	X	#	X	#	X	#	X
Y	N											
#	X											
#	X											
#	X											
#	X											
<b>Other comments:</b>	#	This CR is based on 23.078-441r1 (N2-020742) which has been already included in the current TS 23.078.										

## 5.2.1.2 Apply Charging Report

### 5.2.1.2.1 Description

This IF is used by the IM-SSF to report to the gsmSCF the information requested in the Apply Charging IF.

### 5.2.1.2.2 Information Elements

Information element name	Status	Description
Call Result	M	This IE contains the charging information to be provided by the IM-SSF.

Call Result contains the following information:

Information element name	Status	Description
Time Duration Charging Result	M	This IE is a list defined in the next table.

Time Duration Charging Result contains the following information:

Information element name	Status	Description
Time Information	M	This IE is a choice between Time if No Tariff Switch and Time if Tariff Switch. This IE is described in the next table.
Party To Charge	M	This IE is received in the related ApplyCharging operation to correlate the result to the request. This IE shall be a copy of the corresponding IE received in the Apply Charging operation.
Call Active	M	This IE indicates whether the call is active or not.
Call Released at Tcp Expiry	C	This element is an indication that the IM-SSF has released the call and terminated the dialogue, due to Tcp expiry. It shall be present when ACR is sent due to Tcp expiry and the IM-SSF has released the call (because "ReleaselfExceeded" was present in ACH operation). In all other circumstances, this element shall be absent.

Time Information contains one of the following information:

Information element name	Status	Description
Time If No Tariff Switch	C	This IE will be present if no tariff switch has occurred since the <a href="#">reception of the first Apply Charging IF</a> <del>detection of Answer</del> for the connection to the Called Party or the <a href="#">MRFC</a> <del>SRE</del> connection, otherwise it will be absent. <a href="#">If Answer was detected for the connection to the Called Party or the MRFC connection, then the elapsed time since detection of Answer shall be reported.</a> <a href="#">If answer was not detected, it shall be set to "0".</a>
Time If Tariff Switch	C	This IE will be present if a tariff switch has occurred since the <a href="#">reception of the first Apply Charging IF</a> <del>detection of Answer</del> for the connection to the Called Party, <del>the Temporary Connection,</del> or the <a href="#">MRFC</a> <del>SRE</del> connection, otherwise it will be absent.