

Source: TSG CN WG4
Title: CRs on Rel-5 Provisioning of IP-based multimedia services for Camel
Agenda item: 8.1
Document for: APPROVAL

Introduction:

This document contains 3 CRs on Rel-5 Work Item "IMS-Camel", that have been agreed by TSG CN WG4, and are forwarded to TSG CN Plenary meeting #16 for approval.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	443	1	N4-020697	Rel-5	Extensions to ATM for CAMEL control of IMS	B	5.1.0
23.003	046		N4-020698	Rel-5	SSN for IM-SSF for support of MAP Si interface	B	5.2.0
29.002	415	5	N4-020739	Rel-5	Support of MAP Si interface	B	5.1.0

CHANGE REQUEST

⌘ **23.003 CR 046** ⌘ 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: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ SSN for IM-SSF for support of MAP Si interface		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CAMEL	Date:	⌘ May 16, 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)

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:	⌘ <input checked="" type="checkbox"/> Other core specifications <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications	⌘	CR 29.002-415 and 3G TS 23.278
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).

CHANGE REQUEST

⌘ **29.002 CR 415** ⌘ rev **5** ⌘ Current version: **5.1.0** ⌘

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Proposed change affects: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Support of MAP Si interface		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CAMEL	Date:	⌘ May 16, 2002
Category:	⌘ B 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 .	Release:	⌘ REL-5 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)

Reason for change:	⌘ Introduce the MAP changes for the new WI: Support of CAMEL by the IMS. 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 (per 3G TS 23.278 requirements) for the following: 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. <u>Notification of Initial UE registration:</u> 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. <u>Notification of HSS updates:</u> 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. 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. 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.
Summary of change:	⌘ Added reference to 3G 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:

⌘ 3G TS 29.002 won't include modifications for the MAP Si interface.

Clauses affected:

⌘ 2, 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:

⌘ Other core specifications ⌘ CR 23.003-046 and 3G TS 23.278
 Test specifications
 O&M Specifications

Other comments:

⌘

**** FIRST MODIFIED SECTION ****

2 References

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unmodified text

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[123] [3GPP TS 23.278: “Customised Applications for Mobile Network Enhanced Logic \(CAMEL\) Phase 4 – Stage 2 IM CN Interworking \(Rel-5\)”](#)

**** NEXT 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
Access signalling information	7.6.9.5	IST Information Withdrawn	7.6.3.68
Additional Absent Subscriber Diagnostic SM	7.6.8.12	IST Support Indicator	7.6.3.69
Additional Location Estimate	7.6.11.21	Kc	7.6.7.4
Additional number	7.6.2.46	Linked Id	7.6.1.2
Additional signal info	7.6.9.10	LMSI	7.6.2.16
Additional SM Delivery Outcome	7.6.8.11	Location Information	7.6.2.30
Age Indicator	7.6.3.72	Location Information for GPRS	7.6.2.30a
		Location update type	7.6.9.6
Alert Reason	7.6.8.8	Long Forwarded-to Number	7.6.2.22A
Alert Reason Indicator	7.6.8.10	Long FTN Supported	7.6.2.22B
Alerting Pattern	7.6.3.44	Lower Layer Compatibility	7.6.3.42
All GPRS Data	7.6.3.53	LSA Information	7.6.3.56
All Information Sent	7.6.1.5	LSA Information Withdraw	7.6.3.58
AN-apdu	7.6.9.1	MC Information	7.6.4.48
APN	7.6.2.42	MC Subscription Data	7.6.4.47
Authentication set list	7.6.7.1	Mobile Not Reachable Reason	7.6.3.51
B-subscriber Address	7.6.2.36	Modification request for CSI	7.6.3.81
B subscriber Number	7.6.2.48	Modification request for SS Information	7.6.3.82
B subscriber subaddress	7.6.2.49	More Messages To Send	7.6.8.7
Basic Service Group	7.6.4.40	MS ISDN	7.6.2.17
Bearer service	7.6.4.38	MSC number	7.6.2.11
		MSISdn-Alert	7.6.2.29
		Multicall Bearer Information	7.6.2.52
		Multiple Bearer Requested	7.6.2.53
		Multiple Bearer Not Supported	7.6.2.54
		MWD status	7.6.8.3

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	Rand	7.6.7.2
CUG interlock	7.6.3.24	Regional Subscription Data	7.6.3.11
CUG Outgoing Access indicator	7.6.3.8	Regional Subscription Response	7.6.3.12
CUG subscription	7.6.3.23	Relocation Number List	7.6.2.19A
CUG Subscription Flag	7.6.3.37	Requested Info	7.6.3.31
Current location area Id	7.6.2.6	Requested Subscription Info	7.6.3.86
		Roaming number	7.6.2.19
Current password	7.6.4.21	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 CSE	7.6.3.79	SM Delivery Outcome	7.6.8.6
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 CSE	7.6.3.80	SM-RP-OA	7.6.8.2
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 Network Entity	7.6.3.71
GGSN number	7.6.2.41	Supported CAMEL Phases in VLR	7.6.3.36
GMSC CAMEL Subscription Info	7.6.3.34	Supported CAMEL Phases in SGSN	7.6.3.36A
GPRS enhancements support indicator	7.6.3.73	Supported GAD Shapes	7.6.11.20
GPRS Node Indicator	7.6.8.14	Supported LCS Capability Sets	7.6.11.17
GPRS Subscription Data	7.6.3.46	Suppress Incoming Call Barring	7.6.3.b
GPRS Subscription Data Withdraw	7.6.3.45	Suppress T-CSI	7.6.3.33
GPRS Support Indicator	7.6.8.15	Suppress VT-CSI	7.6.3.a
Group Id	7.6.2.33	Suppression of Announcement	7.6.3.32
GSM bearer capability	7.6.3.6	Target cell Id	7.6.2.8
gsmSCF Address	7.6.2.58	Target location area Id	7.6.2.7
gsmSCF Initiated Call	7.6.3.c	Target RNC Id	7.6.2.8A
Guidance information	7.6.4.22	Target MSC number	7.6.2.12
Handover number	7.6.2.21	Teleservice	7.6.4.39
High Layer Compatibility	7.6.3.43	TMSI	7.6.2.2
HLR Id	7.6.2.15	Trace reference	7.6.10.2
HLR number	7.6.2.13	Trace type	7.6.10.3
HO-Number Not Required	7.6.6.7	User error	7.6.1.4
IMEI	7.6.2.3	USSD Data Coding Scheme	7.6.4.36
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

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unmodified sections and text

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[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.](#)

7.6.5 Call parameters

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unmodified sections and text

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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(=)
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) version7 (7)}
```

DEFINITIONS

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

-- subscriber management types

```
. . .
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 is are only applicable for the NoteSubscriberDataModified operation.
```

-- 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,
    ... }
    
```

```

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.
    
```

```

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 }
    
```

```

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,
  ...}

```

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 \(see 3GPP TS 23.278\).](#)

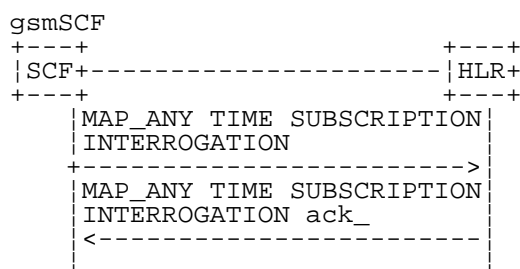


Figure 24A.1/1: Message flow for any time subscription interrogation

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.

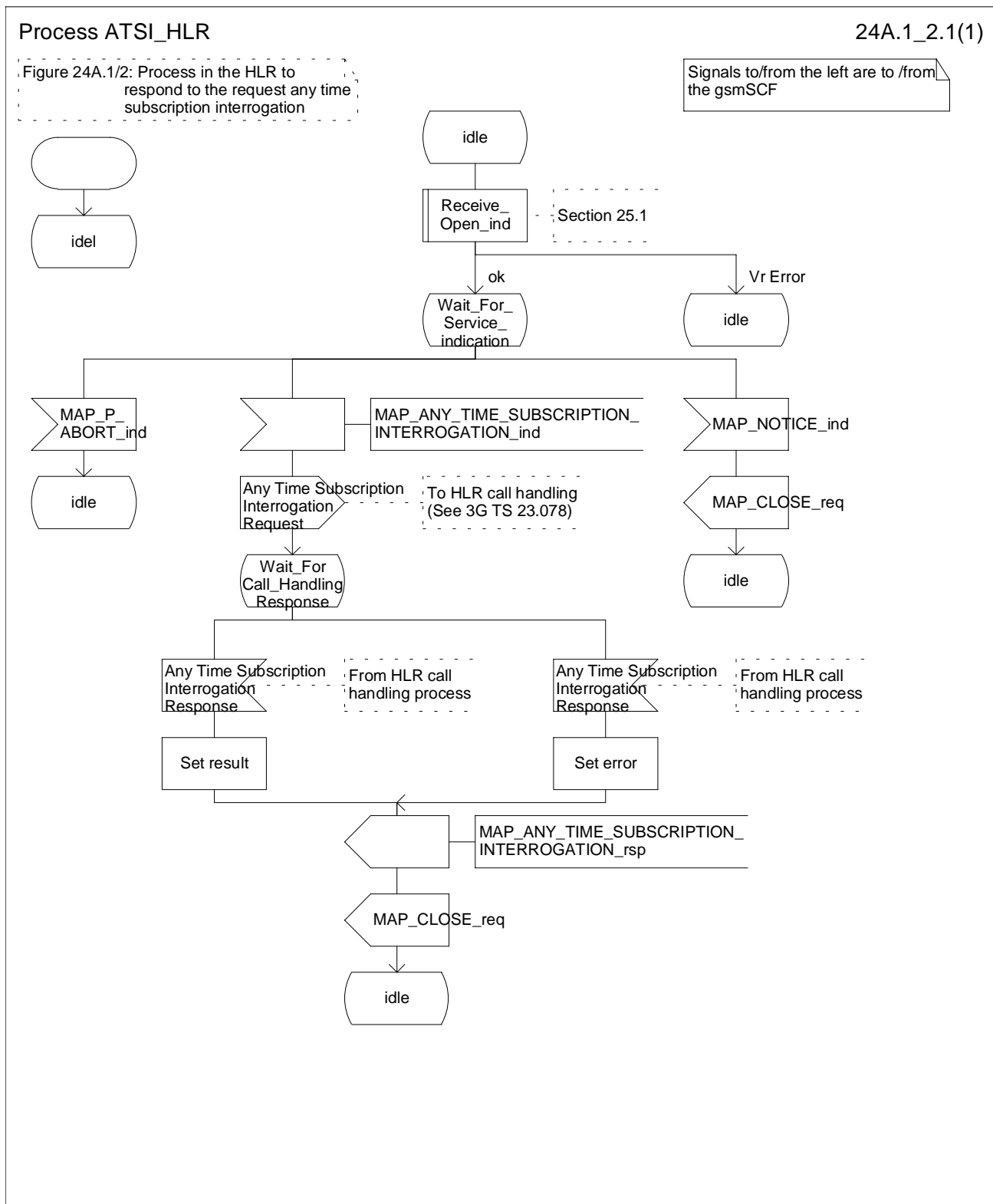


Figure 24A.1/2: Process ATSI_HLR

**** LAST MODIFIED SECTION ***

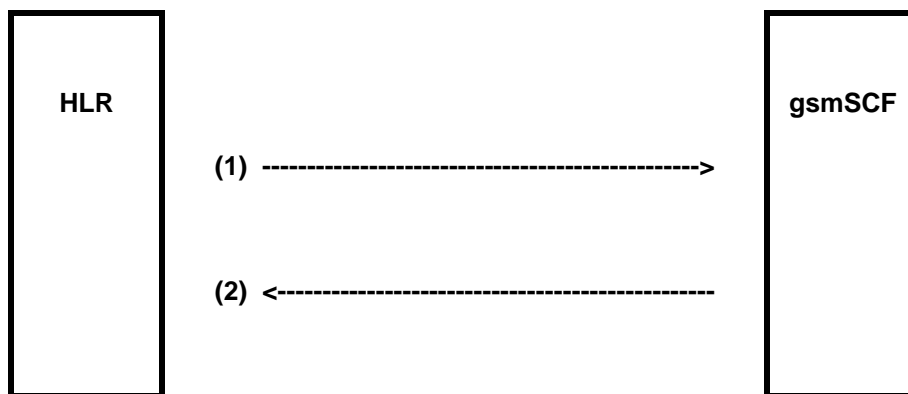
24A.3 Subscriber Data Modification Notification procedure

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:



- (1) MAP-NOTE_SUBSCRIBER_DATA_MODIFIED (HLR to gsmSCF).
 (2) MAP-NOTE_SUBSCRIBER_DATA_MODIFIED-ACK (gsmSCF to HLR).

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.

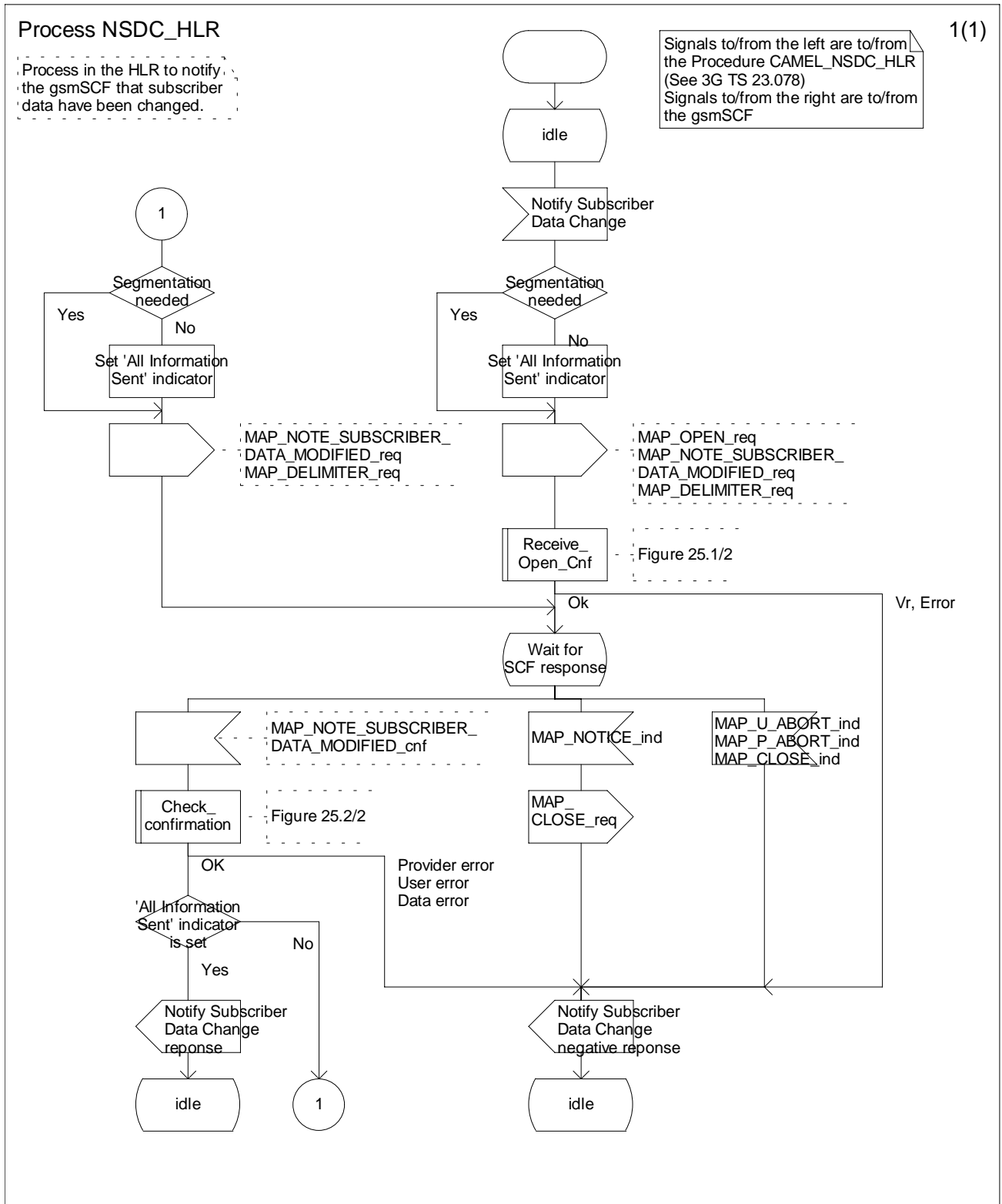


Figure 24A.3/2 Process Subscriber_Data_Modification_Notification_HLR (sheet 1 of 1)

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.

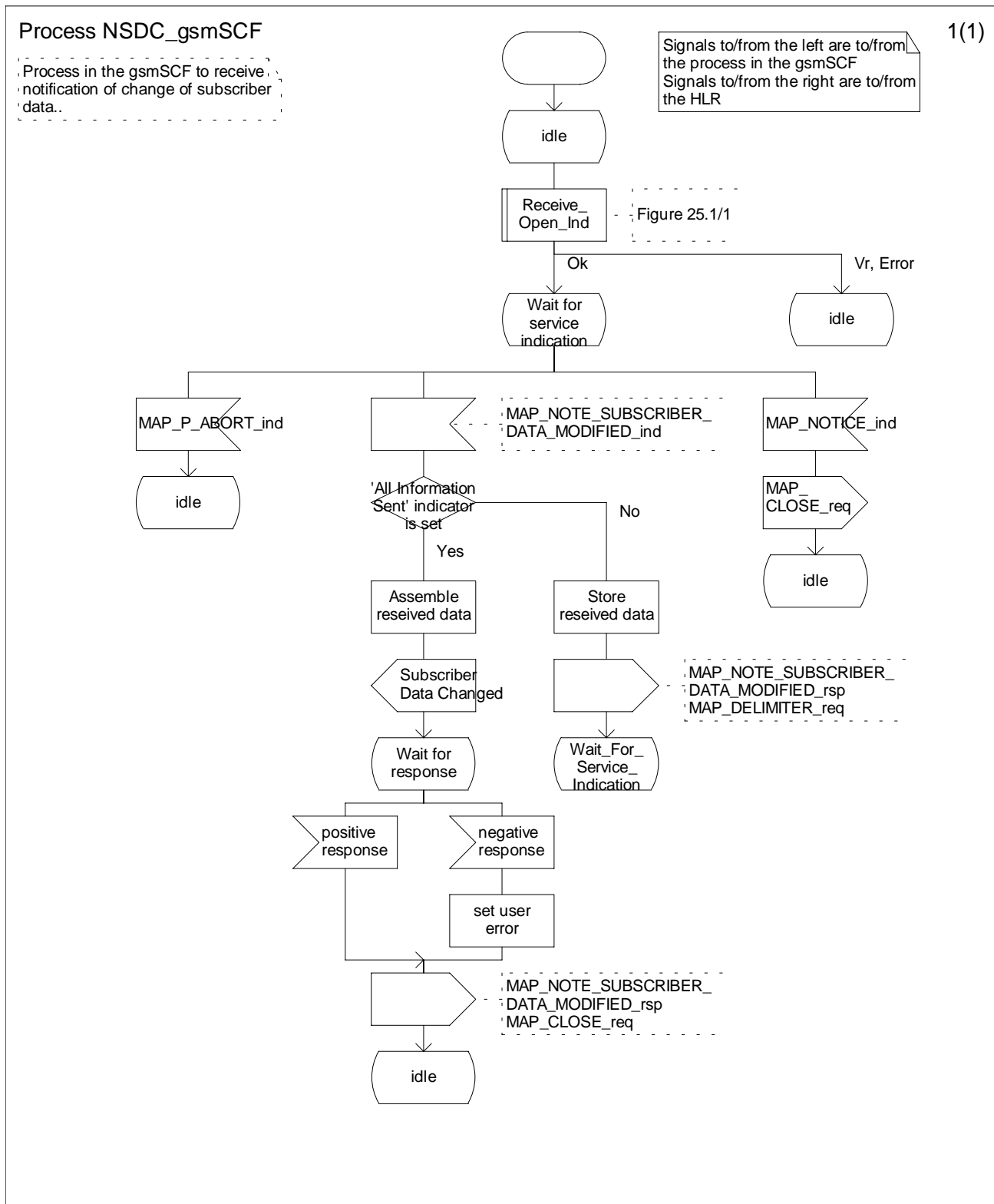


Figure 24A.3/3: Process Subscriber_Data_Modification_Notification_gsmSCF (sheet 1 of 1)

CHANGE REQUEST

⌘ **29.002 CR 443** ⌘ 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: ⌘ (U)SIM ME/UE Radio Access Network Core Network

Title:	⌘ Extensions to ATM for CAMEL control of IMS		
Source:	⌘ CN4		
Work item code:	⌘ IMS-CAMEL	Date:	⌘ May 14, 2002
Category:	⌘ B 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 .	Release:	⌘ REL-5 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)

Reason for change:	⌘ This CR modifies the existing MAP service Any Time Modification (ATM) request between the HSS and the gsmSCF for IMS-CAMEL work item. 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). [The acknowledgement contains a confirmation of the changed CSI data (within CAMEL-Subscription Info).]
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:	⌘ <input checked="" type="checkbox"/> Other core specifications ⌘ 3GPP TS 23.278 <input type="checkbox"/> Test specifications <input type="checkbox"/> O&M Specifications
Other comments:	⌘ Note: See also N2-020579 for N2 requirement.

**** FIRST MODIFIED SECTION ****

2 References

...

unmodified text

...

[123] [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) version7 (7)}
```

DEFINITIONS

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

-- subscriber management types

```
. . .
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
. . .

```

Error! No text of specified style in document.

6

Error! No text of specified style in document.

**** 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

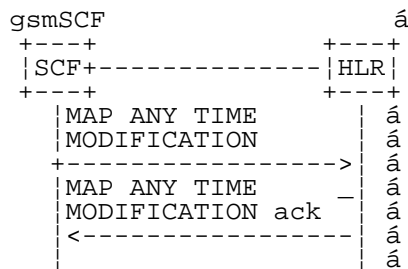


Figure 24A.2/1: Message flow for any time modification

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_Sub_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.

****** figure in this section is not shown, since it is unchanged ******