

3GPP TSG CN Plenary Meeting #17
4th – 6th September 2002 Biarritz, FRANCE.

NP-020451

Source: TSG CN WG4
Title: IMS-Camel
Agenda item: 8.1
Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	482		N4-020809	Rel5	Support of the MAP Si interface	B	5.2.0
29.002	481		N4-020810	Rel5	Extensions to ATM for CAMEL control of IMS	B	5.2.0
23.003	054		N4-020811	Rel5	SCCP sub-system Number for IM-SSF	B	5.3.0
23.008	054	1	N4-021012	Rel5	Organisation of CAMEL IMS Data	B	5.1.0

3GPP TSG CN WG4 Meeting #15
Helsinki, Finland, 29th July – 2nd August 2002

N4-020811

<small>CR-Form-v7</small>
<h2 style="margin: 0;">CHANGE REQUEST</h2>
⌘ 23.003 CR 054 ⌘ rev ⌘ Current version: 5.3.0 ⌘

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:	⌘ CR 23.003-046 (rel 5) on SCCP sub-system Number for IM-SSF		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CAMEL	Date:	⌘ 24/06/2002
Category:	⌘ B	Release:	⌘ REL-5
	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: 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:	⌘ Introduce the SSN used for an IM-SSF MAP Si interface. Changes are introduced for the new WI: Support of CAMEL by the IMS. In an IP Multimedia Core Network, the IM-SSF takes the role of the gsmSCF for the Any Time Subscriber Interrogation and Note Subscriber Data Modified MAP services.
Summary of change:	⌘ Re-use gsmSCF SSN for IM-SSF when the IM-SSF takes the role of the gsmSCF (when interfacing with the HLR via the MAP Si interface).
Consequences if not approved:	⌘ Incomplete MAP Si interface.

Clauses affected:	⌘ 8.2								
Other specs affected:	<table style="display: inline-table; border-collapse: collapse;"> <tr> <td style="border: 1px solid black; padding: 2px;">Y</td> <td style="border: 1px solid black; padding: 2px;">N</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;">X</td> <td style="border: 1px solid black; padding: 2px;"> </td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;"> </td> <td style="border: 1px solid black; padding: 2px;">X</td> </tr> <tr> <td style="border: 1px solid black; padding: 2px;"> </td> <td style="border: 1px solid black; padding: 2px;">X</td> </tr> </table> Other core specifications ⌘ CR 29.002-415 and 3G TS 23.278 Test specifications O&M Specifications	Y	N	X			X		X
Y	N								
X									
	X								
	X								
Other comments:	⌘								

8 SCCP subsystem numbers

Subsystem numbers are used to identify applications within network entities which use SCCP signalling. In GSM, subsystem numbers may be used between PLMNs, in which case they are taken from the globally standardized range (1 - 31) or the part of the national network range (129 - 150) reserved for GSM use between PLMNs, or within a PLMN, in which case they are taken from the part of the national network range (32 - 128 & 151 - 254) not reserved for GSM use between PLMNs.

8.1 Globally standardized subsystem numbers used for GSM

The following globally standardised subsystem numbers have been allocated for use by GSM:

- 0000 0110 HLR (MAP);
- 0000 0111 VLR (MAP);
- 0000 1000 MSC (MAP);
- 0000 1001 EIR (MAP);
- 0000 1010 is allocated for evolution (possible Authentication Centre).

**** ONLY MODIFIED SECTION IS BELOW ****

8.2 National network subsystem numbers used for GSM

The following national network subsystem numbers have been allocated for use within GSM networks:

- 1111 1001 PCAP;
- 1111 1010 BSC (BSSAP-LE);
- 1111 1011 MSC (BSSAP-LE);
- 1111 1100 SMLC (BSSAP-LE);
- 1111 1101 BSS O&M (A interface);
- 1111 1110 BSSAP (A interface).

The following national network subsystem numbers have been allocated for use within and between GSM networks:

- 1000 1110 RANAP;
- 1000 1111 RNSAP;
- 1001 0001 GMLC(MAP);
- 1001 0010 CAP;
- 1001 0011 gsmSCF(MAP) [or IM-SSF \(MAP\)](#);
- 1001 0100 SIWF(MAP);
- 1001 0101 SGSN(MAP);
- 1001 0110 GGSN(MAP).

CR-Form-v7

CHANGE REQUEST

⌘ **23.008 CR 054** ⌘ rev **1** ⌘ Current version: **5.1.0** ⌘

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

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

Title:	⌘ CR to 23.008 on the Organisation of CAMEL IMS Data		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CAMEL	Date:	⌘ 27/06/2002
Category:	⌘ B	Release:	⌘ 5
	Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
	F (correction)		2 (GSM Phase 2)
	A (corresponds to a correction in an earlier release)		R96 (Release 1996)
	B (addition of feature),		R97 (Release 1997)
	C (functional modification of feature)		R98 (Release 1998)
	D (editorial modification)		R99 (Release 1999)
	Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Rel-4 (Release 4)
			Rel-5 (Release 5)
			Rel-6 (Release 6)

Reason for change:	⌘ Introduces the Data related for the CAMEL Support of IMS Services.		
Summary of change:	⌘ A reference to 3GPP TS 23.278 is given. A new section 3.8 is introduced detailing the Originating and Terminating IP Multimedia CAMEL Subscription Information and also that for Dialed services. The gsmSCF address for IP Multimedia CSI is defined.		
Consequences if not approved:	⌘ 3GPP TS 23.008 won't include the required data modifications for Camel Support in IMS.		

Clauses affected:	⌘ 0.1, 3.8, 5.3,										
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;">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	⌘ CR 29.002-443, CR23.003-046, 3GPP TS 23.278
Y	N										
X											
	X										
	X										
		Test specifications									
		O&M Specifications									
Other comments:	⌘ <u>This tdoc is a revision of N4-020812/N2-020649 based on CN2 discussions.</u>										

How to create CRs using this form:

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

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

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

*** First Modified section ***

0.1 References

...

Unmodified Text

...

- [54] 3GPP TS 29.328 "IP Multimedia (IM) Subsystem Sh Interface; Signalling flows and message contents (Release 5)"
- [55] 3GPP TS 23.278 "Customised Applications for Mobile Network Enhanced Logic (CAMEL) Phase 4-Stage 2 IM CN Interworking (Rel-5)"

*** New Inserted section ***

3.8 Data related to CAMEL Support of IMS Services

3.8.1 HSS CAMEL-IMS Data

3.8.1.4 Originating IP Multimedia CAMEL Subscription Information (O-IM-CSI)

This data defines the contents of the Originating IP Multimedia CAMEL subscription information used to interwork with the gsmSCF for -originating IP multimedia sessions. It consists of:

- A TDP list. The TDP list is a list of TDP descriptions. Each TDP description contains the following elements:
 1. DP Value. The DP value identifies the DP in the ~~MO State Model~~ O-IM-BCSM where service triggering may take place. For O-IM-CSI, the allowed DP values are *DP Collected info*, *DP Route Select Failure*.
 2. A gsmSCF address. It is the gsmSCF address (E164 number) where the CAMEL service is treated for the subscriber. A gsmSCF address is associated to each serviceKey.
 3. A serviceKey. The serviceKey identifies to the gsmSCF the service logic. A serviceKey is associated to each TDP.
 4. A default Call Handling. The default call handling indicates whether the IP Multimedia session ~~at~~ shall be released or continued as requested in case of error in the IM-SSF to gsmSCF dialogue. A default Call Handling is associated to each serviceKey.
 5. DP criteria. The DP criteria indicates on which criteria the IM-SSF shall access the gsmSCF. DP criteria is associated to each TDP.

<u>TDP</u>	<u>Triggering Criteria (*)</u>	<u>ServiceKey</u>	<u>gsmSCF address</u>	<u>Default Call Handling</u>
<u>DP Collected Info</u>	<u>No Criterion</u> <u>Number criteria</u>	<u>One</u> <u>ServiceKey</u>	<u>One E164</u> <u>gsmSCF</u> <u>address</u>	<u>One Default</u> <u>call handling</u>
<u>DP Route Select Failure</u>	<u>No criterion</u> <u>Cause value criteria</u>	<u>One</u> <u>ServiceKey</u>	<u>One E164</u> <u>gsmSCF</u> <u>address</u>	<u>One Default</u> <u>call handling</u>

(*) One or more TDP criteria shall be applicable. All applicable triggering criteria must be satisfied before the dialogue is established with the gsmSCF.

- CAMEL capability handling. It gives the CAMEL phase associated to the O-IM-CSI (phase 4).
- The CSI state. The CSI state indicates whether the O-IM-CSI is active or not. The CSI state is not sent to the IM-SSF.
- The notification flag. the notification flag indicates whether changes of the O-IM-CSI shall trigger Notification on Change of Subscriber Data towards the gsmSCF and IM-SSF. The notification flag is not sent to the IM-SSF.

3.8.4.2 Terminating IP Multimedia CAMEL Subscription Information (VT-IM-CSI)

This data defines the contents of the terminating IP Multimedia CAMEL subscription information used to interwork with the gsmSCF for terminating IP multimedia sessions. It consists of:

- A TDP list. The TDP list is a list of TDP descriptions. Each TDP description contains the following elements:
 - DP Value. The DP value identifies the DP in the MT-~~State Model~~ T-IM-BCSM where service triggering may take place. For VT-IM-CSI, the allowed DP values are DP Terminating Attempt Authorised, DP T Busy, DP T No Answer.
 - A gsmSCF address. It is the gsmSCF address (E.164 number) where the CAMEL service is treated for the subscriber. A gsmSCF address is associated to each serviceKey.
 - A serviceKey. The serviceKey identifies to the gsmSCF the service logic. A serviceKey is associated to each TDP.
 - A default Call Handling. The default call handling indicates whether the e-~~IP~~ IP Multimedia session shall be released or continued as requested in case of error in the gsm~~SSF~~IM-SSF to gsmSCF dialogue. A default Call Handling is associated to each serviceKey.
 - DP criteria. The DP criteria indicates on which criteria the gsm~~SSF~~IM-SSF shall access the gsmSCF. DP criteria is associated to each TDP.

<u>TDP</u>	<u>Triggering Criteria (*)</u>	<u>ServiceKey</u>	<u>gsmSCF address</u>	<u>Default Call Handling</u>
<u>DP Terminating Attempt Authorised</u>	<u>No Criterion</u>	<u>One serviceKey</u>	<u>One E164</u> <u>gsmSCF</u> <u>address</u>	<u>One Default call</u> <u>handling</u>
<u>DP T Busy</u>	<u>No criterion</u> <u>Cause value criteria</u>	<u>One serviceKey</u>	<u>One E164</u> <u>gsmSCF</u> <u>address</u>	<u>One Default call</u> <u>handling</u>
<u>DP T No Answer</u>	<u>No criterion</u> <u>Cause value criteria</u>	<u>One</u> <u>service Key</u>	<u>One E164</u> <u>gsmSCF</u> <u>address</u>	<u>One Default call</u> <u>handling</u>

(*) One or more TDP criteria shall be applicable. All applicable triggering criteria must be satisfied before the dialogue is established with the gsmSCF.

- CAMEL capability handling. It gives the CAMEL phase associated to the VT-IM-CSI (CAMEL phase 4).
- The CSI state indicates whether the VT-IM-CSI is active or not. The CSI state is not sent to the IM-SSF.
- Notification flag. The notification flag indicates whether the change of the VT-IM-CSI shall trigger Notification on Change of Subscriber data towards the gsmSCF and IM-SSF. The notification flag is not sent to the IM-SSF.

3.8.31.3 Dialed Services IP Multimedia CAMEL Subscription Information (D-IM-CSI)

This data defines the contents of the dialed service CAMEL subscription information used to interwork with the gsmSCF for MO and MF call originating and forwarded IP Multimedia sessions. It is applicable at TDP Analysed Info. It consists of:

- –DP Criteria list. This consists of 1 to 10 entries. Each entry shall contain the following items:
 1. DP Criterion. It indicates when the gsmSSFIM-SSF shall request gsmSCF for instructions. It is a destination number.
 2. A gsmSCF address. It is the gsmSCF address (E164 number) where this Subscribed Dialed CAMEL service is treated for the subscriber. A gsmSCF address is associated to each DP Criterion.
 3. A serviceKey. The serviceKey identifies to the gsmSCF the service logic. A serviceKey is associated to each DP Criterion.
 4. A default Call Handling. It indicates whether the eMIP Multimedia session shall be released or continued as requested in case of error in the IM-SSF to gsmSCF dialogue. A default Call Handling is associated to each DP Criterion.
- CAMEL capability handling. It indicates the CAMEL phase associated to the D-IM-CSI (CAMEL phase 4 shall be indicated).
- CSI state: indicates whether the D-IM-CSI is active or not. The CSI state is not sent to the IM-SSF.
- Notification Flag. It indicates whether the change of the D-IM-CSI shall trigger the Notification on Change of Subscriber Data towards the gsmSCF and IM-SSF. The notification flag is not sent to the IM-SSF.

3.8.2 Other Data Stored in the HSS Related to CAMEL Support of IMS Services

3.8.42.1 gsmSCF address for IM CSI

This information element contains the list of gsmSCF address (E164 address) to which Notification on Change of Subscriber Data is to be sent. In an IP Multimedia Core Network, the gsmSCF address list can contain the IM-SSF address when the IM-SSF takes the role of the gsmSCF for notification of HSS changes to the IP Multimedia CSI data.

3.8.5 IM-SSF address for IM CSI

This information element contains the IM-SSF address to which Notification on Change of Subscriber Data is to be sent. The IM-SSF address is entered in the HSS/HLR at UE registration and is deleted when the HSS/HLR initiates or is notified of the UE deregistration.

*** Next Modified section ***

5.3 IP Multimedia Service Data Storage

Table 3: Overview of data used for IP Multimedia services

PARAMETER	Subclause	HSS	S-CSCF	IM-SSF	AS	TYPE
Private User Identity	3.1.1	M	M		-	P
Public Identity	3.1.2	M	M		-	P
Registration Status	3.2.1	M	-		-	T
S-CSCF Name	3.2.2	M	-		-	T
Diameter Client Address of S-CSCF	3.2.3	M	-		-	T
Diameter Server Address of HSS	3.2.3	-	M		-	T
RAND, XRES, CK, IK and AUTN	3.3.1	M	C		-	T
Server Capabilities	3.4.1	C	C		-	P
Initial Filter Criteria	3.5.2	C	C		-	P
Service Indication	3.5.4	M	-		M	P
GsmSCF address for IM CSI	3.8.42.1	C	-		-	P
IM-SSF address for IM CSI	3.8.5	C	-		-	T
O-IM-CSI	3.8.1.4	C	-	C	-	P
VT-IM-CSI	3.8.24.2	C	-	C	-	P
D-IM-CSI	3.8.34.3	C	-	C	-	P

CHANGE REQUEST

⌘ **29.002 CR 481** ⌘ rev ⌘ Current version: **5.2.0** ⌘

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

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

Title:	⌘	CR29.002-443 (rel5) on extensions to ATM for CAMEL control of IMS		
Source:	⌘	CN4		
Work item code:	⌘	IMS-CAMEL	Date:	⌘ 26/06/2002
Category:	⌘	B	Release:	⌘ REL-5
		Use <u>one</u> of the following categories:		Use <u>one</u> of the following releases:
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		Detailed explanations of the above categories can be found in 3GPP TR 21.900.		Rel-4 (Release 4)
				Rel-5 (Release 5)
				Rel-6 (Release 6)

Reason for change:	⌘	<p>This CR modifies the existing MAP service Any Time Modification (ATM) request between the HSS and the gsmSCF for IMS-CAMEL work item.</p> <p>This CR adds the capability for the gsmSCF to request modification of IM-CSI data (O-IM-CSI, D-IM-CSI, or VT-IM-CSI) in the HLR/HSS by sending MAP ATM (containing additionalRequestedCAMEL-SubInfo).</p> <p>[The acknowledgement contains a confirmation of the changed CSI data (within CAMEL-Subscription Info).]</p>
Summary of change:	⌘	AdditionalRequestedCAMEL-SubscriptionInfo has O-IM-CSI, D-IM-CSI, and VT-IM-CSI added to it for use within the ATM request. Reference to 23.278 added.
Consequences if not approved:	⌘	3G TS 29.002 won't include modifications for the MAP interface between the HSS and the gsmSCF to support queries for IMS CSIs.

Clauses affected:	⌘	2, 8.11.4, 17.7.1, 24A.2.3										
Other specs affected:	⌘	<table border="1" style="border-collapse: collapse;"> <tr> <td style="padding: 2px;">Y</td> <td style="padding: 2px;">N</td> </tr> <tr> <td style="padding: 2px;">X</td> <td style="padding: 2px;"></td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> </tr> <tr> <td style="padding: 2px;"></td> <td style="padding: 2px;">X</td> </tr> </table>	Y	N	X			X		X	Other core specifications	⌘ 23.008-054, 3GPP TS 23.278
	Y	N										
	X											
	X											
	X											
		Test specifications										
		O&M Specifications										
Other comments:	⌘											

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**** FIRST MODIFIED SECTION ****

2 References

...

unmodified text

...

[124] 3GPP TS 23.278: "Customised Applications for Mobile Network Enhanced Logic (CAMEL) Phase 4 – Stage 2 IM CN Interworking (Rel-5)"

**** NEXT MODIFIED SECTION ****

8.11.4 MAP-ANY-TIME-MODIFICATION service

8.11.4.1 Definition

This service is used by the gsmSCF, to modify information of the HLR at any time.

8.11.4.2 Service primitives

Table 8.11/4: Any_Time_Modification

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
gsmSCF-Address	M	M(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
Modification request for ODB data	C	C(=)		
Modification request for SS information	C	C(=)		
Modification request for CSI	C	C(=)		
Long FTN Supported	C	C(=)		
Ext Forwarding information-for-CSE			C	C(=)
Ext Call barring information-for-CSE			C	C(=)
ODB Info			C	C(=)
CAMEL subscription info			C	C(=)
User error			C	C(=)
Provider error				O

8.11.4.3 Parameter definition and use

All parameters are described in clause 7.6.

The HLR may be able to use the value of the parameter gsmSCF-address to screen a MAP_Any_Time_Modification indication.

The use of these parameters and the requirements for their presence are specified in 3GPP TS 23.078 and 3GPP TS 23.278.

User error

This parameter is sent by the responder when an error is detected and if present, takes one of the following values:

- Any Time Modification Not Allowed;
- Data Missing;
- Unexpected Data Value;
- Unknown Subscriber;
- Bearer service not provisioned;

This error is returned only if not even a subset of the requested bearer service group has been subscribed to;

- Teleservice not provisioned;

This error is returned only if not even a subset of the requested teleservice group has been subscribed to;

- Call Barred;
- Illegal SS operation;
- SS error status;
- SS incompatibility;
- SS subscription violation;
- Information Not Available.

Provider error

These are defined in clause 7.6.1.

**** NEXT MODIFIED SECTION ****

17.7 MAP constants and data types

17.7.1 Mobile Service data types

```
MAP-MS-DataTypes {
  ccitt-identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-MS-DataTypes (11) version8 (8)}
```

DEFINITIONS

Unmodified ASN.1

```
RequestedCAMEL-SubscriptionInfo ::= ENUMERATED {
  o-CSI           (0),
  t-CSI           (1),
  vt-CSI          (2),
  tif-CSI         (3),
  gprs-CSI        (4),
  mo-sms-CSI      (5),
  ss-CSI          (6),
  m-CSI           (7),
  d-csi           (8)}
```

```
AdditionalRequestedCAMEL-SubscriptionInfo ::= ENUMERATED {
  mt-sms-CSI      (0),
  mg-csi          (1),
  o-IM-CSI        (2),
  d-IM-CSI        (3),
  vt-IM-CSI       (4),
  ...}
```

-- exception handling: unknown values shall be discarded by the receiver.

```
CallForwardingData ::= SEQUENCE {
  forwardingFeatureList      Ext-ForwFeatureList,
  notificationToCSE          NULL,
  extensionContainer         [0] ExtensionContainer OPTIONAL,
  ...}
```

```
CallBarringData ::= SEQUENCE {
  callBarringFeatureList     Ext-CallBarFeatureList,
  password                    Password OPTIONAL,
  wrongPasswordAttemptsCounter WrongPasswordAttemptsCounter OPTIONAL,
  notificationToCSE          NULL,
  extensionContainer          ExtensionContainer OPTIONAL,
  ...}
```

```
WrongPasswordAttemptsCounter ::= INTEGER (0..4)
```

```
ODB-Info ::= SEQUENCE {
  odb-Data                  ODB-Data,
  notificationToCSE          NULL,
  extensionContainer          ExtensionContainer OPTIONAL,
  ...}
```

```
CAMEL-SubscriptionInfo ::= SEQUENCE {
  o-CSI           [0] O-CSI           OPTIONAL,
  o-BcsmCamelTDP-CriteriaList [1] O-BcsmCamelTDPCriteriaList OPTIONAL,
  d-CSI           [2] D-CSI           OPTIONAL,
  t-CSI           [3] T-CSI           OPTIONAL,
  t-BCSM-CAMEL-TDP-CriteriaList [4] T-BCSM-CAMEL-TDP-CriteriaList OPTIONAL,
  vt-CSI          [5] T-CSI           OPTIONAL,
  vt-BCSM-CAMEL-TDP-CriteriaList [6] T-BCSM-CAMEL-TDP-CriteriaList OPTIONAL,
  tif-CSI         [7] NULL           OPTIONAL,
  tif-CSI-NotificationToCSE [8] NULL           OPTIONAL,
  gprs-CSI        [9] GPRS-CSI        OPTIONAL,
  mo-sms-CSI      [10] SMS-CSI        OPTIONAL,
  ss-CSI          [11] SS-CSI         OPTIONAL,
  m-CSI           [12] M-CSI          OPTIONAL,
  extensionContainer [13] ExtensionContainer OPTIONAL,
  ...,
  specificCSIDeletedList [14] SpecificCSI-Withdraw OPTIONAL,
  mt-sms-CSI        [15] SMS-CSI        OPTIONAL,
  mt-smsCAMELTDP-CriteriaList [16] MT-smsCAMELTDP-CriteriaList OPTIONAL,
  mg-csi           [17] MG-CSI          OPTIONAL
}
```

```

AnyTimeModificationArg ::= SEQUENCE {
  subscriberIdentity          [0] SubscriberIdentity,
  gsmSCF-Address              [1] ISDN-AddressString,
  modificationRequestFor-CF-Info [2] ModificationRequestFor-CF-Info OPTIONAL,
  modificationRequestFor-CB-Info [3] ModificationRequestFor-CB-Info OPTIONAL,
  modificationRequestFor-CSI   [4] ModificationRequestFor-CSI   OPTIONAL,
  extensionContainer           [5] ExtensionContainer             OPTIONAL,
  longFTN-Supported            [6] NULL                          OPTIONAL,
  ...,
  modificationRequestFor-ODB-data [7] ModificationRequestFor-ODB-data OPTIONAL }

```

```

AnyTimeModificationRes ::= SEQUENCE {
  ss-InfoFor-CSE              [0] Ext-SS-InfoFor-CSE           OPTIONAL,
  camel-SubscriptionInfo      [1] CAMEL-SubscriptionInfo     OPTIONAL,
  extensionContainer           [2] ExtensionContainer           OPTIONAL,
  ...,
  odb-Info                    [3] ODB-Info                     OPTIONAL }

```

```

ModificationRequestFor-CF-Info ::= SEQUENCE {
  ss-Code                     [0] SS-Code,
  basicService                 [1] Ext-BasicServiceCode       OPTIONAL,
  ss-Status                    [2] Ext-SS-Status              OPTIONAL,
  forwardedToNumber            [3] AddressString               OPTIONAL,
  forwardedToSubaddress        [4] ISDN-SubaddressString      OPTIONAL,
  noReplyConditionTime         [5] Ext-NoRepCondTime          OPTIONAL,
  modifyNotificationToCSE      [6] ModificationInstruction     OPTIONAL,
  extensionContainer           [7] ExtensionContainer           OPTIONAL,
  ...}

```

```

ModificationRequestFor-CB-Info ::= SEQUENCE {
  ss-Code                     [0] SS-Code,
  basicService                 [1] Ext-BasicServiceCode       OPTIONAL,
  ss-Status                    [2] Ext-SS-Status              OPTIONAL,
  password                     [3] Password                   OPTIONAL,
  wrongPasswordAttemptsCounter [4] WrongPasswordAttemptsCounter OPTIONAL,
  modifyNotificationToCSE      [5] ModificationInstruction     OPTIONAL,
  extensionContainer           [6] ExtensionContainer           OPTIONAL,
  ...}

```

```

ModificationRequestFor-ODB-data ::= SEQUENCE {
  odb-data                    [0] ODB-Data                     OPTIONAL,
  modifyNotificationToCSE      [1] ModificationInstruction     OPTIONAL,
  extensionContainer           [2] ExtensionContainer           OPTIONAL,
  ...}

```

```

ModificationRequestFor-CSI ::= SEQUENCE {
  requestedCamel-SubscriptionInfo [0] RequestedCAMEL-SubscriptionInfo,
  modifyNotificationToCSE         [1] ModificationInstruction   OPTIONAL,
  modifyCSI-State                 [2] ModificationInstruction   OPTIONAL,
  extensionContainer              [3] ExtensionContainer         OPTIONAL,
  ...,
  additionalRequestedCAMEL-SubscriptionInfo [4] AdditionalRequestedCAMEL-SubscriptionInfo OPTIONAL }

```

```

ModificationInstruction ::= ENUMERATED {
  deactivate (0),
  activate (1)}

```

```

...
Unmodified ASN.1
...

```

**** LAST MODIFIED SECTION ****

24A.2 Any Time Modification procedure

24A.2.1 General

The message flows for successful modification of subscriber information related to an any time modification from the CAMEL server are shown in figure 24A.2/1

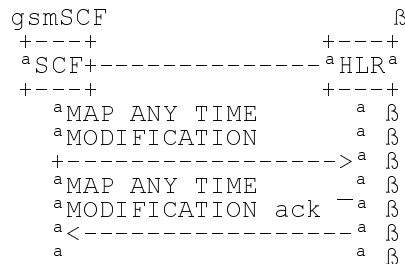


Figure 24A.2/1: Message flow for any time modification

The following MAP services are used to modify subscription information:

MAP_ANY_TIME_MODIFICATION see clause 8.11.x.

24A.2.2 Process in the gsmSCF

Out of the scope of the MAP specification.

24A.2.3 Process in the HLR

The MAP process in the HLR to modify subscriber information in response to a modification request from the CAMEL server is shown in figure 24A.2/2. The MAP process invokes macros not defined in this clause; the definitions of these macros can be found as follows:

Receive_Open_Ind see clause 25.1.1;

Insert_Subst_Data_Stand_Alone_HLR see clause 25.7.2;

Successful outcome

When the MAP process receives a MAP_OPEN indication with the application context anyTimeInformationHandling, it checks it by invoking the macro Receive_Open_Ind.

If the macro takes the OK exit, the MAP process waits for a service indication.

If a MAP_ANY_TIME_MODIFICATION service indication is received, the MAP process sends an Any Time modification request to the call handling process in the HLR (described in 3GPP TS 23.078 and 3GPP TS 23.278), and waits for a response. The Any Time modification request contains the parameters received in the MAP_ANY_TIME_MODIFICATION service indication.

If the call handling process in the HLR returns an Any Time modification response, the MAP process constructs a MAP_ANY_TIME_MODIFICATION service response containing the modified subscription information contained in the Any Time modification response, constructs a MAP_CLOSE service request, sends them to the CAMEL server. If the MAP_ANY_TIME_MODIFICATION service response cannot be carried in a single TC-Result component, it is carried in one or more TC-Result-NL components (each sent in a TC-CONTINUE), followed by a TC-Result-L component in a TC-END message. If the VLR/SGSN is to be updated after the modification, the MAP_INSERT_SUBS_DATA_HLR process shall be initiated and then returns to the idle state.

Negative response from HLR call handling process

If the call handling process in the HLR returns a negative response to modify subscription information, the MAP process constructs a MAP_ANY_TIME_MODIFICATION service response containing the appropriate error, constructs a MAP_CLOSE service request, sends them to the CAMEL server and returns to the idle state.

Failure of dialogue opening with the CAMEL server

If the macro Receive_Open_Ind takes the Vr or Error exit, the MAP process returns to the idle state.

If the MAP provider sends a MAP_P_ABORT while the MAP process is waiting for a service indication, the MAP process returns to the idle state.

If the MAP provider sends a MAP_NOTICE while the MAP process is waiting for a service indication, the MAP process sends a MAP_CLOSE request to terminate the dialogue and returns to the idle state.

CHANGE REQUEST

⌘ **29.002 CR 482** ⌘ rev ⌘ Current version: **5.2.0** ⌘

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

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

Title:	⌘ CR to 29.002 for the support of the MAP Si interface		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CAMEL	Date:	⌘ 26/06/2002
Category:	⌘ B	Release:	⌘ REL-5
	<p>Use <u>one</u> of the following categories:</p> <p>F (correction)</p> <p>A (corresponds to a correction in an earlier release)</p> <p>B (addition of feature),</p> <p>C (functional modification of feature)</p> <p>D (editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>Rel-4 (Release 4)</p> <p>Rel-5 (Release 5)</p> <p>Rel-6 (Release 6)</p>

Reason for change:	<p>⌘ Introduces the MAP changes for the new WI: CAMEL Support of IMS Services.</p> <p>This CR introduces the use of existing MAP operations for downloading CSI data from the HSS (acting as a HLR) to the IM-SSF (acting as a gsmSCF) via the MAP Si interface (as per 3GPP TS 23.278 requirements) for the following:</p> <ol style="list-style-type: none"> a) For notification of initial UE registration – send MAP AnyTimeSubscriptionInterrogation request from IM-SSF to HSS/HLR. b) For notification of HSS updates of IM CSIs – send MAP NoteSubscriberDataModified notify from HSS/HLR to IM-SSF. <p><u>Notification of Initial UE registration:</u></p> <p>After receiving a notification from the S-CSCF for a UE's registration within the IM Core Network, the IM-SSF shall send a MAP ATSI request to the HSS for O-IM-CSI, D-IM-CSI or VT-IM-CSI data per the requirements in 3GPP TS 23.278.</p> <p><u>Notification of HSS updates:</u></p> <p>When an IM CSI data is changed in the HSS, the HSS shall send the MAP NoteSubscriberDataModified to the IM-SSF. It is proposed that the same procedure used in the CS CN be used for IM CN.</p> <p>Both operations are currently used in the CS CN between the HLR and a gsmSCF. For IMS, this CR proposes that the operations be supported between the HSS and the IM-SSF. The idea is to benefit from existing HLR capabilities with minimum changes in the ASN.1 format specified in TS 29.002.</p> <p>There is a need to have the capability for the HSS to be able to withdraw a specific O-IM-CSI, D-IM-CSI or VT-IM-CSI from the IM-SSF.</p>
Summary of change:	⌘ Added reference to 3GPP TS 23.278 & added IM-SSF address definition. Re-

used MAP services and procedures: AnyTimeSubscriberInterrogation & NoteSubscriberDataModified to transfer/change subscriber data to/in the IM-SSF from the HSS-- pointed out that the IM-SSF can take on the role of the gsmSCF & the HSS can take on the role of the HLR as currently defined in MAP.

O-IM-CSI, D-IM-CSI, and VT-IM-CSI are added to the CAMEL-SubscriptionInfo, reusing the O-CSI, D-CSI, and T-CSI data types for use in the ATSI result and the NoteSubscriberDataChangeArg.

Added to Specific-CSI-withdraw: O-IM-CSI (and DP criteria), D-IM-CSI, and VT-IM-CSI (and DP criteria) for use in NoteSubscriberDataChangeArg.

AdditionalRequestedCAMEL-SubscriptionInfo has O-IM-CSI, D-IM-CSI, and VT-IM-CSI added to it for use within the ATSI request.

Consequences if not approved: ⌘ 3GPP TS 29.002 won't include modifications for the MAP Si interface.

Clauses affected: ⌘ 7.6, 7.6.2.58, 7.6.5.7, 8.11.3, 8.11.5, 17.7.1, 24A.1.1, 24.A.1.3, 24A.3.1

Other specs affected:	⌘	<table border="1"><tr><td>Y</td><td>N</td></tr><tr><td>X</td><td></td></tr><tr><td></td><td>X</td></tr><tr><td></td><td>X</td></tr></table>	Y	N	X			X		X	Other core specifications	⌘	CR 23.003-046 and 3GPP TS 23.278
		Y	N										
		X											
			X										
	X												
	Test specifications												
	O&M Specifications												

Other comments: ⌘

How to create CRs using this form:

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

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

**** FIRST MODIFIED SECTION ****

7.6 Definition of parameters

Following is an alphabetic list of parameters used in the common MAP-services in clause 7.3:

Application context name	7.3.1	Refuse reason	7.3.1
Destination address	7.3.1	Release method	7.3.2
Destination reference	7.3.1	Responding address	7.3.1
Diagnostic information	7.3.4	Result	7.3.1
Originating address	7.3.1	Source	7.3.5
Originating reference	7.3.1	Specific information	7.3.1/7.3.2/7.3.4
Problem diagnostic	7.3.6	User reason	7.3.4
Provider reason	7.3.5		

Following is an alphabetic list of parameters contained in this clause:

Absent Subscriber Diagnostic SM	7.6.8.9	Invoke Id	7.6.1.1
Access connection status	7.6.9.3	ISDN Bearer Capability	7.6.3.41
		IST Alert Timer	7.6.3.66
		IST Information Withdrawn	7.6.3.68
		IST Support Indicator	7.6.3.69
		LCS Codeword	7.6.11.18
		LCS Codeword Applicability	7.6.11.19
		LCS Information	7.6.3.60
		LCS Service Type Id	7.6.11.15
		LCS Codeword Notification	7.6.11.22
Access signalling information	7.6.9.5	Kc	7.6.7.4
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Linked Id	7.6.1.2
Additional Location Estimate	7.6.11.21	LMSI	7.6.2.16
Additional number	7.6.2.46	Location Information	7.6.2.30
		Location Information for GPRS	7.6.2.30a
Additional signal info	7.6.9.10	Location update type	7.6.9.6
Additional SM Delivery Outcome	7.6.8.11	Long Forwarded-to Number	7.6.2.22A
		Long FTN Supported	7.6.2.22B
Age Indicator	7.6.3.72	Lower Layer Compatibility	7.6.3.42
		LSA Information	7.6.3.56
		LSA Information Withdraw	7.6.3.58
Alert Reason	7.6.8.8	MC Information	7.6.4.48
Alert Reason Indicator	7.6.8.10	MC Subscription Data	7.6.4.47
Alerting Pattern	7.6.3.44	Mobile Not Reachable Reason	7.6.3.51
All GPRS Data	7.6.3.53	Modification request for CSI	7.6.3.81
All Information Sent	7.6.1.5	Modification request for SS Information	7.6.3.82
AN-apdu	7.6.9.1	More Messages To Send	7.6.8.7
APN	7.6.2.42	MS ISDN	7.6.2.17
Authentication set list	7.6.7.1	MSC number	7.6.2.11
B-subscriber Address	7.6.2.36	MSISdn-Alert	7.6.2.29
B subscriber Number	7.6.2.48	Multicall Bearer Information	7.6.2.52
B subscriber subaddress	7.6.2.49	Multiple Bearer Requested	7.6.2.53
Basic Service Group	7.6.4.40	Multiple Bearer Not Supported	7.6.2.54
Bearer service	7.6.4.38	MWD status	7.6.8.3
BSSMAP Service Handover	7.6.6.5		
Call Barring Data	7.6.3.83	NbrUser	7.6.4.45
Call barring feature	7.6.4.19	Network Access Mode	7.6.3.50
Call barring information	7.6.4.18	Network node number	7.6.2.43
Call Direction	7.6.5.8	Network resources	7.6.10.1
Call Forwarding Data	7.6.3.84	Network signal information	7.6.9.8
Call Info	7.6.9.9	New password	7.6.4.20
Call reference	7.6.5.1	No reply condition timer	7.6.4.7
Call Termination Indicator	7.6.3.67		
Called number	7.6.2.24	North American Equal Access preferred Carrier Id	7.6.2.34
		Number Portability Status	7.6.5.14
Calling number	7.6.2.25	ODB Data	7.6.3.85
CAMEL Subscription Info	7.6.3.78	ODB General Data	7.6.3.9
CAMEL Subscription Info Withdraw	7.6.3.38	ODB HPLMN Specific Data	7.6.3.10
Cancellation Type	7.6.3.52	OMC Id	7.6.2.18
Category	7.6.3.1	Originally dialled number	7.6.2.26
CCBS Feature	7.6.5.8	Originating entity number	7.6.2.10
CCBS Request State	7.6.4.49	Override Category	7.6.4.4
Channel Type	7.6.5.9	P-TMSI	7.6.2.47
Chosen Channel	7.6.5.10	PDP-Address	7.6.2.45
Chosen Radio Resource Information	7.6.6.10B	PDP-Context identifier	7.6.3.55
Ciphering mode	7.6.7.7	PDP-Type	7.6.2.44
Cksn	7.6.7.5	Pre-paging supported	7.6.5.15
CLI Restriction	7.6.4.5	Previous location area Id	7.6.2.4
CM service type	7.6.9.2	Protocol Id	7.6.9.7
Complete Data List Included	7.6.3.54	Provider error	7.6.1.3
CS Allocation Retention priority	7.6.3.87	PS LCS Not Supported by UE	7.6.11.10
CS LCS Not Supported by UE	7.6.11.9	QoS-Subscribed	7.6.3.47
CUG feature	7.6.3.26	Radio Resource Information	7.6.6.10
CUG index	7.6.3.25	Radio Resource List	7.6.6.10A
CUG info	7.6.3.22		

CUG interlock	7.6.3.24	RANAP Service Handover	7.6.6.6
CUG Outgoing Access indicator	7.6.3.8	Rand	7.6.7.2
CUG subscription	7.6.3.23	Regional Subscription Data	7.6.3.11
CUG Subscription Flag	7.6.3.37	Regional Subscription Response	7.6.3.12
Current location area Id	7.6.2.6	Relocation Number List	7.6.2.19A
		Requested Info	7.6.3.31
Current password	7.6.4.21	Requested Subscription Info	7.6.3.86
		Roaming number	7.6.2.19
		Roaming Restricted In SGSN Due To	7.6.3.49
		Unsupported Feature	
Deferred MT-LR Data	7.6.11.3	Roaming Restriction Due To	7.6.3.13
		Unsupported Feature	
Deferred MT-LR Response Indicator	7.6.11.2	Current Security Context	7.6.7.8
eMLPP Information	7.6.4.41	Selected RAB ID	7.6.2.56
Encryption Information	7.6.6.9	Service centre address	7.6.2.27
Equipment status	7.6.3.2	Serving Cell Id	7.6.2.37
Extensible Basic Service Group	7.6.3.5	SGSN address	7.6.2.39
Extensible Bearer service	7.6.3.3	SGSN CAMEL Subscription Info	7.6.3.75
Extensible Call barring feature	7.6.3.21	SGSN number	7.6.2.38
Extensible Call barring information	7.6.3.20	SIWF Number	7.6.2.35
		SoLSA Support Indicator	7.6.3.57
Extensible Call barring information for	7.6.3.79	SM Delivery Outcome	7.6.8.6
CSE			
Extensible Forwarding feature	7.6.3.16	SM-RP-DA	7.6.8.1
Extensible Forwarding info	7.6.3.15	SM-RP-MTI	7.6.8.16
Extensible Forwarding information for	7.6.3.80	SM-RP-OA	7.6.8.2
CSE			
Extensible Forwarding Options	7.6.3.18	SM-RP-PRI	7.6.8.5
Extensible No reply condition timer	7.6.3.19	SM-RP-SMEA	7.6.8.17
Extensible QoS-Subscribed	7.6.3.74	SM-RP-UI	7.6.8.4
Extensible SS-Data	7.6.3.29	Sres	7.6.7.3
Extensible SS-Info	7.6.3.14	SS-Code	7.6.4.1
Extensible SS-Status	7.6.3.17	SS-Data	7.6.4.3
Extensible Teleservice	7.6.3.4	SS-Event	7.6.4.42
External Signal Information	7.6.9.4	SS-Event-Data	7.6.4.43
Failure Cause	7.6.7.9	SS-Info	7.6.4.24
Forwarded-to number	7.6.2.22	SS-Status	7.6.4.2
Forwarded-to subaddress	7.6.2.23	Stored location area Id	7.6.2.5
Forwarding feature	7.6.4.16	Subscriber State	7.6.3.30
Forwarding information	7.6.4.15	Subscriber Status	7.6.3.7
Forwarding Options	7.6.4.6	Super-Charger Supported in HLR	7.6.3.70
GGSN address	7.6.2.40	Super-Charger Supported in Serving	7.6.3.71
		Network Entity	
		Supported Camel4 Subsets	7.6.3.36D
		Supported Camel4 Subsets in GMSC	7.6.3.36E
		Supported Camel4 Subsets in VMSC	7.6.3.36F
		Supported Camel4 Subsets in VLR	7.6.3.36B
		Supported Camel4 Subsets in SGSN	7.6.3.36C
		Supported CAMEL Phases in VLR	7.6.3.36
		Supported CAMEL Phases in SGSN	7.6.3.36A
		Supported GAD Shapes	7.6.11.20
		Supported LCS Capability Sets	7.6.11.17
		Suppress Incoming Call Barring	7.6.3.b
		Suppress T-CSI	7.6.3.33
		Suppress VT-CSI	7.6.3.a
		Suppression of Announcement	7.6.3.32
		Target cell Id	7.6.2.8
		Target location area Id	7.6.2.7
		Target RNC Id	7.6.2.8A
		Target MSC number	7.6.2.12
		Teleservice	7.6.4.39
		TMSI	7.6.2.2
		Trace reference	7.6.10.2
		Trace type	7.6.10.3
		User error	7.6.1.4
		USSD Data Coding Scheme	7.6.4.36
GGSN number	7.6.2.41		
GMSC CAMEL Subscription Info	7.6.3.34		
GPRS enhancements support indicator	7.6.3.73		
GPRS Node Indicator	7.6.8.14		
GPRS Subscription Data	7.6.3.46		
GPRS Subscription Data Withdraw	7.6.3.45		
GPRS Support Indicator	7.6.8.15		
Group Id	7.6.2.33		
GSM bearer capability	7.6.3.6		
gsmSCF Address	7.6.2.58		
gsmSCF Address	7.6.2.58		
gsmSCF Initiated Call	7.6.3.c		
Guidance information	7.6.4.22		
Handover number	7.6.2.21		
High Layer Compatibility	7.6.3.43		
HLR Id	7.6.2.15		
HLR number	7.6.2.13		
HO-Number Not Required	7.6.6.7		
IMEI	7.6.2.3		

IMSI	7.6.2.1	USSD String	7.6.4.37
Integrity Protection Information	7.6.6.8	UU Data	7.6.5.12
Inter CUG options	7.6.3.27	UUS CF Interaction	7.6.5.13
Intra CUG restrictions	7.6.3.28	VBS Data	7.6.3.40
		VGCS Data	7.6.3.39
		VLR CAMEL Subscription Info	7.6.3.35
		VLR number	7.6.2.14
		VPLMN address allowed	7.6.3.48
		Zone Code	7.6.2.28

**** NEXT MODIFIED SECTION ****

7.6.2 Numbering and identification parameters

...

unmodified sections and text

...

7.6.2.58 gsmSCF Address

This parameter refers to the ISDN number assigned to the gsmSCF address. In an IP Multimedia Core Network, the gsmSCF-address shall contain the IM-SSF address when the IM-SSF takes the role of the gsmSCF.

**** NEXT MODIFIED SECTION ****

7.6.5 Call parameters

...

unmodified sections and text

...

7.6.5.7 O-CSI

This parameter identifies the subscriber as having originating CAMEL services as defined in 3GPP TS 23.078.

7.6.5.7A D-CSI

This parameter identifies the subscriber as having originating CAMEL dialled services as defined in 3GPP TS 23.078.

7.6.5.7B T-CSI

This parameter identifies the subscriber as having terminating CAMEL services in the GMSC, as defined in 3GPP TS 23.078.

7.6.5.7C VT-CSI

This parameter identifies the subscriber as having terminating CAMEL services in the VMSC, as defined in 3GPP TS 23.078.

7.6.5.7D O-IM-CSI

This parameter identifies the subscriber as having originating IP Multimedia Core Network CAMEL services as defined in 3GPP TS 23.278.

7.6.5.7E D-IM-CSI

This parameter identifies the subscriber as having originating IP Multimedia Core Network CAMEL dialled services as defined in 3GPP TS 23.278.

7.6.5.7F VT-IM-CSI

This parameter identifies the subscriber as having terminating IP Multimedia Core Network CAMEL services as defined in 3GPP TS 23.278.

**** NEXT MODIFIED SECTION ****

8.11.3 MAP-ANY-TIME-SUBSCRIPTION-INTERROGATION service

8.11.3.1 Definition

This service is used by the gsmSCF, to request subscription information (e.g. call forwarding supplementary service data or CSI) from the HLR at any time. In an IP Multimedia Core Network, an IM-SSF can take on the role of a gsmSCF for this service.

8.11.3.2 Service primitives

Table 8.11/3: Any_Time_Subscription_Interrogation

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
Requested Subscription Info	M	M(=)		
GsmSCF-Address	M	M(=)		
IMSI	C	C(=)		
MSISDN	C	C(=)		
Long FTN Supported	C	C(=)		
Call Forwarding Data			C	C(=)
Call Barring Data			C	C(=)
ODB Info			C	C(=)
CAMEL Subscription Info			C	C(=)
Supported CAMEL phases in VLR			C	C(=)
Supported CAMEL phases in SGSN			C	C(=)
Supported CAMEL 4 Subsets in VLR			C	C(=)
Supported CAMEL 4 Subsets in SGSN			C	C(=)
User error			C	C(=)
Provider error				O

8.11.3.3 Parameter definition and use

All parameters are described in clause 7.6.

The HLR may be able to use the value of the parameter gsmSCF-address to screen a MAP_Any_Time_Subscription_Interrogation indication. The gsmSCF-address shall contain the IM-SSF address when the IM-SSF takes the role of the gsmSCF.

The use of the parameters and the requirements for their presence are specified in 3GPP TS 23.078 and 3GPP TS 23.278.

User error

This parameter is sent by the responder when an error is detected and if present, takes one of the following values:

- Unexpected Data Value;
- Unknown Subscriber;
- BearerServiceNotProvisioned;
- TeleserviceNotProvisioned;
- CallBarred;
- IllegalSS-Operation;
- SS-NotAvailable;
- InformationNotAvailable;
- Any Time Subscription Interrogation Not Allowed;
- Data Missing.

Provider error

These are defined in clause 7.6.1.

***** NEXT MODIFIED SECTION *****

8.11.5 MAP-NOTE-SUBSCRIBER-DATA-MODIFIED service

8.11.5.1 Definition

This service is used by the HLR to inform the gsmSCF that subscriber data have been modified. In an IP Multimedia Core Network, an IM-SSF can take on the role of a gsmSCF for this service.

8.11.5.2 Service primitives

Table 8.11/5: Note_Subscriber_Data_Modified

Parameter name	Request	Indication	Response	Confirm
Invoke id	M	M(=)	M(=)	M(=)
IMSI	M	M(=)		
MSISDN	M	M(=)		
Ext Forwarding information-for-CSE	C	C(=)		
Ext Call barring information-for-CSE	C	C(=)		
ODB Info	C	C(=)		
CAMEL subscription info	C	C(=)		
All Information Sent	C	C(=)		
User error			C	C(=)
Provider error				O

8.11.5.3 Parameter definition and use

Invoke id

See clause 7.6.1 for the use of this parameter.

IMSI

See clause 7.6.2 for the use of this parameter.

MSISDN

See clause 7.6.2 for the use of this parameter. In an IP Multimedia Core Network, if no MSISDN is available, the HLR shall populate this parameter with a dummy MSISDN.

Ext Forwarding information-for-CSE

See clause 7.6.3 for the use of this parameter. The use of this parameter and the requirements for their presence are specified in 3GPP TS 23.078.

Ext Call barring information-for-CSE

See clause 7.6.3 for the use of this parameter. The use of this parameter and the requirements for their presence are specified in 3GPP TS 23.078.

ODB Info

See clause 7.6.3 for the use of this parameter. The use of this parameter and the requirements for their presence are specified in 3GPP TS 23.078.

CAMEL subscription info

See clause 7.6.3 for the use of this parameter. The use of this parameter and the requirements for their presence are specified in 3GPP TS 23.078 and 3GPP TS 23.278.

All Information Sent

This parameter is set when the HLR has sent all information to gsmSCF.

User error

This parameter is sent by the responder when an error is detected and if present, takes one of the following values:

- Data Missing;
- Unexpected Data Value;
- Unknown Subscriber.

Provider error

These are defined in clause 7.6.1.

The use of the parameters and the requirements for their presence are specified in 3GPP TS 23.078 and 3GPP TS 23.278.

**** NEXT MODIFIED SECTION ****

17.7 MAP constants and data types

17.7.1 Mobile Service data types


```
MAP-MS-DataTypes {
  ccitt-identified-organization (4) etsi (0) mobileDomain (0)
  gsm-Network (1) modules (3) map-MS-DataTypes (11) version8 (8)}
```

DEFINITIONS

```
. . .
Unmodified ASN.1
. . .
```

```
SpecificCSI-Withdraw ::= BIT STRING {
  o-csi (0),
  ss-csi (1),
  tif-csi (2),
  d-csi (3),
  vt-csi (4),
  mo-sms-csi (5),
  m-csi (6),
  gprs-csi (7),
  t-csi (8),
  mt-sms-csi (9),
  mg-csi (10),
  o-IM-CSI (11),
  d-IM-CSI (12),
  vt-IM-CSI (13) } (SIZE(8..32))
-- exception handling:
-- bits 11 to 31 shall be ignored if received by a non-IP Multimedia Core Network entity.
-- bits 0-10 and 14-31 shall be ignored if received by an IP Multimedia Core Network entity.
-- bits 11-13 are only applicable in an IP Multimedia Core Network.
-- Bit 8 and bits 11-13 are only applicable for the NoteSubscriberDataModified operation.
```

```
GPRSSubscriptionDataWithdraw ::= CHOICE {
  allGPRSData          NULL,
  contextIdList        ContextIdList}
```

```
ContextIdList ::= SEQUENCE SIZE (1..maxNumOfPDP-Contexts) OF
  ContextId
```

```
LSAInformationWithdraw ::= CHOICE {
  allLSAData          NULL,
  lsaIdentityList     LSAIdentityList }
```

```
LSAIdentityList ::= SEQUENCE SIZE (1..maxNumOfLSAs) OF
  LSAIdentity
```

```
BasicServiceList ::= SEQUENCE SIZE (1..maxNumOfBasicServices) OF
  Ext-BasicServiceCode
```

```
maxNumOfBasicServices INTEGER ::= 70
```

```
DeleteSubscriberDataRes ::= SEQUENCE {
  regionalSubscriptionResponse [0] RegionalSubscriptionResponse OPTIONAL,
  extensionContainer           ExtensionContainer                OPTIONAL,
  ...}
```

```
VlrCamelSubscriptionInfo ::= SEQUENCE {
  o-CSI [0] O-CSI OPTIONAL,
  extensionContainer [1] ExtensionContainer OPTIONAL,
  ...,
  ss-CSI [2] SS-CSI OPTIONAL,
  o-BcsmCamelTDP-CriteriaList [4] O-BcsmCamelTDPCriteriaList OPTIONAL,
  tif-CSI [3] NULL OPTIONAL,
  m-CSI [5] M-CSI OPTIONAL,
  mo-sms-CSI [6] SMS-CSI OPTIONAL,
  vt-CSI [7] T-CSI OPTIONAL,
  t-BCSM-CAMEL-TDP-CriteriaList [8] T-BCSM-CAMEL-TDP-CriteriaList OPTIONAL,
  d-CSI [9] D-CSI OPTIONAL,
  mt-sms-CSI [10] SMS-CSI OPTIONAL,
  mt-smsCAMELTDP-CriteriaList [11] MT-smsCAMELTDP-CriteriaList OPTIONAL
}
```

```
MT-smsCAMELTDP-CriteriaList ::= SEQUENCE SIZE (1.. maxNumOfCamelTDPData) OF
  MT-smsCAMELTDP-Criteria
```

```
. . .
Unmodified ASN.1
. . .
```

-- any time interrogation info types

```
AnyTimeInterrogationArg ::= SEQUENCE {
  subscriberIdentity      [0] SubscriberIdentity,
  requestedInfo           [1] RequestedInfo,
  gsmSCF-Address         [3] ISDN-AddressString,
  extensionContainer      [2] ExtensionContainer          OPTIONAL,
  ...}
```

```
AnyTimeInterrogationRes ::= SEQUENCE {
  subscriberInfo          SubscriberInfo,
  extensionContainer      ExtensionContainer              OPTIONAL,
  ...}
```

-- any time information handling types

```
AnyTimeSubscriptionInterrogationArg ::= SEQUENCE {
  subscriberIdentity      [0] SubscriberIdentity,
  requestedSubscriptionInfo [1] RequestedSubscriptionInfo,
  gsmSCF-Address         [2] ISDN-AddressString,
  extensionContainer      [3] ExtensionContainer          OPTIONAL,
  longFTN-Supported      [4] NULL                      OPTIONAL,
  ...}
```

```
AnyTimeSubscriptionInterrogationRes ::= SEQUENCE {
  callForwardingData     [1] CallForwardingData          OPTIONAL,
  callBarringData        [2] CallBarringData            OPTIONAL,
  odb-Info               [3] ODB-Info                  OPTIONAL,
  camel-SubscriptionInfo [4] CAMEL-SubscriptionInfo     OPTIONAL,
  supportedVLR-CAMEL-Phases [5] SupportedCamelPhases      OPTIONAL,
  supportedSGSN-CAMEL-Phases [6] SupportedCamelPhases      OPTIONAL,
  extensionContainer      [7] ExtensionContainer          OPTIONAL,
  ... ,
  supportedCamel4SubsetsInVLR [8] SupportedCamel4Subsets    OPTIONAL,
  supportedCamel4SubsetsInSGSN [9] SupportedCamel4Subsets    OPTIONAL }
```

```
RequestedSubscriptionInfo ::= SEQUENCE {
  requestedSS-Info       [1] SS-ForBS-Code              OPTIONAL,
  odb                   [2] NULL                       OPTIONAL,
  requestedCAMEL-SubscriptionInfo [3] RequestedCAMEL-SubscriptionInfo OPTIONAL,
  supportedVLR-CAMEL-Phases [4] NULL                  OPTIONAL,
  supportedSGSN-CAMEL-Phases [5] NULL                  OPTIONAL,
  extensionContainer     [6] ExtensionContainer          OPTIONAL,
  ... ,
  additionalRequestedCAMEL-SubscriptionInfo [7] AdditionalRequestedCAMEL-SubscriptionInfo OPTIONAL }
```

```
RequestedCAMEL-SubscriptionInfo ::= ENUMERATED {
  o-CSI      (0),
  t-CSI      (1),
  vt-CSI     (2),
  tif-CSI    (3),
  gprs-CSI   (4),
  mo-sms-CSI (5),
  ss-CSI     (6),
  m-CSI      (7),
  d-csi      (8)}
```

```
AdditionalRequestedCAMEL-SubscriptionInfo ::= ENUMERATED {
  mt-sms-CSI (0),
  mg-csi     (1),
  o-IM-CSI   (2),
  d-IM-CSI   (3),
  vt-IM-CSI  (4),
  ...}
```

-- exception handling: unknown values shall be discarded by the receiver.

```
CallForwardingData ::= SEQUENCE {
  forwardingFeatureList Ext-ForwFeatureList,
  notificationToCSE     NULL                      OPTIONAL,
  extensionContainer     [0] ExtensionContainer      OPTIONAL,
  ...}
```

CallBarringData ::= SEQUENCE {			
callBarringFeatureList	Ext-CallBarFeatureList,		
password	Password		OPTIONAL,
wrongPasswordAttemptsCounter	WrongPasswordAttemptsCounter		OPTIONAL,
notificationToCSE	NULL		OPTIONAL,
extensionContainer	ExtensionContainer		OPTIONAL,
...}			

WrongPasswordAttemptsCounter ::= INTEGER (0..4)
--

ODB-Info ::= SEQUENCE {			
odb-Data	ODB-Data,		
notificationToCSE	NULL		OPTIONAL,
extensionContainer	ExtensionContainer		OPTIONAL,
...}			

CAMEL-SubscriptionInfo ::= SEQUENCE {			
o-CSI	[0] O-CSI		OPTIONAL,
o-BcsmCamelTDP-CriteriaList	[1] O-BcsmCamelTDPCriteriaList		OPTIONAL,
d-CSI	[2] D-CSI		OPTIONAL,
t-CSI	[3] T-CSI		OPTIONAL,
t-BCSM-CAMEL-TDP-CriteriaList	[4] T-BCSM-CAMEL-TDP-CriteriaList		OPTIONAL,
vt-CSI	[5] T-CSI		OPTIONAL,
vt-BCSM-CAMEL-TDP-CriteriaList	[6] T-BCSM-CAMEL-TDP-CriteriaList		OPTIONAL,
tif-CSI	[7] NULL		OPTIONAL,
tif-CSI-NotificationToCSE	[8] NULL		OPTIONAL,
gprs-CSI	[9] GPRS-CSI		OPTIONAL,
mo-sms-CSI	[10] SMS-CSI		OPTIONAL,
ss-CSI	[11] SS-CSI		OPTIONAL,
m-CSI	[12] M-CSI		OPTIONAL,
extensionContainer	[13] ExtensionContainer		OPTIONAL,
...			
specificCSIDeletedList	[14] SpecificCSI-Withdraw		OPTIONAL,
mt-sms-CSI	[15] SMS-CSI		OPTIONAL,
mt-smsCAMELTDP-CriteriaList	[16] MT-smsCAMELTDP-CriteriaList		OPTIONAL,
mg-csi	[17] MG-CSI		OPTIONAL,
o-IM-CSI	[18] O-CSI		OPTIONAL,
o-IM-BcsmCamelTDP-CriteriaList	[19] O-BcsmCamelTDPCriteriaList		OPTIONAL,
d-IM-CSI	[20] D-CSI		OPTIONAL,
vt-IM-CSI	[21] T-CSI		OPTIONAL,
vt-IM-BCSM-CAMEL-TDP-CriteriaList	[22] T-BCSM-CAMEL-TDP-CriteriaList		OPTIONAL,
...}			

AnyTimeModificationArg ::= SEQUENCE {			
subscriberIdentity	[0] SubscriberIdentity,		
gsmSCF-Address	[1] ISDN-AddressString,		
modificationRequestFor-CF-Info	[2] ModificationRequestFor-CF-Info		OPTIONAL,
modificationRequestFor-CB-Info	[3] ModificationRequestFor-CB-Info		OPTIONAL,
modificationRequestFor-CSI	[4] ModificationRequestFor-CSI		OPTIONAL,
extensionContainer	[5] ExtensionContainer		OPTIONAL,
longFTN-Supported	[6] NULL		OPTIONAL,
...			
modificationRequestFor-ODB-data	[7] ModificationRequestFor-ODB-data		OPTIONAL }

AnyTimeModificationRes ::= SEQUENCE {			
ss-InfoFor-CSE	[0] Ext-SS-InfoFor-CSE		OPTIONAL,
camel-SubscriptionInfo	[1] CAMEL-SubscriptionInfo		OPTIONAL,
extensionContainer	[2] ExtensionContainer		OPTIONAL,
...			
odb-Info	[3] ODB-Info		OPTIONAL }

ModificationRequestFor-CF-Info ::= SEQUENCE {			
ss-Code	[0] SS-Code,		
basicService	[1] Ext-BasicServiceCode		OPTIONAL,
ss-Status	[2] Ext-SS-Status		OPTIONAL,
forwardedToNumber	[3] AddressString		OPTIONAL,
forwardedToSubaddress	[4] ISDN-SubaddressString		OPTIONAL,
noReplyConditionTime	[5] Ext-NoRepCondTime		OPTIONAL,
modifyNotificationToCSE	[6] ModificationInstruction		OPTIONAL,
extensionContainer	[7] ExtensionContainer		OPTIONAL,
...}			

```

ModificationRequestFor-CB-Info ::= SEQUENCE {
    ss-Code [0] SS-Code,
    basicService [1] Ext-BasicServiceCode OPTIONAL,
    ss-Status [2] Ext-SS-Status OPTIONAL,
    password [3] Password OPTIONAL,
    wrongPasswordAttemptsCounter [4] WrongPasswordAttemptsCounter OPTIONAL,
    modifyNotificationToCSE [5] ModificationInstruction OPTIONAL,
    extensionContainer [6] ExtensionContainer OPTIONAL,
    ...}

```

```

ModificationRequestFor-ODB-data ::= SEQUENCE {
    odb-data [0] ODB-Data OPTIONAL,
    modifyNotificationToCSE [1] ModificationInstruction OPTIONAL,
    extensionContainer [2] ExtensionContainer OPTIONAL,
    ...}

```

```

ModificationRequestFor-CSI ::= SEQUENCE {
    requestedCamel-SubscriptionInfo [0] RequestedCAMEL-SubscriptionInfo,
    modifyNotificationToCSE [1] ModificationInstruction OPTIONAL,
    modifyCSI-State [2] ModificationInstruction OPTIONAL,
    extensionContainer [3] ExtensionContainer OPTIONAL,
    ...,
    additionalRequestedCAMEL-SubscriptionInfo [4] AdditionalRequestedCAMEL-SubscriptionInfo OPTIONAL }

```

```

ModificationInstruction ::= ENUMERATED {
    deactivate (0),
    activate (1)}

```

-- subscriber data modification notification types

```

NoteSubscriberDataModifiedArg ::= SEQUENCE {
    imsi IMSI,
    msisdn ISDN-AddressString,
    forwardingInfoFor-CSE [0] Ext-ForwardingInfoFor-CSE OPTIONAL,
    callBarringInfoFor-CSE [1] Ext-CallBarringInfoFor-CSE OPTIONAL,
    odb-Info [2] ODB-Info OPTIONAL,
    camel-SubscriptionInfo [3] CAMEL-SubscriptionInfo OPTIONAL,
    allInformationSent [4] NULL OPTIONAL,
    extensionContainer ExtensionContainer OPTIONAL,
    ...}

```

```

NoteSubscriberDataModifiedRes ::= SEQUENCE {
    extensionContainer ExtensionContainer OPTIONAL,
    ...}

```

-- mobility management event notification info types

```

NoteMM-EventArg::= SEQUENCE {
    serviceKey ServiceKey,
    eventMet [0] MM-Code,
    imsi [1] IMSI,
    msisdn [2] ISDN-AddressString,
    locationInformation [3] LocationInformation OPTIONAL,
    supportedCAMELPhases [5] SupportedCamelPhases OPTIONAL,
    extensionContainer [6] ExtensionContainer OPTIONAL,
    ...,
    locationInformationGPRS [7] LocationInformationGPRS OPTIONAL,
    supportedCamel4Subsets [8] SupportedCamel4Subsets OPTIONAL
}

```

```

NoteMM-EventRes ::= SEQUENCE {
    extensionContainer ExtensionContainer OPTIONAL,
    ...}

```

```

Ext-SS-InfoFor-CSE ::= CHOICE {
    forwardingInfoFor-CSE [0] Ext-ForwardingInfoFor-CSE,
    callBarringInfoFor-CSE [1] Ext-CallBarringInfoFor-CSE
}

```

```

Ext-ForwardingInfoFor-CSE ::= SEQUENCE {
    ss-Code [0] SS-Code,
    forwardingFeatureList [1] Ext-ForwFeatureList,
    notificationToCSE [2] NULL OPTIONAL,
    extensionContainer [3] ExtensionContainer OPTIONAL,
    ...}
    
```

```

Ext-CallBarringInfoFor-CSE ::= SEQUENCE {
    ss-Code [0] SS-Code,
    callBarringFeatureList [1] Ext-CallBarFeatureList,
    password [2] Password OPTIONAL,
    wrongPasswordAttemptsCounter [3] WrongPasswordAttemptsCounter OPTIONAL,
    notificationToCSE [4] NULL OPTIONAL,
    extensionContainer [5] ExtensionContainer OPTIONAL,
    ...}
    
```

END

**** NEXT MODIFIED SECTION ****

24A CSE control of subscriber data

24A.1 Any Time Subscription Interrogation procedure

24A.1.1 General

The message flows for successful retrieval of subscription information related to an any time interrogation from the CAMEL server are shown in figure 24A.1/1. In an IP Multimedia Core Network, an IM-SSF can take on the role of a gsmSCF for this procedure (see 3GPP TS 23.278).

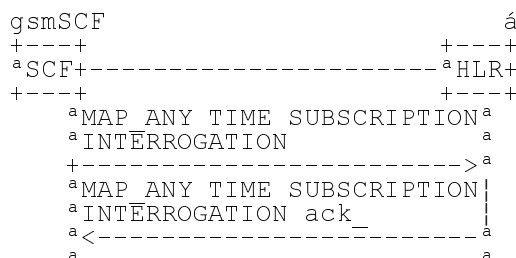


Figure 24A.1/1: Message flow for any time subscription interrogation

The following MAP services are used to retrieve requested information:

MAP_ANY_TIME_SUBSCRIPTION_INTERROGATION see clause 8.11.x.

24A.1.2 Process in the gsmSCF

Out of the scope of the MAP specification.

24A.1.3 Process in the HLR

The MAP process in the HLR to provide subscription information in response to an interrogation from the CAMEL server is shown in figure 24A.1/2. The MAP process invokes macros not defined in this clause; the definitions of these macros can be found as follows:

Receive_Open_Ind see clause 25.1.1;

Successful outcome

When the MAP process receives a MAP_OPEN indication with the application context anyTimeInformationHandlng, it checks it by invoking the macro Receive_Open_Ind.

If the macro takes the OK exit, the MAP process waits for a service indication.

If a MAP_ANY_TIME_SUBSCRIPTION_INTERROGATION service indication is received, the MAP process sends an Any Time Subscription Interrogation request to the call handling process in the HLR (described in 3GPP TS 23.078 and 3GPP TS 23.278), and waits for a response. The Any Time Subscription Interrogation request contains the parameters received in the MAP_ANY_TIME_SUBSCRIPTION_INTERROGATION service indication.

If the call handling process in the HLR returns an Any Time Subscription Interrogation response, the MAP process constructs a MAP_ANY_TIME_SUBSCRIPTION_INTERROGATION service response containing the subscription information contained in the Any Time Subscription Interrogation response, constructs a MAP_CLOSE service request, sends them to the CAMEL server and returns to the idle state. If the MAP_ANY_TIME_SUBSCRIPTION_INTERROGATION service response cannot be carried in a single TC-Result component, it is carried in one or more TC-Result-NL components (each sent in a TC-CONTINUE), followed by a TC-Result-L component in a TC-END message.

Negative response from HLR call handling process

If the call handling process in the HLR returns a negative response to obtain subscription information, the MAP process constructs a MAP_ANY_TIME_SUBSCRIPTION_INTERROGATION service response containing the appropriate error, constructs a MAP_CLOSE service request, sends them to the CAMEL server and returns to the idle state.

Failure of dialogue opening with the CAMEL server

If the macro Receive_Open_Ind takes the Vr or Error exit, the MAP process returns to the idle state.

If the MAP provider sends a MAP_P_ABORT while the MAP process is waiting for a service indication, the MAP process returns to the idle state.

If the MAP provider sends a MAP_NOTICE while the MAP process is waiting for a service indication, the MAP process sends a MAP_CLOSE request to terminate the dialogue and returns to the idle state.

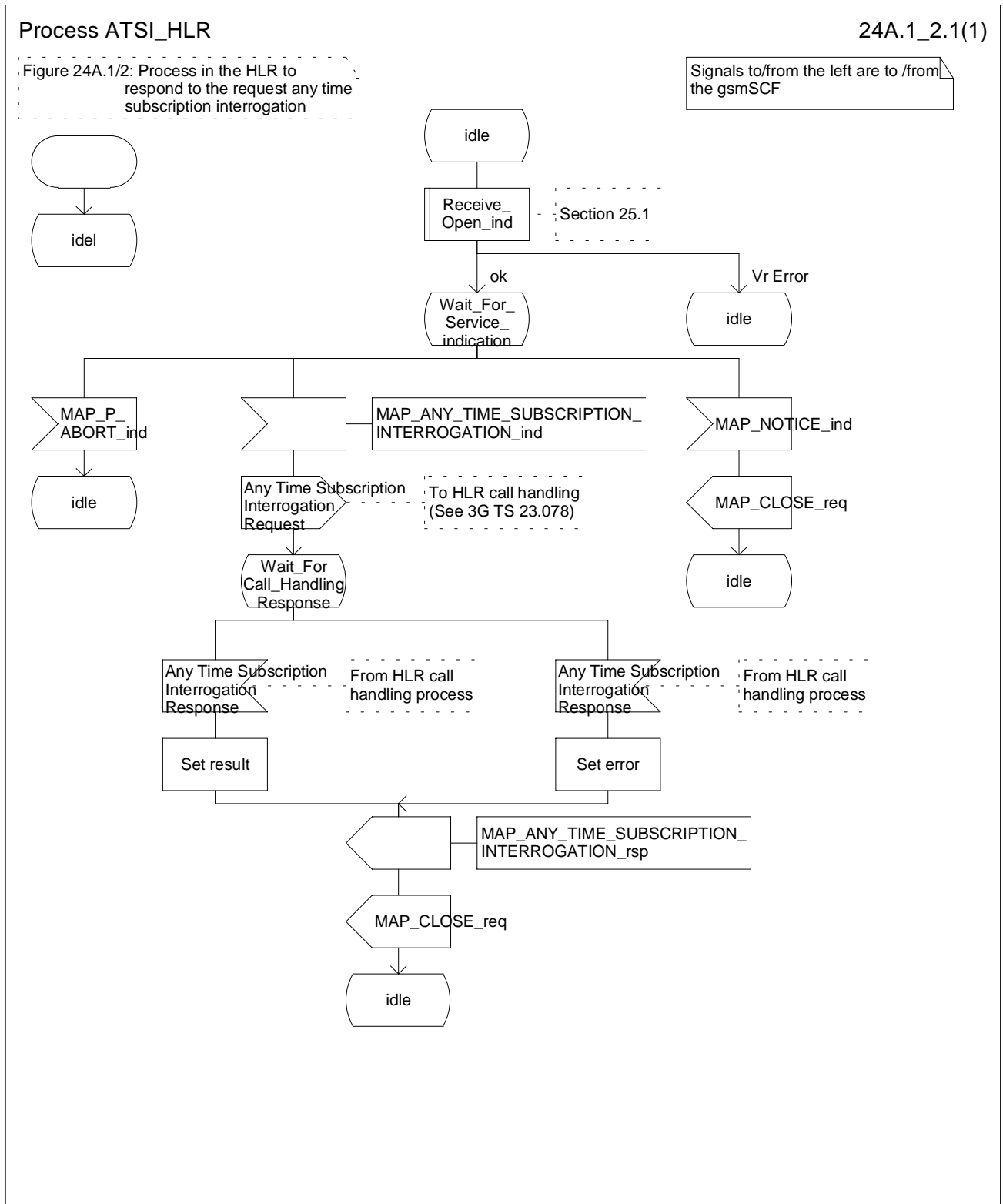


Figure 24A.1/2: Process ATSI_HLR

**** LAST MODIFIED SECTION ****

24A.3 Subscriber Data Modification Notification procedure

24A.3.1 General

The Subscriber Data Modification Notification procedure is used to notify a gsmSCF about the modification of subscriber data. In an IP Multimedia Core Network, an IM-SSF can take on the role of a gsmSCF for this procedure.

The stage 2 specification for Subscriber Data Modification Notification is in 3GPP TS 23.078 and 3GPP TS 23.278. The interworking between the MAP signalling procedures and the Subscriber Data Modification Notification procedures for each entity (HLR, gsmSCF) is shown by the transfer of signals between these procedures.

The following services are used:

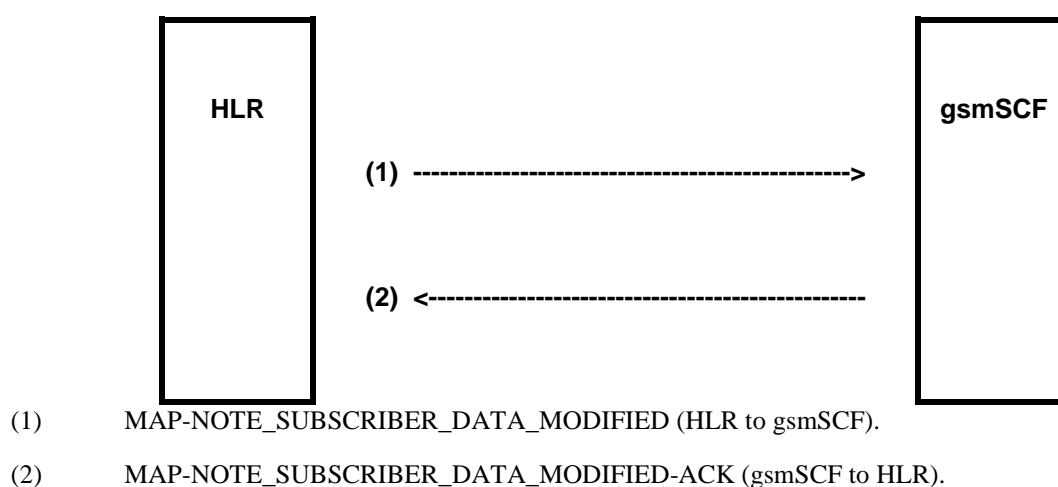


Figure 24A.3/1: Interfaces and services for subscriber data modification notification

24A.3.2 Processes in the MAP Entities

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.

24A.3.2.1 Process in the HLR

The MAP process in the HLR to send modified data to the gsmSCF is shown in figure 24A.3/2. The MAP process invokes macros not defined in this clause; the definitions of these macros can be found as follows:

Receive_Open_Cnf	see clause 25.1.2;
Check_Confirmation	see clause 25.2.2.

Successful Outcome

When the MAP process receives a Notify Subscriber Data Change request from the process in the HLR, it requests a dialogue with the gsmSCF whose identity is contained in the Note Subscriber Data Modified request by sending a MAP_OPEN service request, notifies modified subscriber data to the gsmSCF using a MAP_NOTE_SUBSCRIBER_DATA_MODIFIED service request and invokes the macro Receive_Open_Cnf to wait for the response to the dialogue opening request. If the dialogue opening is successful, the MAP process waits for a response from the gsmSCF.

If the HLR notices after receiving a Notify Subscriber Data Change request that the segmentation is needed the HLR does not set the “All Information Sent” indicator. Otherwise the indicator is set and the process returns to the Wait for SCF response state.

If the MAP process receives a MAP_NOTE_SUBSCRIBER_DATA_MODIFIED service confirm from the gsmSCF, the MAP process invokes the macro Check_Confirmation to check the content of the confirm.

If the macro Check_Confirmation takes the OK exit, the MAP process checks if the “All Information Sent” indicator is set. If it is set the MAP process sends a Notify Subscriber Data Modified ack to the process in the HLR and returns to the idle state. If the “All Information Sent” indicator is not set the MAP process checks if the further segmentation is needed. If segmentation is needed the HLR does not set the indicator and sends MAP_NOTE_SUBSCRIBER_DATA_MODIFIED service request to the gsmSCF. Otherwise the indicator is set and the MAP_NOTE_SUBSCRIBER_DATA_MODIFIED service request is sent to the gsmSCF.

Dialogue opening failure

If the macro Receive_Open_Cnf indicates that the dialogue with the gsmSCF could not be opened or that the dialogue can be opened only at an earlier version, the MAP process sends a Notify Subscriber Data Modified negative response indicating system failure to the process in the HLR and returns to the idle state.

Error in MAP_NOTE_SUBSCRIBER_DATA_MODIFIED confirm

If the MAP_NOTE_SUBSCRIBER_DATA_MODIFIED service confirm contains a user error or a provider error, the MAP process sends a Notify Subscriber Data Change negative response to the process in the HLR and returns to the idle state.

Abort of gsmSCF dialogue

After the dialogue with the gsmSCF has been established, the MAP service provider may abort the dialogue by issuing a MAP_P_ABORT indication, or the gsmSCF may send a MAP_CLOSE indication. In either of these cases, the MAP process sends a Notify Subscriber Data Change negative response to the process in the HLR and returns to the idle state.

If the MAP provider indicates a protocol problem by sending a MAP_NOTICE indication, the MAP process closes the dialogue with the gsmSCF, sends a Notify Subscriber Data Change negative response indicating system failure to the process in the HLR and returns to the idle state.

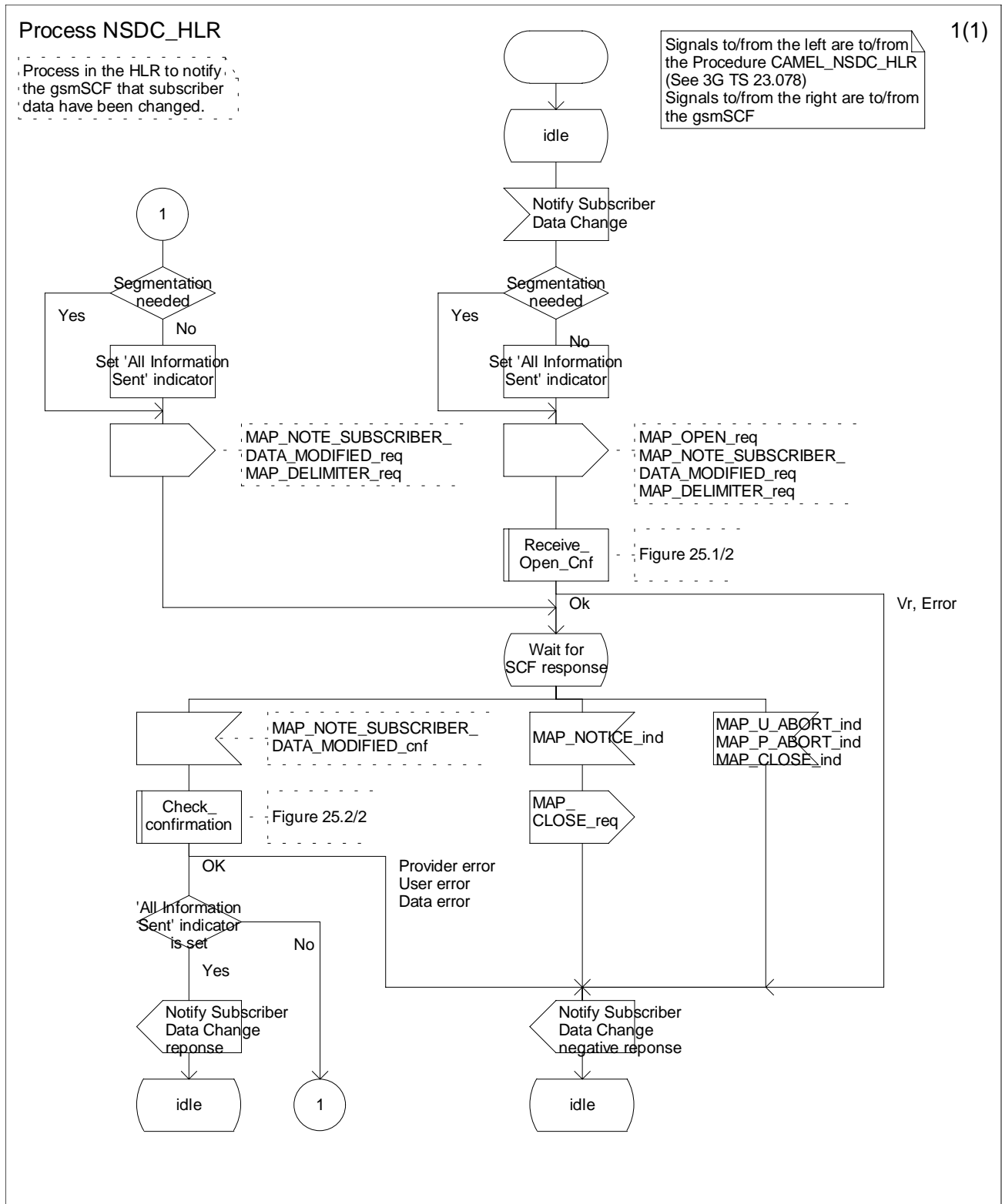


Figure 24A.3/2 Process Subscriber_Data_Modification_Notification_HLR (sheet 1 of 1)

24A.3.2.2 Process in the gsmSCF

The MAP process in the gsmSCF to handle a notification to the gsmSCF of change of subscriber data resume is shown in figure 24A.3/3. The MAP process invokes a macro not defined in this clause; the definition of this macro can be found as follows:

Receive_Open_Ind see clause 25.1.1;

Successful outcome

When the MAP process receives a MAP_OPEN indication with the application context noteSubscriberDataModified, it checks it by invoking the macro Receive_Open_Ind.

If the macro takes the OK exit, the MAP process waits for a service indication.

If a MAP_NOTE_SUBSCRIBER_DATA_MODIFIED service indication is received, the MAP process checks if the “All Information Sent” indicator is set and if so it sends a Subscriber Data Changed request including all the stored data to the process in the gsmSCF, and waits for a response. The Subscriber Data Changed request contains the parameters received in the MAP_NOTE_SUBSCRIBER_DATA_MODIFIED service indication. If the “All Information Sent” indicator is not set, the received data is stored and the MAP process constructs an empty MAP_NOTE_SUBSCRIBER_DATA_MODIFIED service response, sends it to the HLR and returns to the Wait for response state.

If the process in the gsmSCF returns a negative response, the MAP process constructs a MAP_NOTE_SUBSCRIBER_DATA_MODIFIED service response, constructs a MAP_CLOSE service request, sends them to the HLR and returns to the idle state.

Failure of dialogue opening with the HLR

If the macro Receive_Open_Ind takes the Vr exit or the Error exit, the MAP process returns to the idle state.

If the MAP provider sends a MAP_P_ABORT while the MAP process is waiting for a service indication, the MAP process returns to the idle state.

If the MAP provider sends a MAP_NOTICE while the MAP process is waiting for a service indication, the MAP process sends a MAP_CLOSE request to terminate the dialogue and returns to the idle.

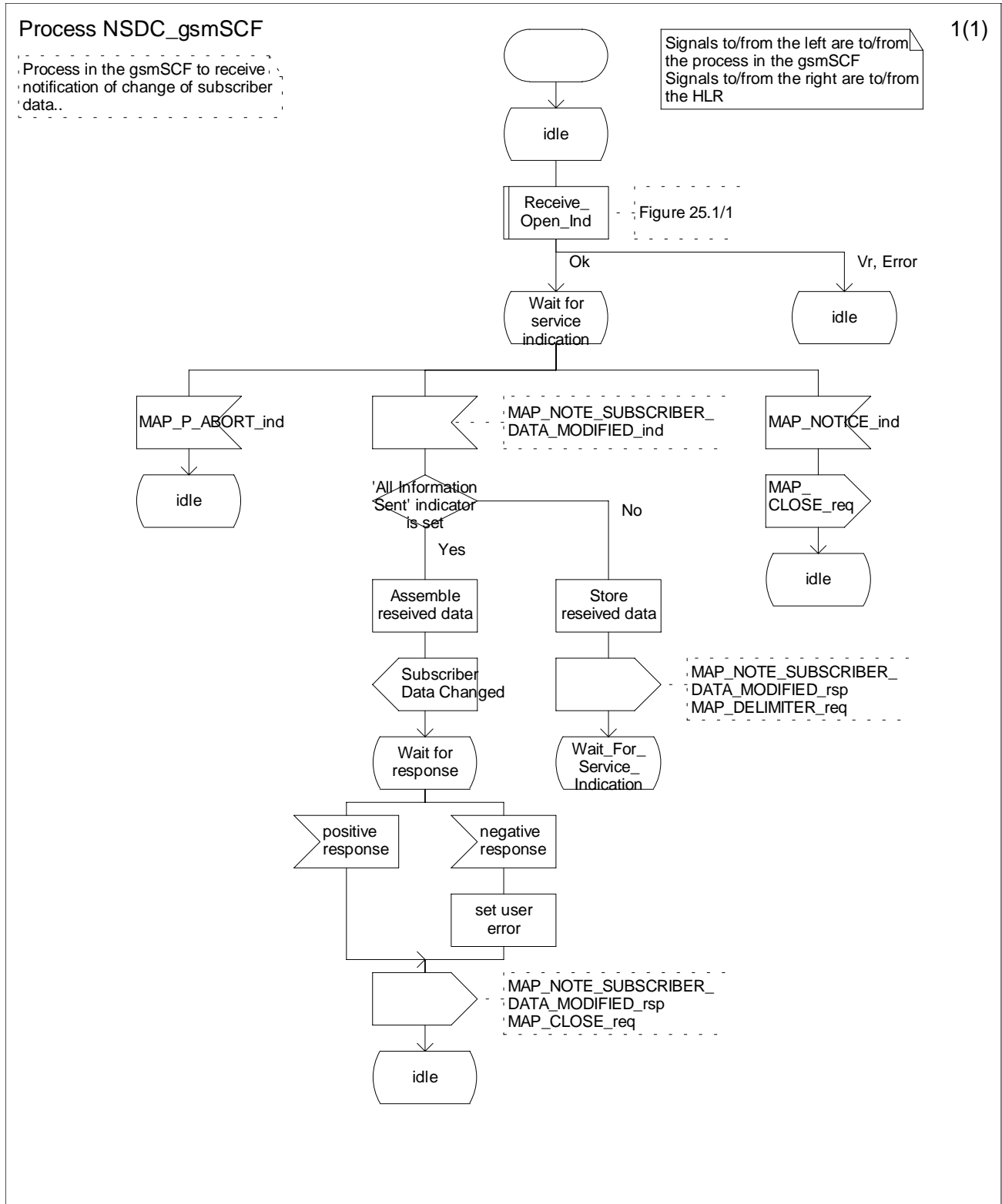


Figure 24A.3/3: Process Subscriber_Data_Modification_Notification_gsmSCF (sheet 1 of 1)