3GPP TSG CN Plenary Meeting #21 **NP-030387**
17th – 19th September 2003 Frankfurt, GERMANY.

Source: TSG CN WG4

Title: Corrections on Service Change and UDI Fallback

Agenda item: 8.7

Document for: APPROVAL

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
23.018	133		N4-031025	Rel-5	HLR Interrogation for SCUDIF calls	F	5.7.0
23.079	026	1	N4-031055	Rel-5	Notification of the 2nd BSG in case of Late CF with OR	F	5.2.0
29.002	659	2	N4-031056	Rel-5	Notification of the 2nd BSG in case of Late CF with OR	F	5.6.2
29.002	660	2	N4-031057	Rel-6	Notification of the 2nd BSG in case of Late CF with OR	A	6.2.0
29.002	613	3	N4-031058	Rel-5	HLR Interrogation for SCUDIF calls	F	5.6.2
29.002	614	3	N4-031059	Rel-6	HLR Interrogation for SCUDIF calls	A	6.2.0

3GPP TSG CN WG4 Meeting #20 ***N4-031025***
Sophia Antipolis, FRANCE, 25th – 29th August 2003

CR-Form-v7

CHANGE REQUEST

⌘ **23.018** **CR** **133** ⌘ **rev** **-** ⌘ Current version: **5.7.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	HLR Interrogation for SCUDIF calls
Source:	⌘	CN4
Work item code:	⌘	SCUDIF
Date:	⌘	01/09/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:

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:	⌘	No proper checking of subscription and forwarding options are performed by the GMSC for services provided by SCUDIF (speech and multimedia)
Summary of change:	⌘	The Obtain Routing Address procedure and the SRI_HLR process are updated to call the SCUDIF-specific procedures defined in 23.172
Consequences if not approved:	⌘	No check is possible in the GMSC for one of the services (speech or multimedia) requested in the codec list. The subscription and call forwarding state of the services offered by the SCUDIF feature (speech and multimedia) cannot be properly checked.

Clauses affected:	⌘	2, 3.2, 7.2.1, 7.2.2

		Y	N			
Other specs affected:	⌘	X		Other core specifications	⌘	23.172-016, 29.002-613
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	

First Modified Section

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] 3GPP TS 43.020: "Security related Network Functions".

[2] 3GPP TS 48.008: "Mobile Switching Centre - Base Station System (MSC - BSS) interface Layer 3 specification".

[3] GSM 12.08: "Digital cellular telecommunications system (Phase 2+); Subscriber and equipment trace".

[4] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[5] 3GPP TS 23.003: "Numbering, addressing and identification".

[6] 3GPP TS 23.012: "Location management procedures".

[7] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)".

[8] 3GPP TS 23.054: "Description for the use of a Shared Inter Working Function (SIWF) in a GSM; Stage 2".

[9] 3GPP TS 23.060: "General Packet Radio Service (GPRS); Service description; Stage 2".

[10] 3GPP TS 23.066: "Support of GSM Mobile Number Portability (MNP); Stage 2".

[11] 3GPP TS 23.072: "Call deflection Supplementary Service; Stage2".

[12] 3GPP TS 23.078: "Customized Applications for Mobile network Enhanced Logic (CAMEL); Stage 2".

[13] 3GPP TS 23.079: "Support of Optimal Routeing (SOR); Technical realization; Stage 2".

[14] 3GPP TS 23.081: "Line identification Supplementary Services; Stage 2 ".

[15] 3GPP TS 23.082: "Call Forwarding (CF) Supplementary Services; Stage 2".

[16] 3GPP TS 23.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Service; Stage 2".

[17] 3GPP TS 23.084: "Multi Party (MPTY) Supplementary Service; Stage 2".

[18] 3GPP TS 23.085: "Closed User Group (CUG) Supplementary Service; Stage 2".

[19] 3GPP TS 23.086: "Advice of Charge (AoC) Supplementary Service; Stage 2".

[20] 3GPP TS 23.087: "User-to-User Signalling (UUS) Supplementary Service; Stage 2".

[21] 3GPP TS 23.088: "Call Barring (CB) Supplementary Service; Stage 2".

[22] 3GPP TS 23.091: "Explicit Call Transfer (ECT) supplementary service; Stage 2".

[23] 3GPP TS 23.093: "Technical realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".

[24] 3GPP TS 23.116: "Super-charger technical realization; Stage 2".

[25] 3GPP TS 23.135: "Multicall supplementary service; Stage 2".

[25a] 3GPP TS 23.195: "Provision of UE Specific Behaviour Information to Network Entities".

[26] 3GPP TS 24.008: "Mobile radio interface Layer 3 specification; Core network protocols; Stage 3".

[27] 3GPP TS 25.413: "UTRAN Iu interface RANAP signalling".

[28] 3GPP TS 27.001: "General on Terminal Adaptation Functions (TAF) for Mobile Stations (MS)".

[29] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[30] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[31] 3GPP TS 29.010: "Information Element Mapping between Mobile Station - Base Station System (MS - BSS) and Base Station System - Mobile-services Switching Centre (BSS - MSC) Signalling Procedures and the Mobile Application Part (MAP)".

[32] 3GPP TS 33.102: "3G Security; Security architecture ".

[33] ITU-T Recommendation Q.761 (1999): " Signalling System No. 7 - ISDN User Part functional description ".

[34] ITU-T Recommendation Q.762 (1999): "Signalling System No. 7 - ISDN User Part general functions of messages and signals".

[35] ITU-T Recommendation Q.763 (1999): "Signalling System No. 7 - ISDN User Part formats and codes".

[36] ITU-T Recommendation Q.764 (1999): " Signalling System No. 7 – ISDN user part signalling procedures".

[37] ITU-T Recommendation Q.850 (1996): "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part".

[x] 3GPP TS 23.172: "Technical realization of Circuit Switched (CS) multimedia service ; UDI/RDI fallback and service modification; Stage 2"

Next Modified Section

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

A&O	Active & Operative
ACM	Address Complete Message
ANM	ANswer Message
AoC	Advice of Charge
BC	Bearer Capability
BOIC-exHC&BOIZC	Barring of Outgoing International Calls except those directed to the HPLMN Country & Barring of Outgoing InterZonal Calls
BOIZC	Barring of Outgoing InterZonal Calls
BOIZC-exHC	Barring of Outgoing InterZonal Calls except those directed to the HPLMN Country
CCBS	Completion of Calls to Busy Subscriber

CFB	Call Forwarding on Busy
CFNRc	Call Forwarding on mobile subscriber Not Reachable
CFNRy	Call Forwarding on No Reply
CFU	Call Forwarding Unconditional
CLIP	Calling Line Identity Presentation
CLIR	Calling Line Identity Restriction
COLP	COnnected Line identity Presentation
COLR	COnnected Line identity Restriction
CUG	Closed User Group
CW	Call Waiting
FTN	Forwarded-To Number
FTNW	Forwarded-To NetWork
GMSCB	Gateway MSC of the B subscriber
GPRS	General Packet Radio Service
HLC	Higher Layer Compatibility
HLRB	The HLR of the B subscriber
HPLMNB	The HPLMN of the B subscriber
IAM	Initial Address Message
IPLMN	Interrogating PLMN - the PLMN containing GMSCB
IWU	Inter Working Unit
LLC	Lower Layer Compatibility
MO	Mobile Originated
MPTY	MultiParTY
MT	Mobile Terminated
NDUB	Network Determined User Busy
NRCT	No Reply Call Timer
PLMN BC	(GSM or UMTS) PLMN Bearer Capability
PRN	Provide Roaming Number
SCUDIF	Service Change and UDI/RDI Fallback
SGSN	Serving GPRS support node
SIFIC	Send Information For Incoming Call
SIFOC	Send Information For Outgoing Call
SIWF	Shared Inter Working Function
SIWFS	SIWF Server. SIWFS is the entity where the used IWU is located.
SRI	Send Routeing Information
UDUB	User Determined User Busy
VLRA	The VLR of the A subscriber
VLRB	The VLR of the B subscriber
VMSCA	The Visited MSC of the A subscriber
VMSCB	The Visited MSC of the B subscriber
VPLMNA	The Visited PLMN of the A subscriber
VPLMNB	The Visited PLMN of the B subscriber

Next Modified Section

7.2.1 Functional requirements of GMSC

SKIPPED TEXT AND FIGURES

7.2.1.2 Procedure Obtain_Routeing_Address

Sheet 1: the procedure MOBILE_NUMBER_PORTABILITY_IN_TQoD is specific to Mobile Number Portability; it is specified in 3GPP TS 23.066 [10].

Sheet 1: the procedure CCBS_MT_GMSC_Check_CCBS_Call is specific to CCBS; it is specified in 3GPP TS 23.093 [23].

Sheet 1: the procedure CLI_MT_GMSC is specific to Enhanced CLI Handling. It is specified in 3GPP TS 23.081 [14].

Sheet 1: for SCUDIF calls, the message Send Routeing Info shall include the ISDN BC of both the preferred and the less preferred service, as specified in 3GPP TS 23.172 [x].

Sheet 2: the procedure SCUDIF_Negative_SRI_Response_Handling is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x]. If the GMSC does not support SCUDIF, processing continues from the "Fail" exit of the test "Result".

Sheet 2: the procedure OR_Handle_SRI_Negative_Response is specific to Support of Optimal Routeing. It is specified in 3GPP TS 23.079 [13]. If the GMSC does not support Optimal Routeing, processing continues from the "No" exit of the test "Result=Pass?".

Sheet 2: the test "Error=Unknown subscriber" refers to the negative response value received from the HLR.

Sheet 2: the procedure MOBILE_NUMBER_PORTABILITY_IN_QoHR is specific to Mobile Number Portability; it is specified in 3GPP TS 23.066 [10].

Sheet 3: the procedure SCUDIF_Check_Service_Availability is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x]. If the GMSC does not support SCUDIF, processing continues from the "continue" exit of the test "Result ?".

Sheet 3: the procedure CAMEL_MT_GMSC_INIT is specific to CAMEL; it is specified in 3GPP TS 23.078 [12].

Sheet 3: the procedure SCUDIF_Check_Service_Compatibility is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x].

~~Sheet 3: the procedure CAMEL_MT_GMSC_Notify_CF is specific to CAMEL phase 2 or later; it is specified in 3GPP TS 23.078 [12]. If the GMSC does not support CAMEL phase 2 or later, processing continues from the "Continue" exit of the test "Result".~~

Sheet 4: the procedure SCUDIF_Check_Service_Compatibility is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x].

Sheet 4~~3~~: the procedure CCBS_MT_GMSC_Check_CCBS_Indicators is specific to CCBS; it is specified in 3GPP TS 23.093 [23].

Sheet 4~~3~~: the task "Store Forwarding Interrogation Required indicator" is executed only if the GMSC supports Optimal Routeing.

Sheet 4~~3~~: The test "MSRN contains a Routeing Number" is executed only if the SRF solution for call related MNP is used. If the SRF solution for call related MNP is not used, processing continues from the "No" exit of the test "MSRN contains a Routeing Number".

Sheet 4~~3~~: the procedure MNP_MT_GMSC_Check_MNP_Indicators is specific to Mobile Number Portability; it is specified in 3GPP TS 23.066 [10].

Sheet 5: the procedure CAMEL_MT_GMSC_Notify_CF is specific to CAMEL phase 2 or later; it is specified in 3GPP TS 23.078 [12]. If the GMSC does not support CAMEL phase 2 or later, processing continues from the "Continue" exit of the test "Result".

Sheet 5: the procedure SCUDIF_Check_Service_Compatibility is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x].

Sheet 6~~4~~: the task "BOR:=OR" is executed only if the GMSC supports Optimal Routeing of mobile-to-mobile calls.

Sheet 6~~4~~: the procedures CCBS_MT_GMSC_Remove_Indicators_Store_FWT is specific to CCBS; it is specified in 3GPP TS 23.093 [23].

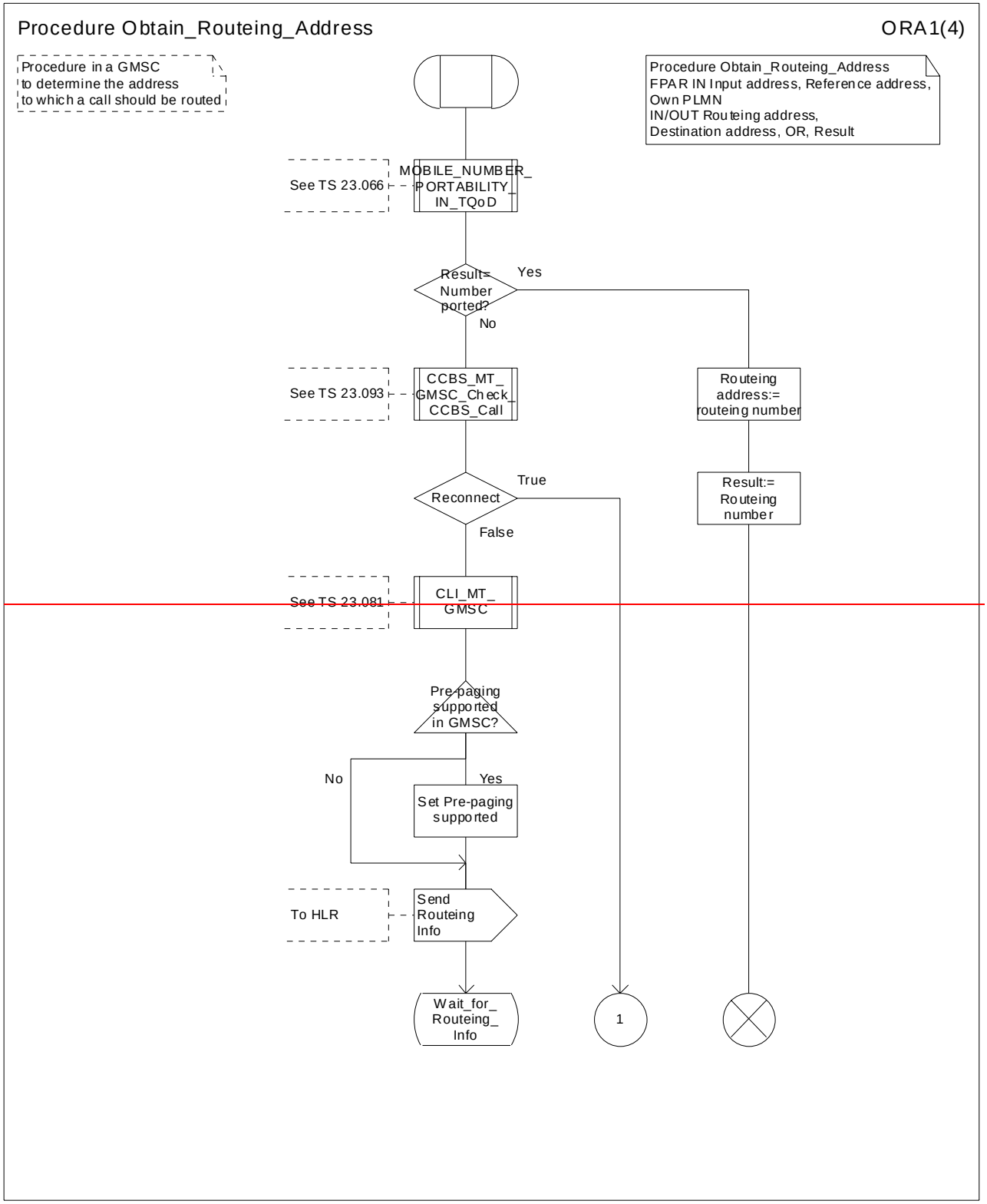
Sheet 6~~4~~: the procedure Route_Permitted is specific to Support of Optimal Routeing. It is specified in 3GPP TS 23.079 [13]. If the GMSC does not support Optimal Routeing, processing continues from the "True" exit of the test "Route permitted".

Sheet 6~~4~~: the procedure CAMEL_MT_MSC_DISC3 is specific to CAMEL phase 1; it is specified in 3GPP TS 23.078 [12].

Sheet 6~~4~~: the procedure CAMEL_MT_GMSC_DISC4 is specific to CAMEL Phase 2 or later; it is specified in 3GPP TS 23.078 [12].

Sheet 6~~4~~: the task "OR:= True" is executed only if the GMSC supports Optimal Routeing of mobile-to-mobile calls.

SKIPPED TEXT AND FIGURES


Procedure Obtain_Routeing_Address
ORA1(4)
Procedure in a GMSC to determine the address to which a call should be routed
Procedure Obtain_Routeing_Address
FPAR IN Input address, Reference address, Own PLMN
IN/OUT Routeing address,
Destination address, OR, Result
See TS 23.066
MOBILE_NUMBER_PORTABILITY_IN_TQoD
Result= Number ported?
Yes
No
See TS 23.093
CCBS_MT_GMSC_Check_CCBS_Call
Routeing address:= routeing number
Reconnect
True
False
Result:= Routeing number
See TS 23.081
CLI_MT_GMSC
Pre-paging supported in GMSC?
No
Yes
Set Pre-paging supported
To HLR
Send Routeing Info
Wait_for_Routeing_Info
1

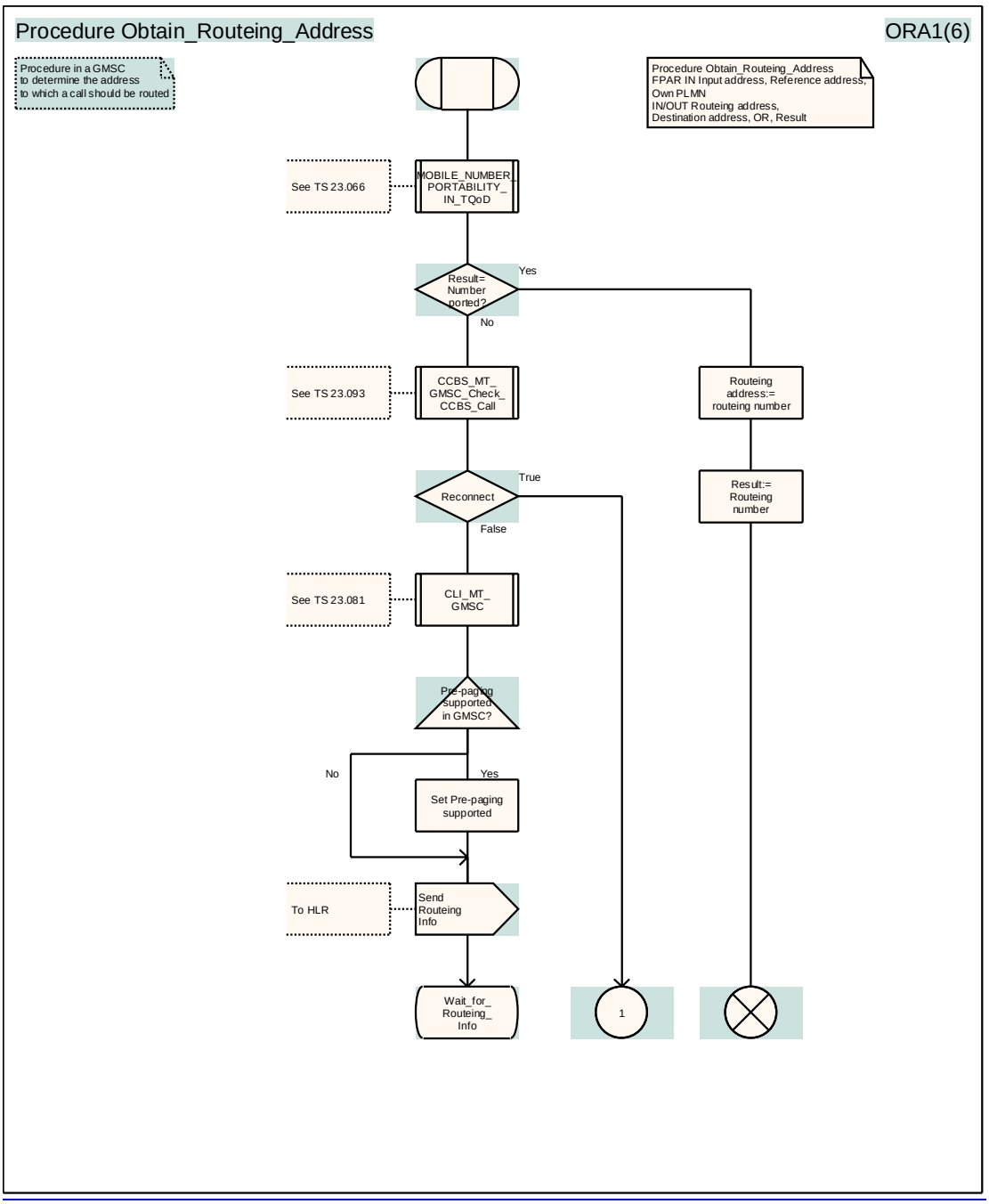
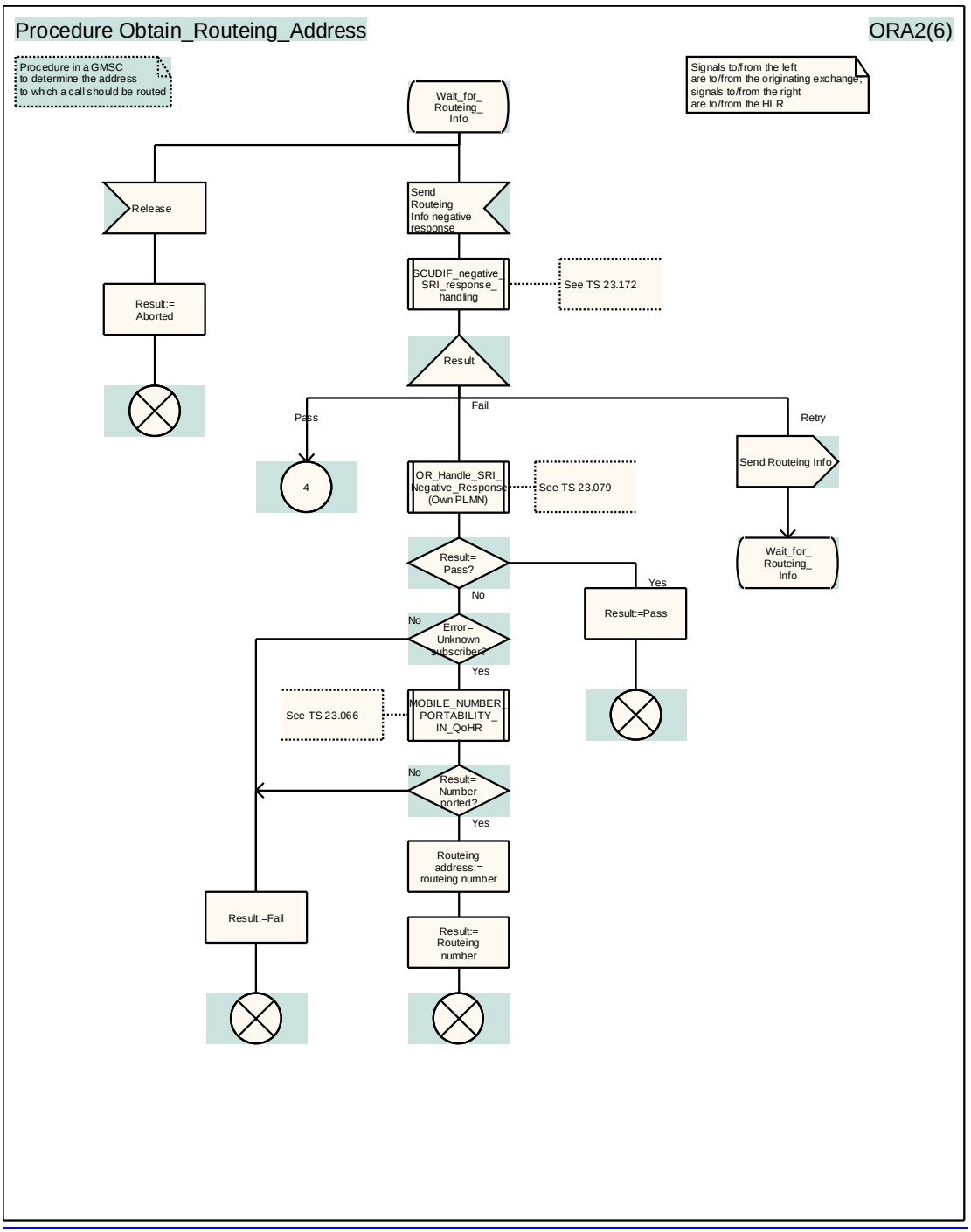


Figure 37a: Procedure Obtain_Routeing_Address (sheet 1)


Procedure Obtain_Routeing_Address
ORA2(6)
Procedure in a GMSC to determine the address to which a call should be routed
Signals to/from the left are to/from the originating exchange; signals to/from the right are to/from the HLR
Wait_for_ Routeing_ Info
Release
Send Routeing Info negative response
SCUDIF_negative_ SRI_response_ handling
See TS 23.172
Result:= Aborted
Result
Pass
Fail
Retry
4
OR_Handle_SRI_ Negative_Response (Own PLMN)
See TS 23.079
Send Routeing Info
Result= Pass?
Yes
No
Wait_for_ Routeing_ Info
Result:=Pass
No
Error= Unknown subscriber?
Yes
See TS 23.066
MOBILE_NUMBER_ PORTABILITY_ IN_QoHR
No
Result= Number ported?
Yes
Routeing address:= routeing number
Result:=Fail
Result:= Routeing number

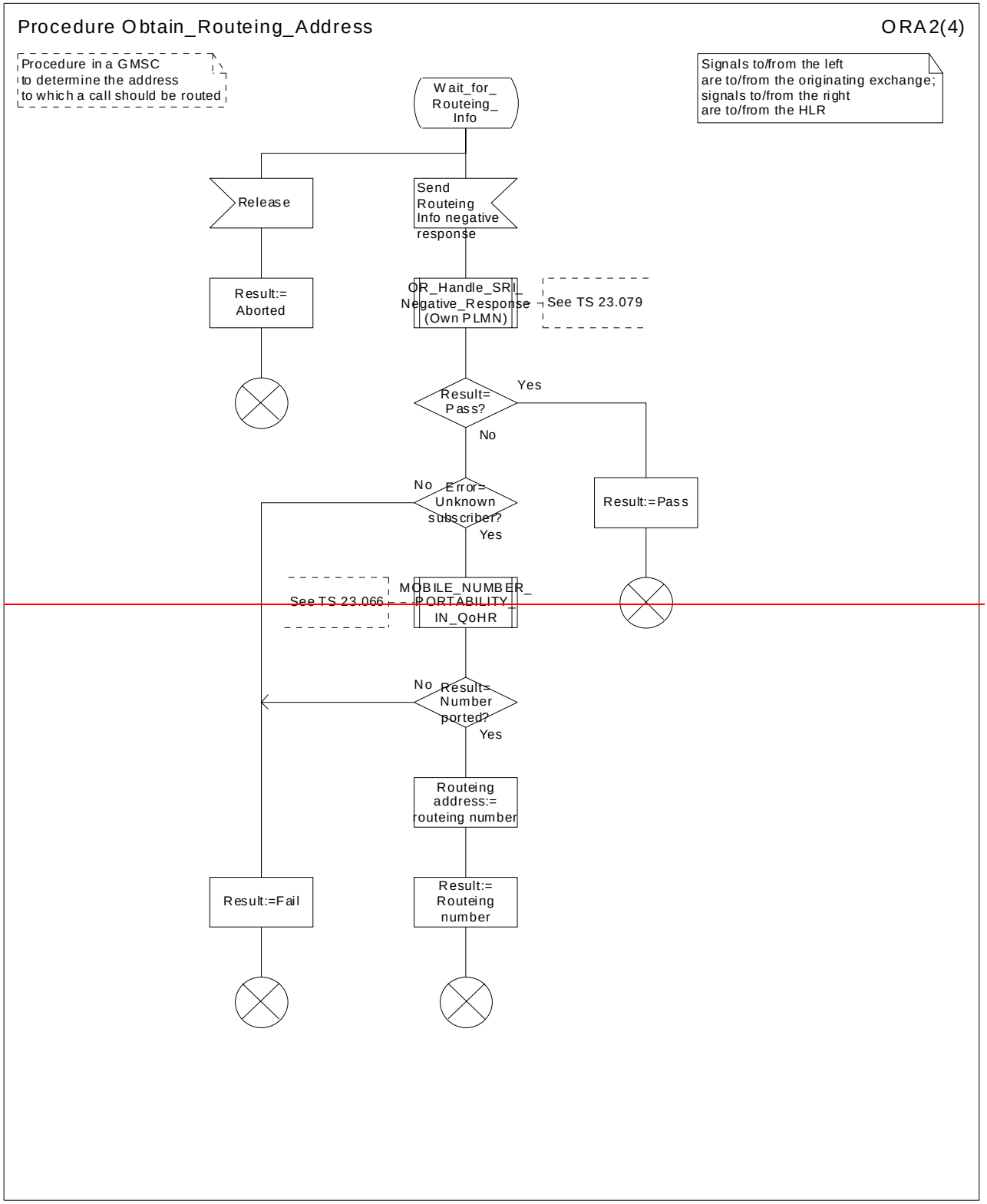
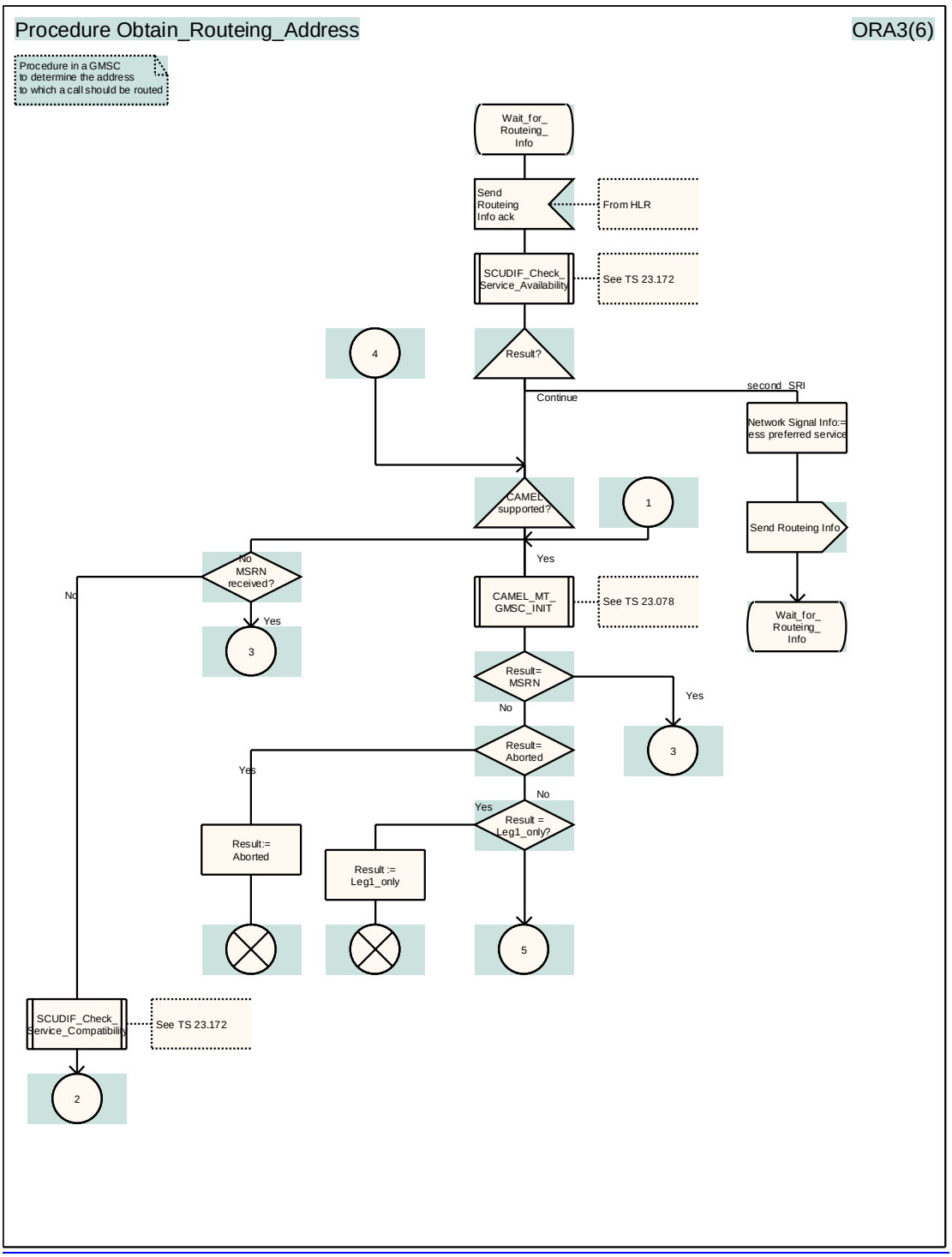


Figure 37b: Procedure Obtain_Routeing_Address (sheet 2)


Procedure Obtain_Routeing_Address
ORA3(6)
Procedure in a GMSC to determine the address to which a call should be routed
Wait_for_ Routeing_ Info
Send Routeing Info ack
From HLR
SCUDIF_Check_ Service_Availability
See TS 23.172
4
Result?
Continue
second_SRI
Network Signal Info:= less preferred service
CAMEL supported?
1
Send Routeing Info
No MSRN received?
Yes
No
3
CAMEL_MT_ GMSC_INIT
See TS 23.078
Wait_for_ Routeing_ Info
Result= MSRN
Yes
No
3
Result= Aborted
Yes
No
Result:= Aborted
Yes
Result = Leg1_only?
Result := Leg1_only
5
SCUDIF_Check_ Service_Compatibility
See TS 23.172
2

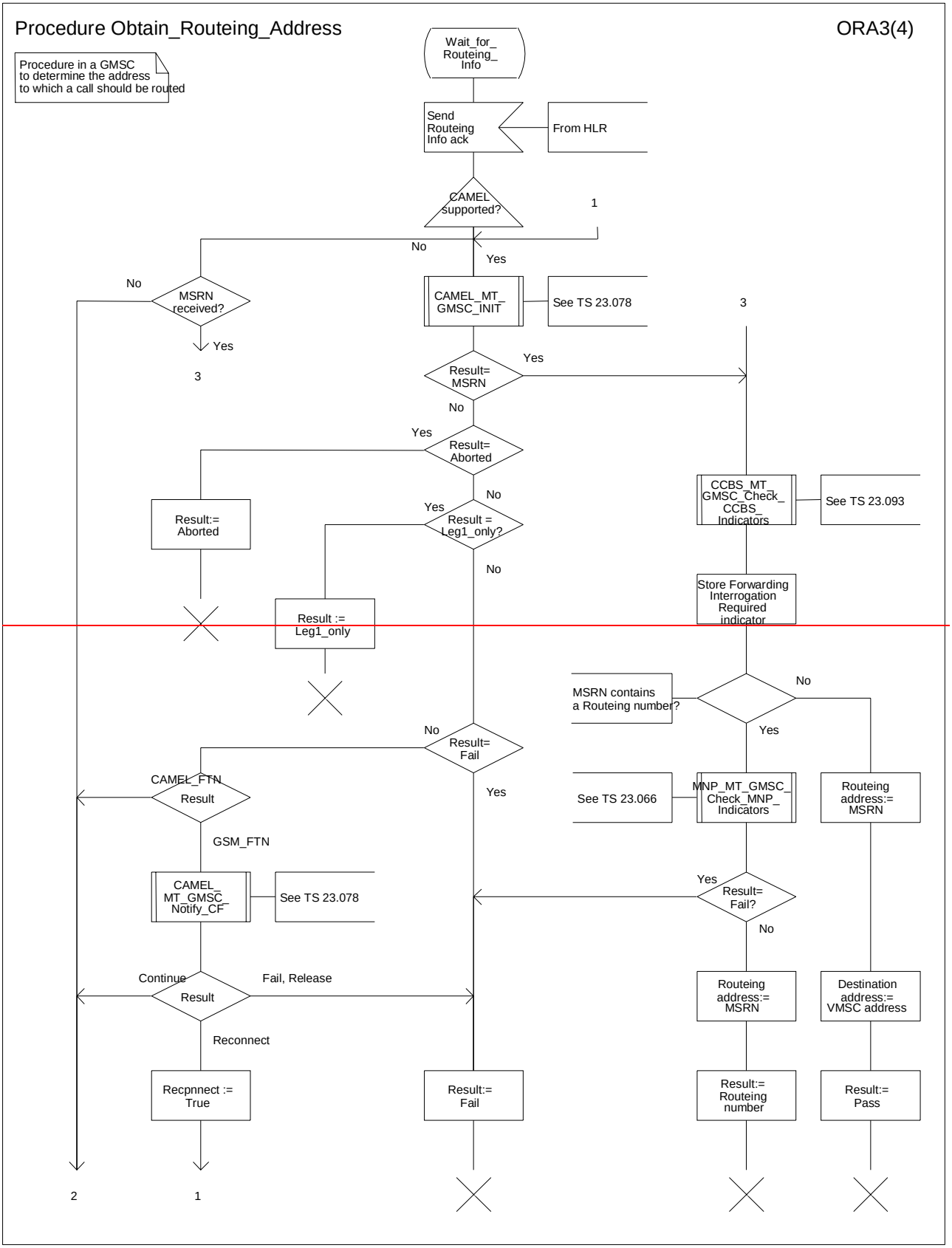
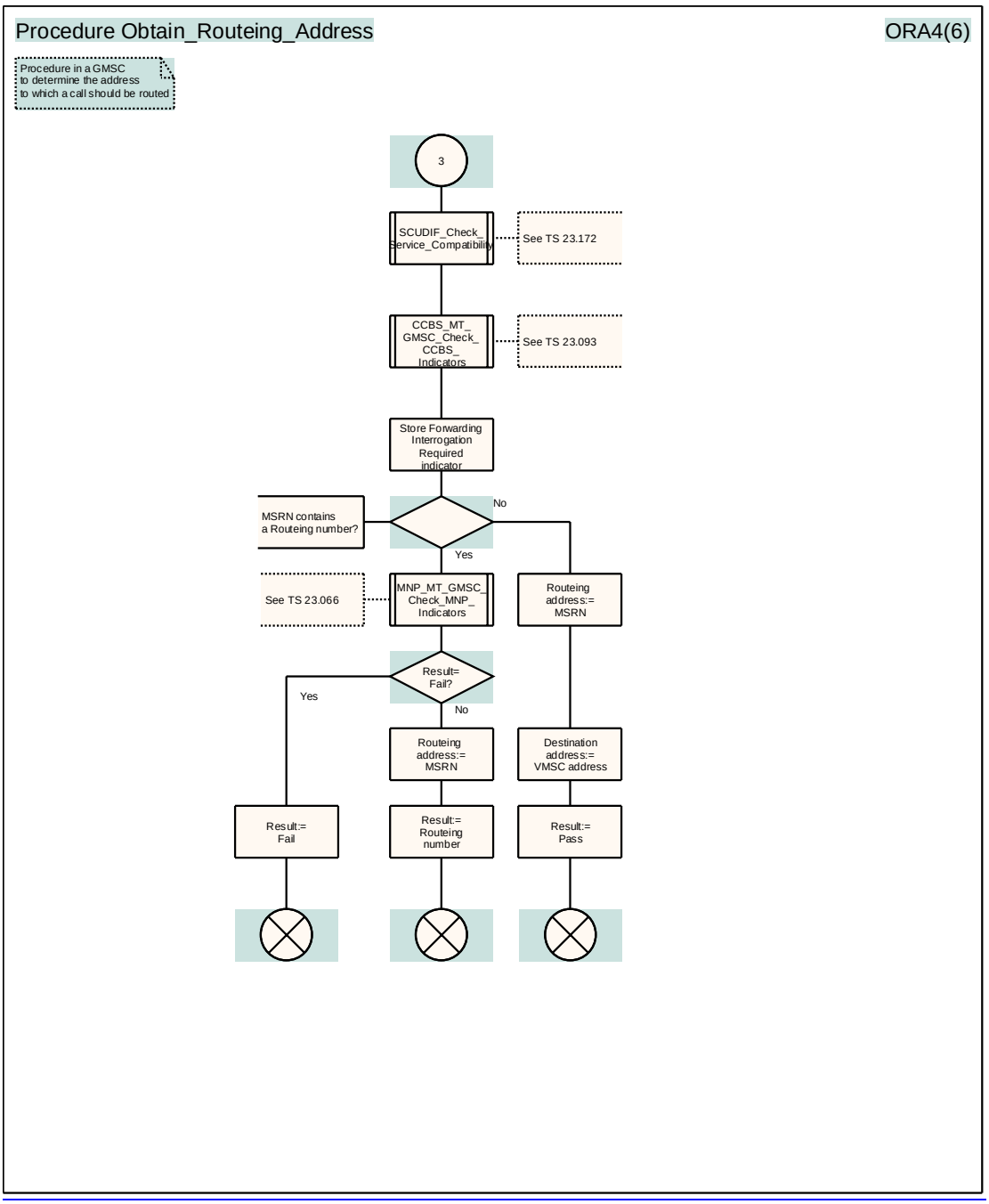


Figure 37c: Procedure Obtain_Routeing_Address (sheet 3)


Procedure Obtain_Routeing_Address
ORA4(6)
Procedure in a GMSC to determine the address to which a call should be routed
3
SCUDIF_Check_Service_Compatibility
See TS 23.172
CCBS_MT_GMSC_Check_CCBS_Indicators
See TS 23.093
Store Forwarding Interrogation Required indicator
MSRN contains a Routeing number?
No
Yes
See TS 23.066
MNP_MT_GMSC_Check_MNP_Indicators
Routeing address:= MSRN
Result= Fail?
Yes
No
Routeing address:= MSRN
Destination address:= VMSC address
Result:= Fail
Result:= Routeing number
Result:= Pass

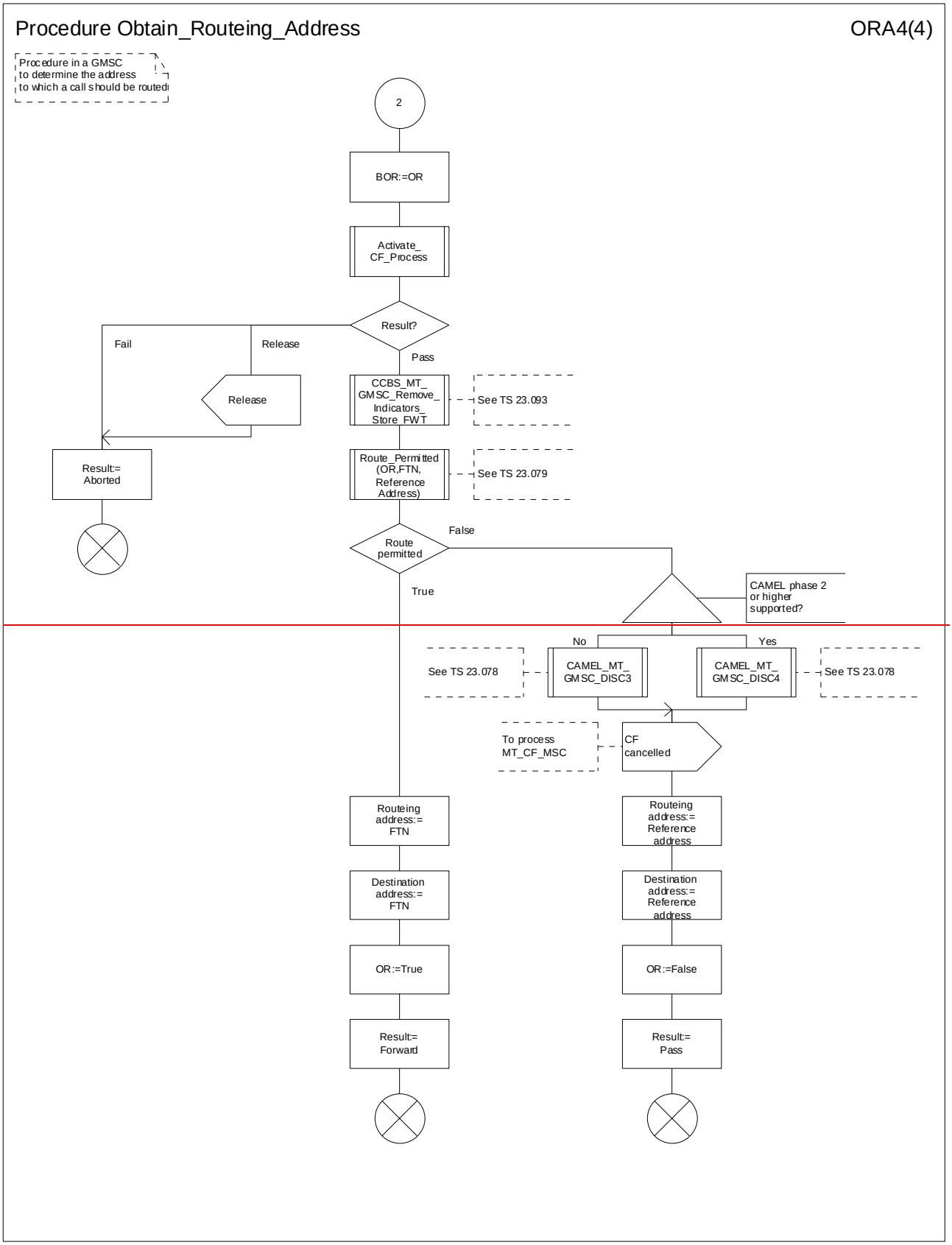


Figure 37d: Procedure Obtain_Routeing_Address (sheet 4)

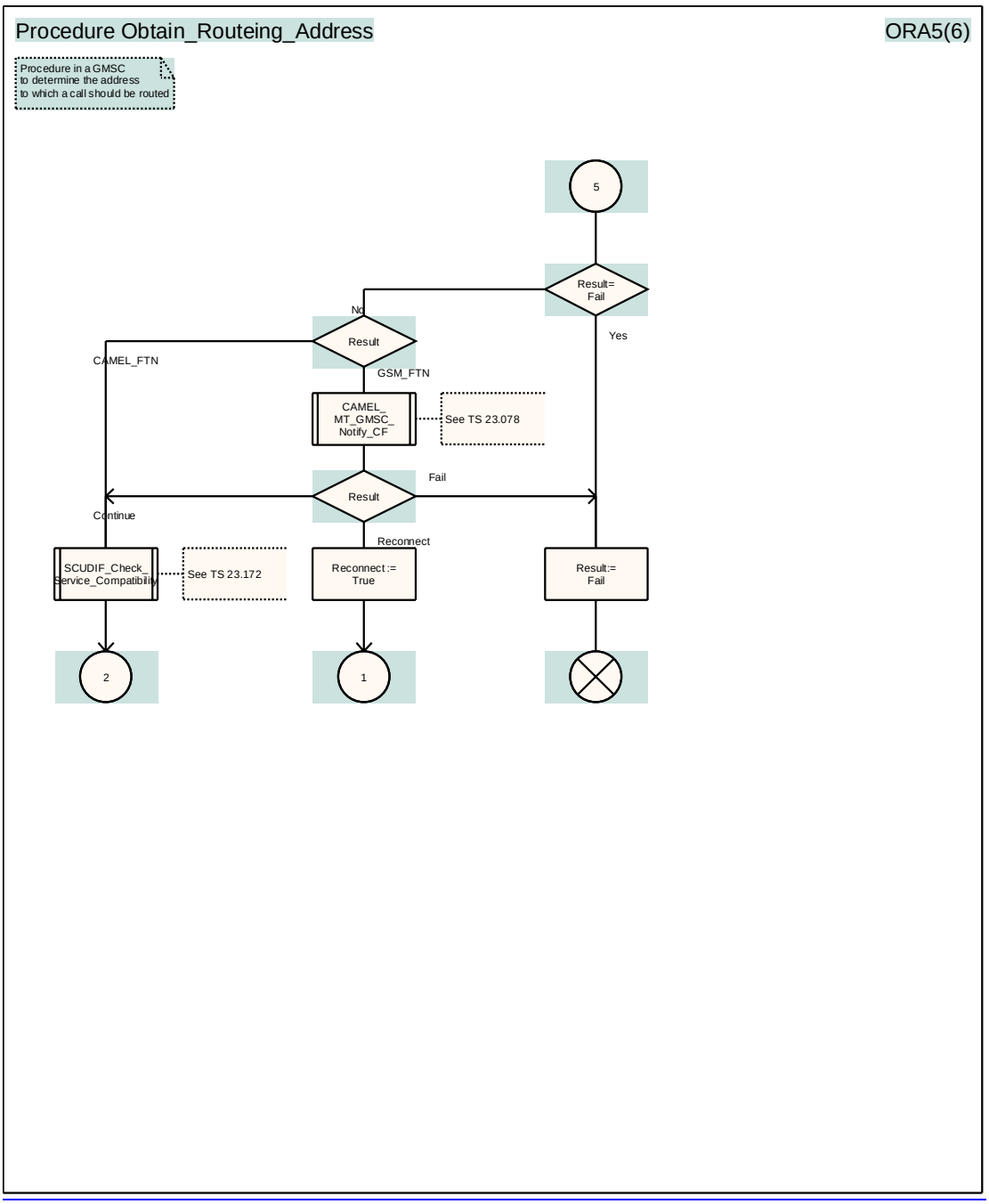


Figure 37e: Procedure Obtain_Routeing_Address (sheet 5)

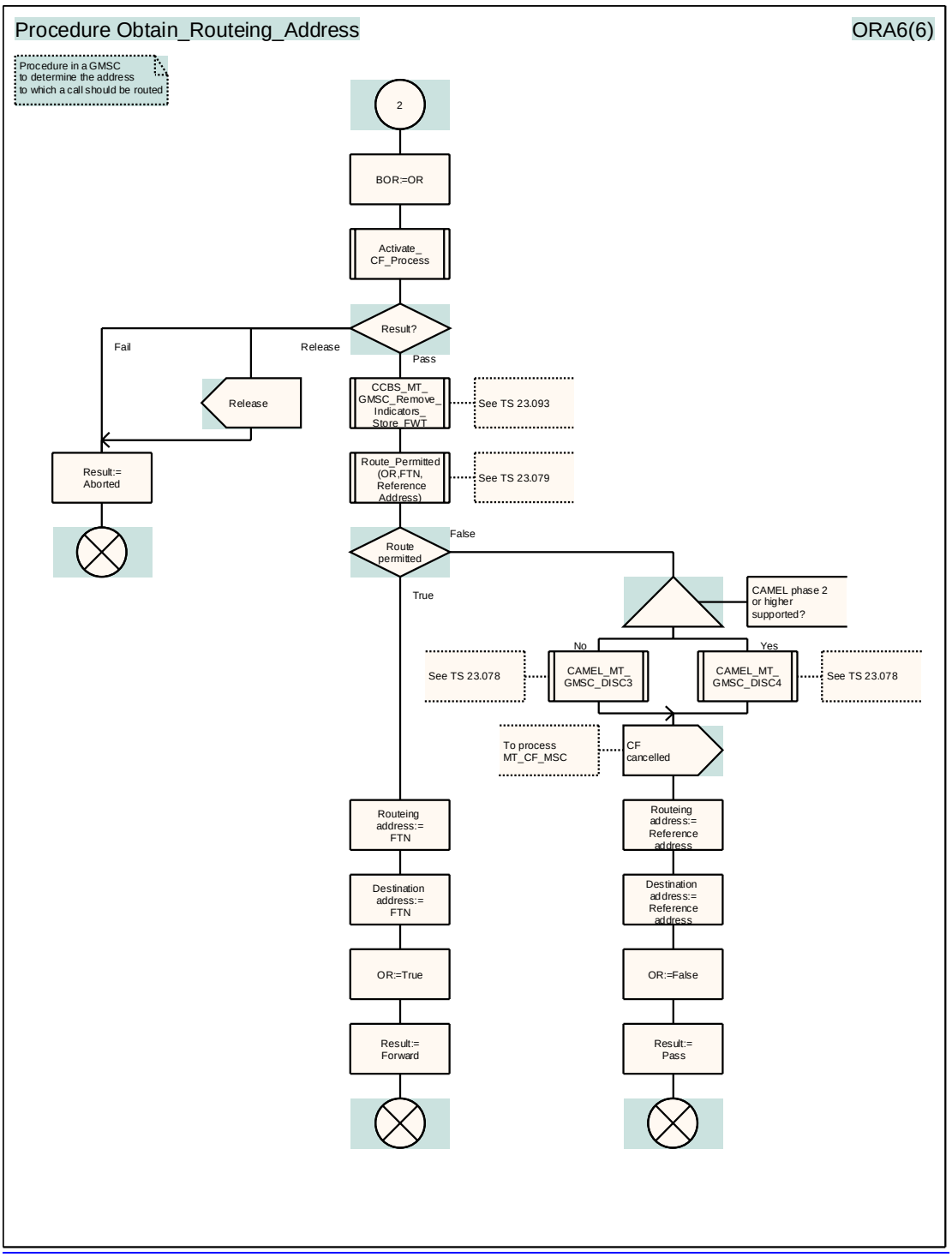


Figure 37f: Procedure Obtain_Routeing_Address (sheet 6)

Next Modified Section

7.2.2 Functional requirements of HLR

7.2.2.1 Process SRI_HLR

Sheet 1: the procedures Check_Parameters, Subscription_Check_HLR, SCUDIF_Subscription_Check_HLR, Handle_OR_HLR_CF and CAMEL_HLR_INIT can set the negative response parameter which is used by the process SRI_HLR to construct the Send Routeing Info negative response message. This negative response parameter is global data, accessible by the process SRI_HLR.

Sheet 1: the procedure Handle_OR_HLR_CF is specific to Support of Optimal Routeing; it is specified in 3GPP TS 23.079 [13]. If the HLR does not support Optimal Routeing, processing continues from the "No" exit of the test "Result=Forward?".

Sheet 1: the procedure SCUDIF_Subscription_Check_HLR is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x]. This procedure gets the result from the Subscription_Check_HLR procedure, and modifies it if needed. If the HLR does not support SCUDIF, the test "Result = Fail ?" applies to the result of the Subscription_Check_HLR procedure.

Sheet 1: the procedure CAMEL_HLR_INIT is specific to CAMEL; it is specified in 3GPP TS 23.078 [12]. If the HLR does not support CAMEL, processing continues from the "No" exit of the test"Result=Fail?".

Sheet 2: the procedure First_Forwarding_HLR can set the negative response parameter which is used by the process SRI_HLR to construct the Send Routeing Info negative response message. This negative response parameter is global data, accessible by the process SRI_HLR.

Sheet 2: the procedure CAMEL_CSI_Check_HLR is specific to CAMEL; it is specified in 3GPP TS 23.078 [12]. If the HLR does not support CAMEL, processing continues from the "No" exit of the test"Result=CSI active?".

Sheet 2: the procedure SCUDIF_CAMEL_CSI_Check_HLR is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x]. This procedure gets the result from the CAMEL_CSI_Check_HLR procedure, and modifies it if needed. If the HLR does not support SCUDIF, the test "Result = CSI Active ?" applies to the result of the CAMEL_CSI_Check_HLR procedure. If the HLR does not support CAMEL, processing continues from the "No" exit of the test "Result=CSI active?".

Sheet 2: the procedure CCBS_Handling_HLR is specific to CCBS; it is specified in 3GPP TS 23.093 [23]. If the HLR does not support CCBS, processing continues from the "Yes" exit of the test "Result = OK?".

Sheet 3: the procedure OR_HLR_Interrogate_VLR is specific to Optimal Routeing. It is specified in 3GPP TS 23.079 [13]. If the HLR does not support Optimal Routeing, processing continues from the "No" exit of the test "Result=Forward".

Sheet 3: the procedure SCUDIF_Set_Correct_PLMN_BC is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x]. If the HLR does not support SCUDIF, processing continues from the "Set_PLMN_BC" exit of the test "Result ?".

Sheet 3: if the HLR does not support Network Indication of Alerting, the test "Alerting pattern required" and the task "Set Alerting Pattern" are omitted.

Sheet 3: the procedure CLI_HLR_Set_CLI is specific to Enhanced CLI Handling. It is specified in 3GPP TS 23.081 [14].

Sheet 5: the procedure SCUDIF_Check_Second_Service_after_PRN is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x]. If the HLR does not support SCUDIF, processing continues from the "yes" exit of the test "Result = Continue ?".

Sheet 54: the procedure PRN_Error_HLR can set the negative response parameter which is used by the process SRI_HLR to construct the Send Routeing Info negative response message. This negative response parameter is global data, accessible by the process SRI_HLR.

Sheet 54: the procedure Forward_CUG_Check is specific to CUG. If the HLR does not support CUG, processing continues from the "Yes" exit of the test "Result=Call allowed?".

Sheet 64: the test "Forwarding enquiry" is specific to Support of Optimal Routeing. If the HLR does not support Optimal Routeing, processing continues from the "No" exit of the test.

Sheet 64: the procedure CAMEL_CSI_Check_HLR is specific to CAMEL; it is specified in 3GPP TS 23.078 [12]. If the HLR does not support CAMEL, processing continues from the "No" exit of the test "Result=CSI active?".

Sheet 6: the procedure SCUDIF_CAMEL_CSI_Check_HLR is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x]. This procedure gets the result from the CAMEL_CSI_Check_HLR procedure, and modifies it if needed. If the HLR does not support SCUDIF, the test "Result = CSI Active ?" applies to the result of the CAMEL_CSI_Check_HLR procedure. If the HLR does not support CAMEL, processing continues from the "No" exit of the test "Result=CSI active?".

Sheet 6: the procedure SCUDIF_Check_Second_Service_before_Negative_Response can set the negative response parameter which is used by the process SRI_HLR to construct the Send Routeing Info negative response message. This negative response parameter is global data, accessible by the process SRI_HLR.

Sheet 6: the procedure SCUDIF_Check_Second_Service_before_Negative_Response is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x]. If the HLR does not support SCUDIF, processing continues from the "Fail" exit of the test "Result ?".

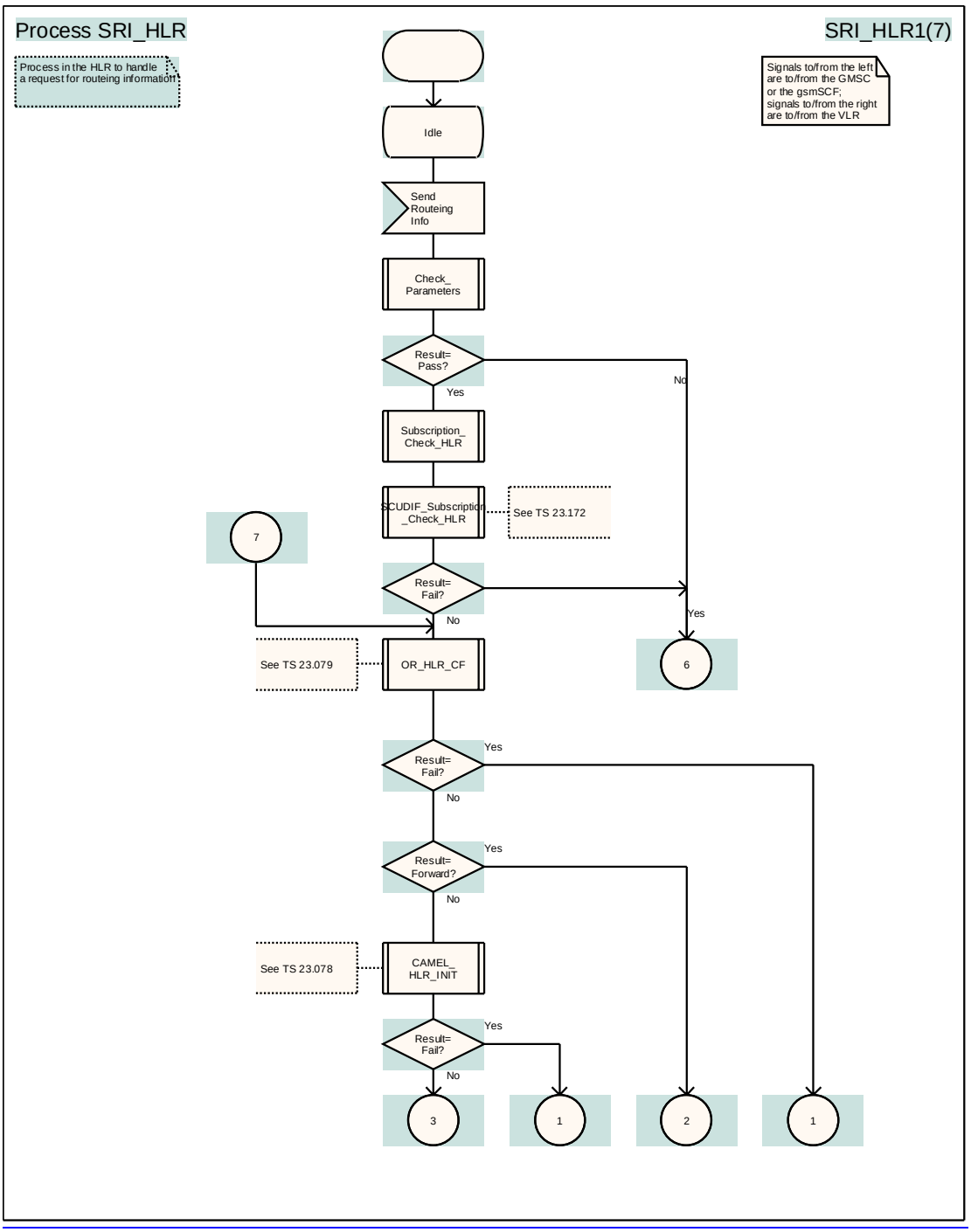
Sheet 74: the procedures CAMEL_T_CSI_CHECK_HLR and CAMEL_O_CSI_CHECK_HLR are specific to CAMEL; they are specified in 3GPP TS 23.078 [12].

Sheet 74: the procedure CAMEL_D_CSI_CHECK_HLR is specific to CAMEL phase 3 or later; it is specified in 3GPP TS 23.078 [12].

Sheet 7: the procedure SCUDIF_Set_Second_Service_when_Forwarded is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x]. If the HLR does not support SCUDIF, processing continues from the "Yes" exit of the test "Result = Continue ?".

Sheet 7: the procedure SCUDIF_Check_Second_Service_when_Forwarded is specific to SCUDIF; it is specified in 3GPP TS 23.172 [x]. If the HLR does not support SCUDIF, processing continues from the "Yes" exit of the test "Result = Continue ?".

SKIPPED TEXT AND FIGURES


Process SRI_HLR
SRI_HLR1(7)
Process in the HLR to handle a request for routeing information
Signals to/from the left are to/from the GMSC or the gsmSCF; signals to/from the right are to/from the VLR
Idle
Send Routeing Info
Check_ Parameters
Result= Pass?
No
Yes
Subscription_ Check_HLR
SCUDIF_Subscription _Check_HLR
See TS 23.172
7
Result= Fail?
Yes
No
See TS 23.079
OR_HLR_CF
6
Result= Fail?
Yes
No
Result= Forward?
Yes
No
See TS 23.078
CAMEL_ HLR_INIT
Result= Fail?
Yes
No
3
1
2
1

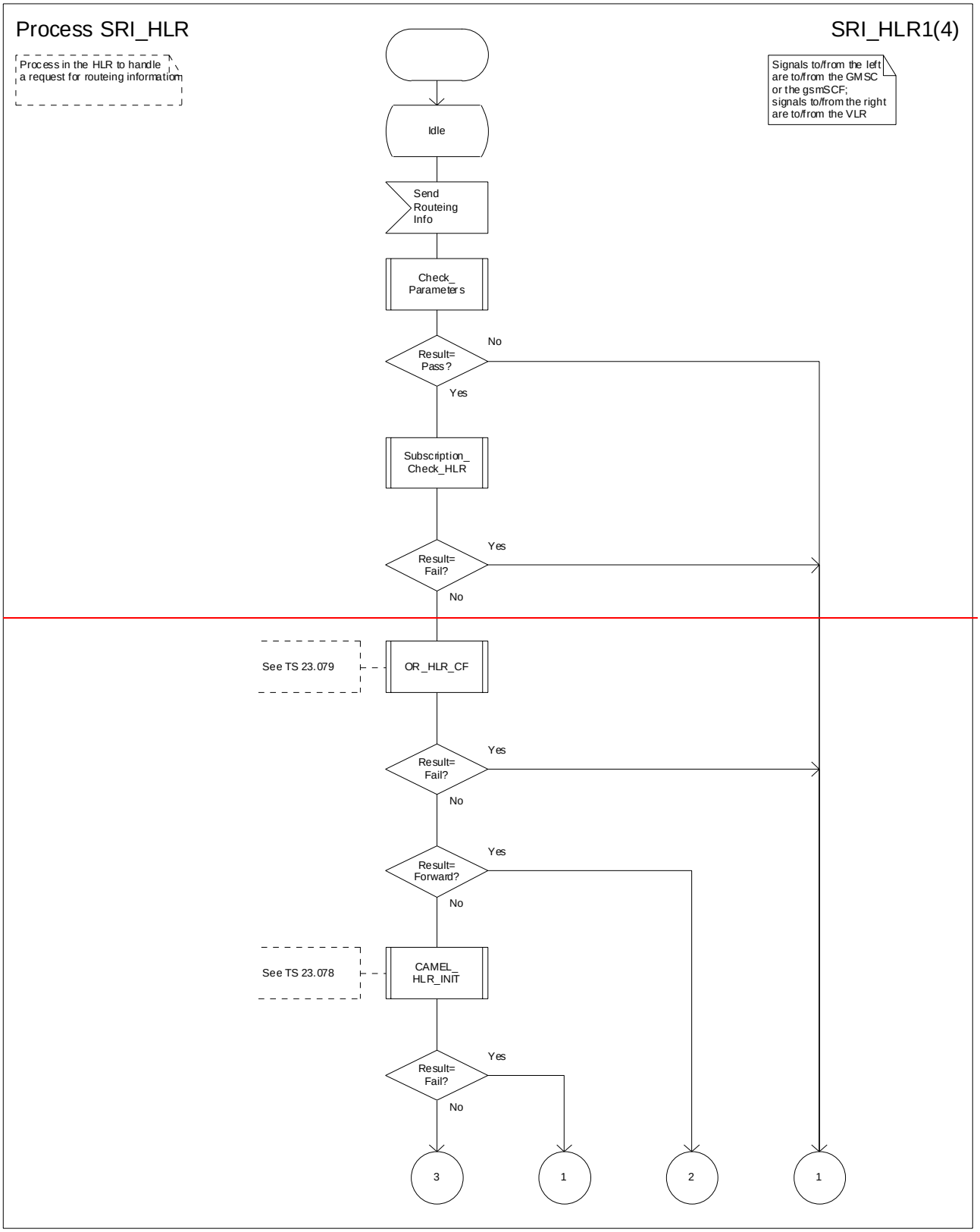
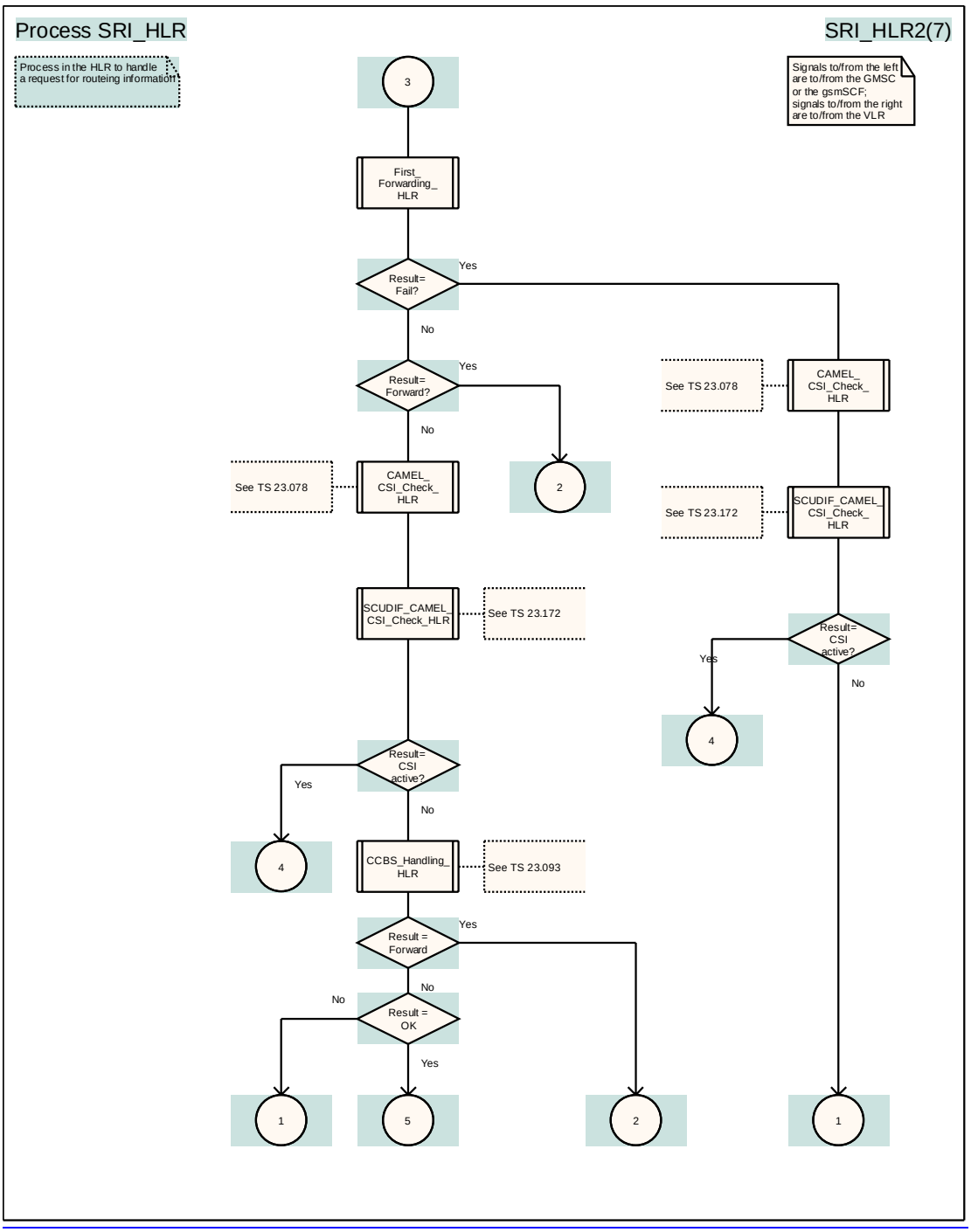


Figure 44a: Process SRI_HLR (sheet 1)


Process SRI_HLR
SRI_HLR2(7)
Process in the HLR to handle a request for routeing information
Signals to/from the left are to/from the GMSC or the gsmSCF; signals to/from the right are to/from the VLR
3
First_ Forwarding_ HLR
Result= Fail?
Yes
No
Result= Forward?
Yes
No
See TS 23.078
CAMEL_ CSI_Check_ HLR
2
SCUDIF_CAMEL_ CSI_Check_HLR
See TS 23.172
Result= CSI active?
Yes
No
4
CCBS_Handling_ HLR
See TS 23.093
Result = Forward
Result = OK
1
5
2

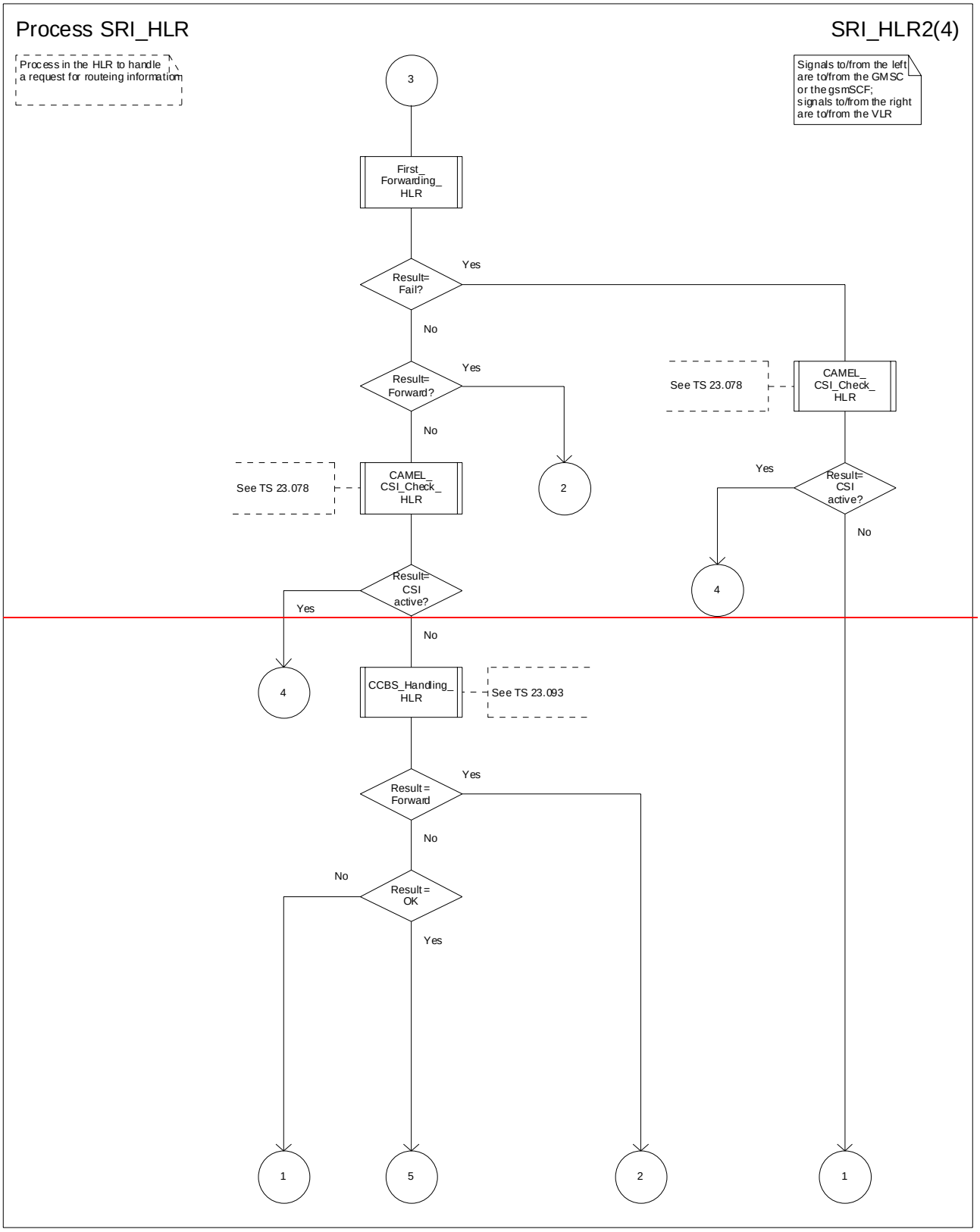
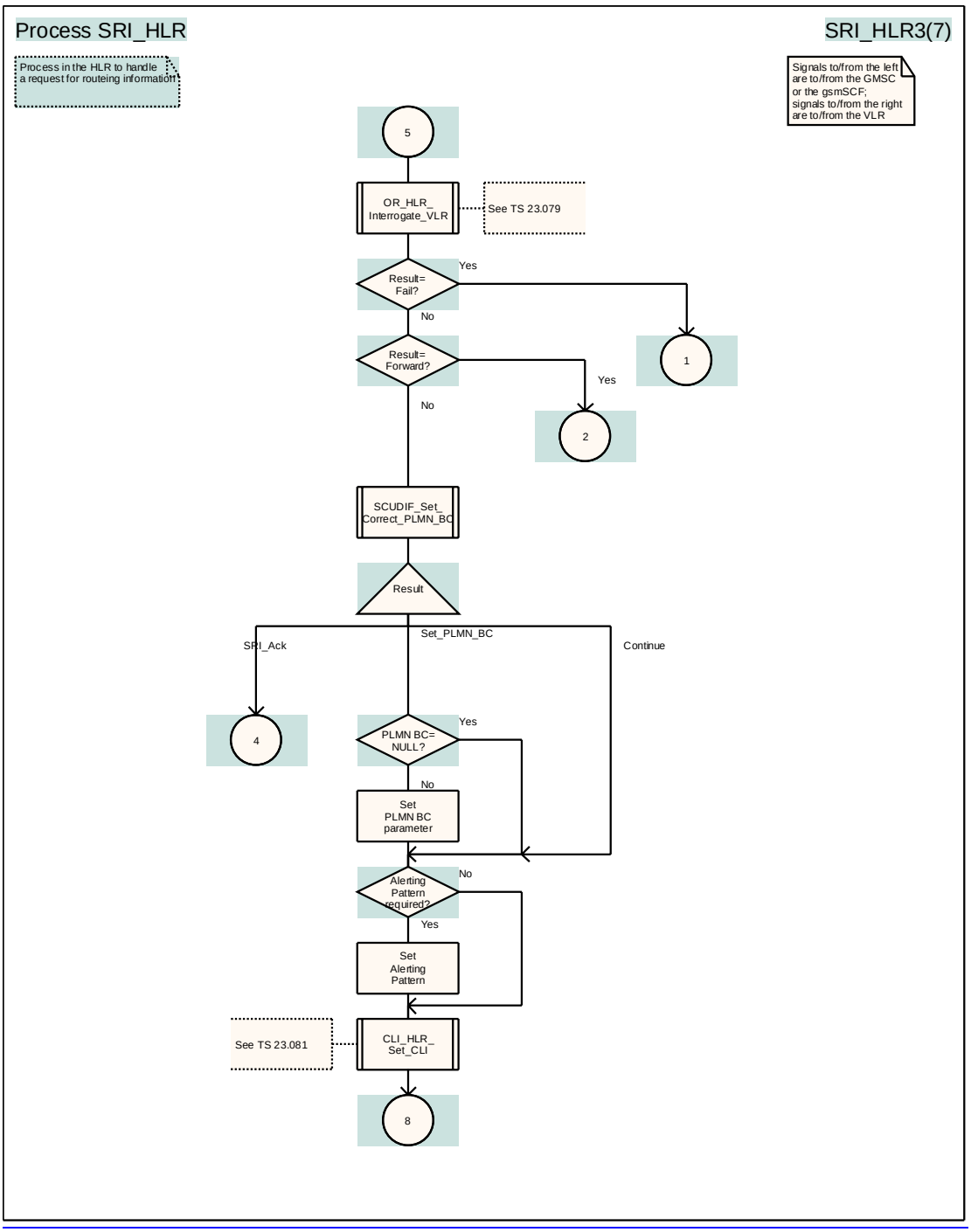


Figure 44b: Process SRI_HLR (sheet 2)


Process SRI_HLR
SRI_HLR3(7)
Process in the HLR to handle a request for routeing information
Signals to/from the left are to/from the GMSC or the gsmSCF; signals to/from the right are to/from the VLR
5
OR_HLR_ Interrogate_VLR
See TS 23.079
Result= Fail?
Yes
No
1
Result= Forward?
Yes
No
2
SCUDIF_Set_ Correct_PLMN_BC
Result
SRI_Ack
Set_PLMN_BC
Continue
4
PLMN BC= NULL?
Yes
No
Set PLMN BC parameter
Alerting Pattern required?
No
Yes
Set Alerting Pattern
See TS 23.081
CLI_HLR_ Set_CLI
8

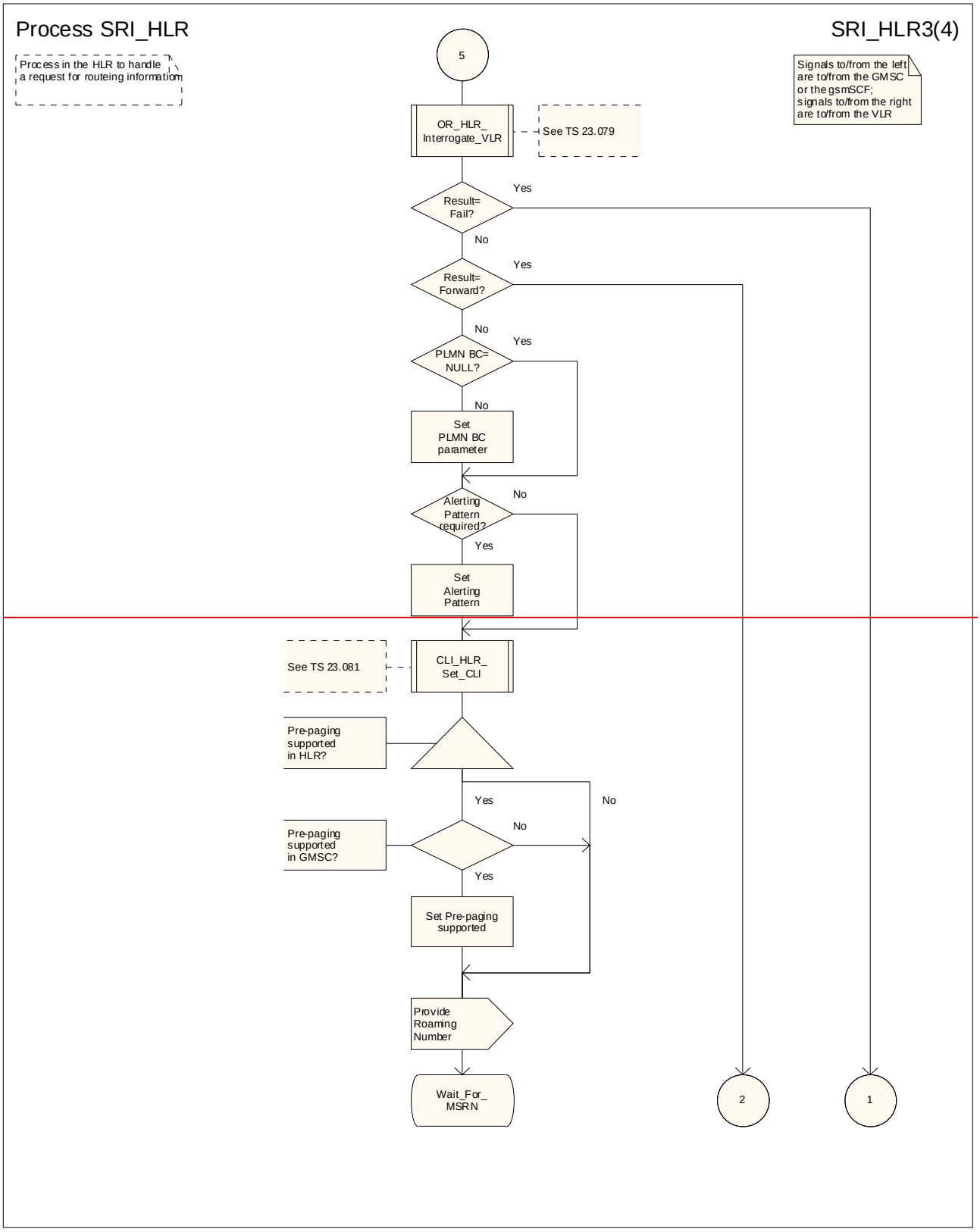
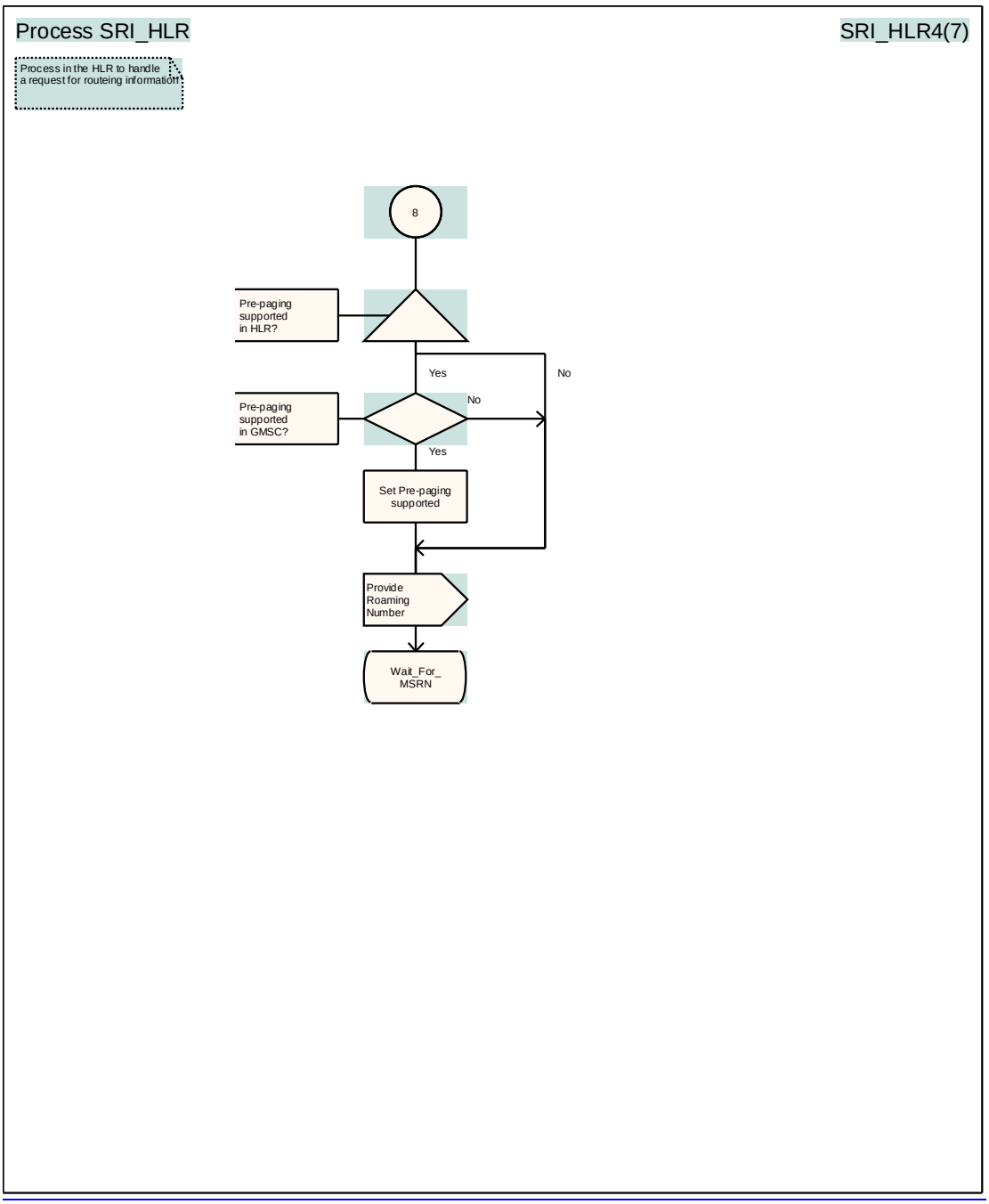


Figure 44c: Process SRI_HLR (sheet 3)


Process SRI_HLR
SRI_HLR4(7)
Process in the HLR to handle a request for routeing information
8
Pre-paging supported in HLR?
Yes
No
Pre-paging supported in GMSC?
No
Yes
Set Pre-paging supported
Provide Roaming Number
Wait_For_ MSRN

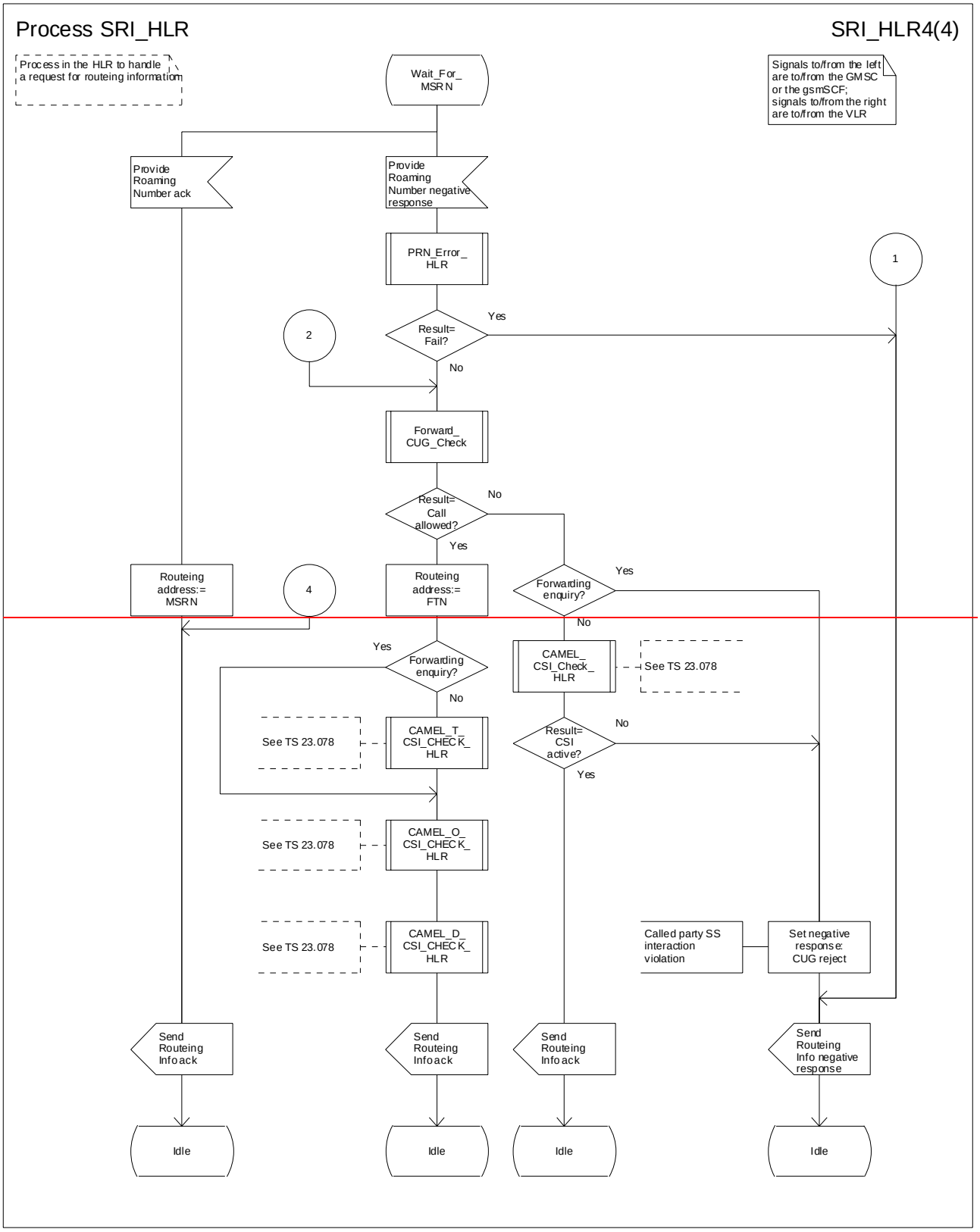


Figure 44d: Process SRI_HLR (sheet 4)

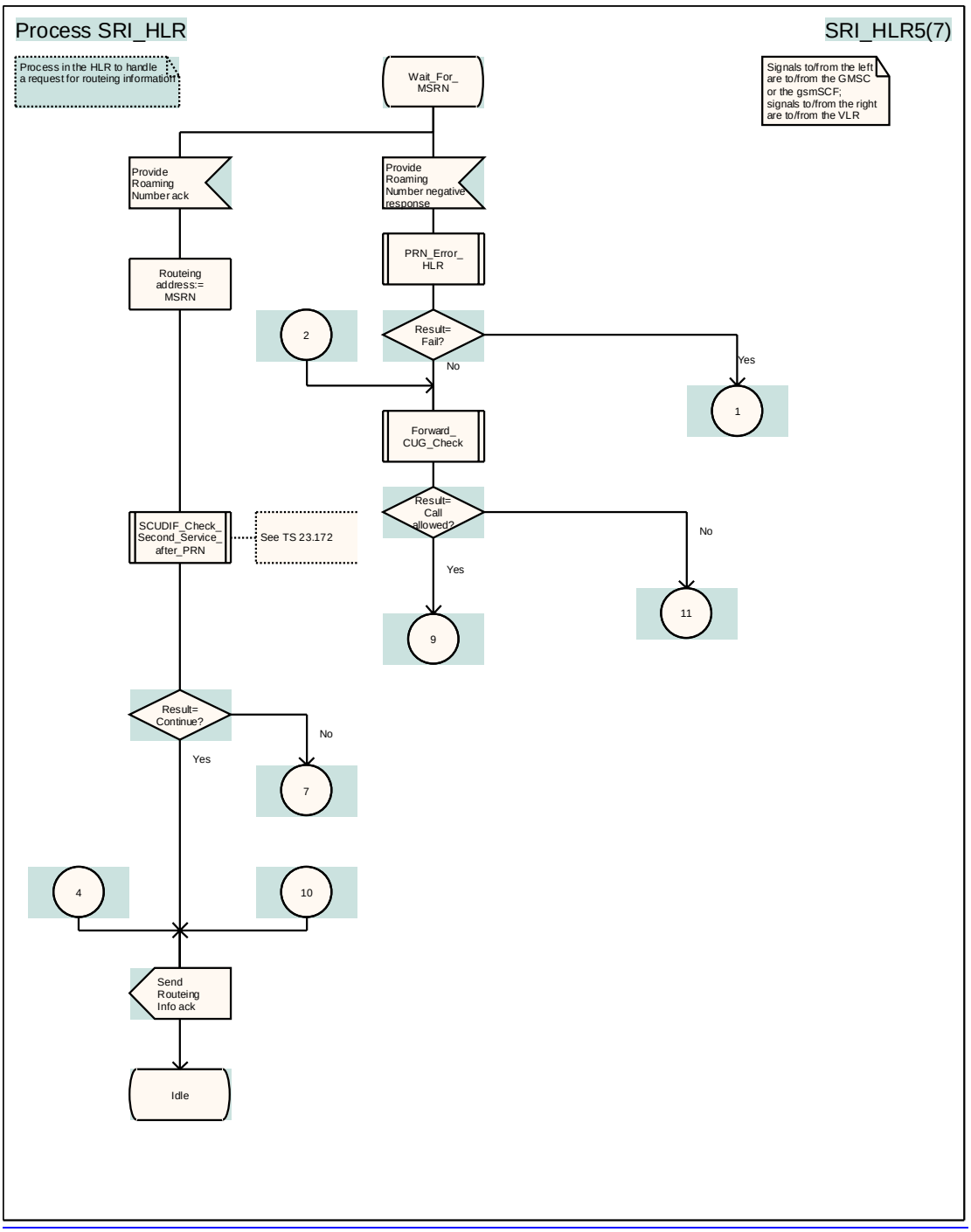


Figure 44e: Process SRI_HLR (sheet 5)

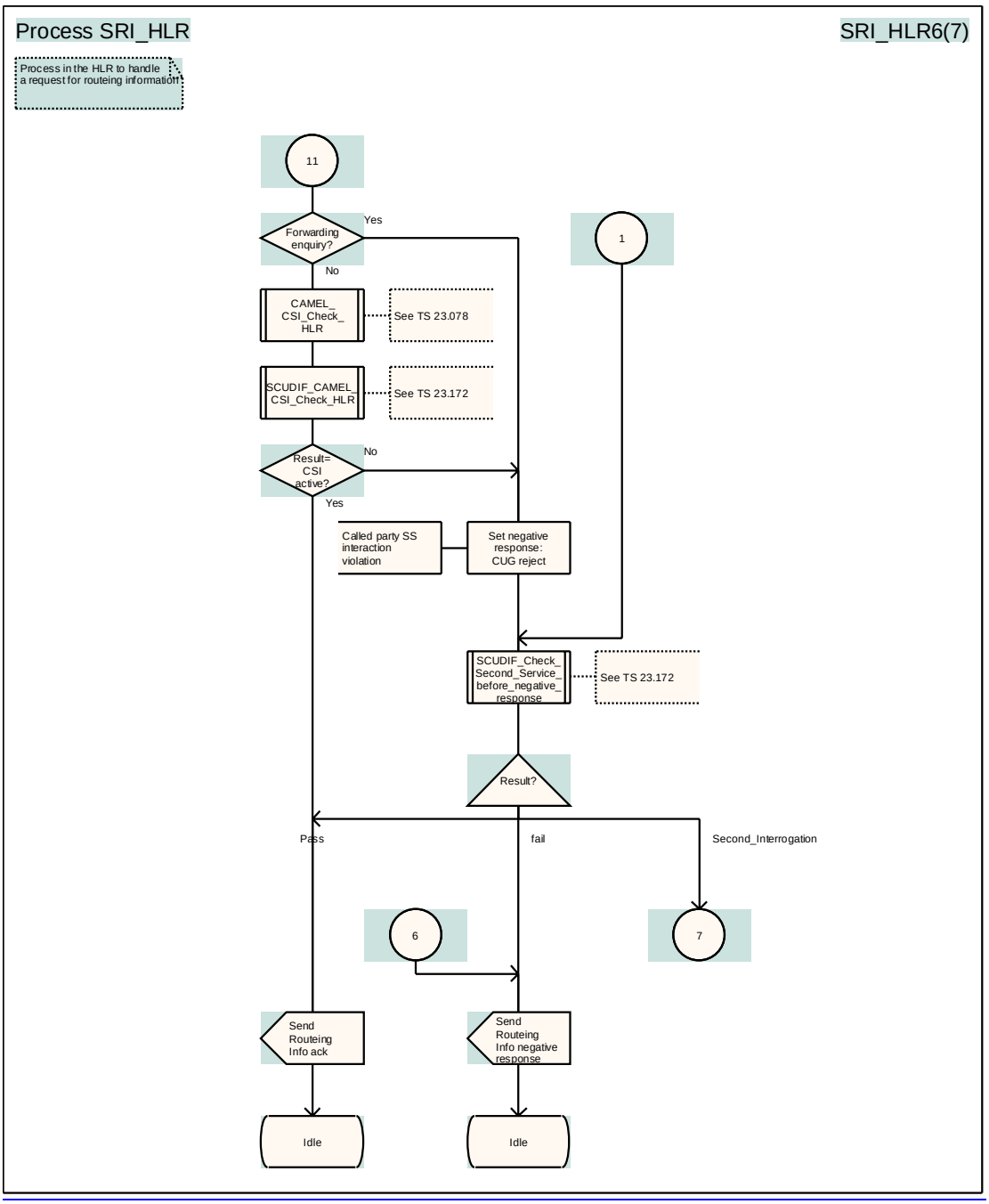


Figure 44f: Process SRI_HLR (sheet 6)

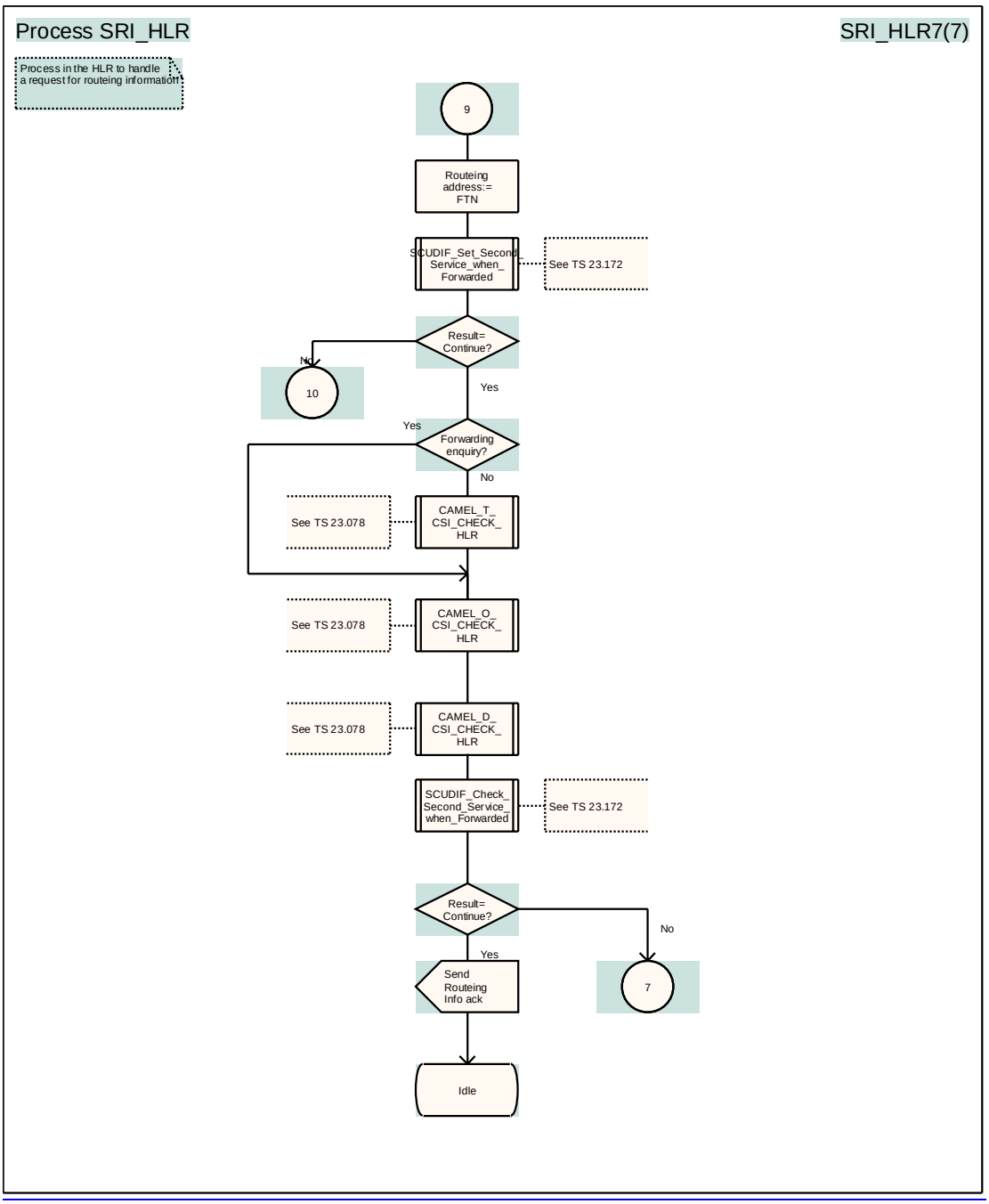


Figure 44g: Process SRI_HLR (sheet 7)

SKIPPED TEXT AND FIGURES

End of the document

CR-Form-v7

CHANGE REQUEST

⌘ 23.079 CR 026 ⌘rev 1 ⌘ 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:	⌘	Notification of the 2nd BSG in case of Late CF with OR
Source:	⌘	CN4
Work item code:	⌘	SCUDIF
Date:	⌘	25/08/2003
Category:	⌘	F
Release:	⌘	Rel-5

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

Use one of the following releases:

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:	⌘	In SCUDIF calls, there is a need to handle two basic services. For Late call forwarding with Optimal Routing, GMSC has no interface to obtain the second basic service which Call Forwarding applies for.
Summary of change:	⌘	"Basic service group 2" information element is added to Resume Call Handling and Send Routing Information.
Consequences if not approved:	⌘	GMSC would not invoke Call Forwarding appropriately, even when Late Call Forwarding is activated for two basic services.

Clauses affected:	⌘	2, 10

Other specs affected:	⌘	Y	N		⌘	
		X		Other core specifications		23.172CR015, 29.002CR660
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	

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

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

2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<<Fisrt Modified Section>>

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

[1] GSM 03.04: "Digital cellular telecommunications system (Phase 2+); Signalling requirements relating to routeing of calls to mobile subscribers".

[2] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[3] 3GPP TS 22.079: "Support of Optimal Routeing (SOR); Service definition - Stage 1".

[4] 3GPP TS 22.082: "Call Forwarding (CF) supplementary services - Stage 1".

[5] 3GPP TS 23.003: "Numbering, addressing & identification".

[6] 3GPP TS 23.018: "Basic call handling; Technical realization".

[7] 3GPP TS 23.078: "Customized Applications for Mobile network Enhanced Logic (CAMEL) - Phase 3; Stage 2".

[8] 3GPP TS 23.085: "Closed User Group (CUG) Supplementary Service - Stage 2".

[9] 3GPP TS 23.087: "User –to-User Signalling (UUS) - Stage 2".

[x] 3GPP TS 23.172: "Technical realization of Circuit Switched (CS) multimedia service; UDI/RDI fallback and service modification"

<<Next Modified Section>>

10 Contents of messages

This clause specifies the changes to the content of each message shown in clauses 5, 6 and 9, including those messages which are already specified for UMTS but which require changes for Optimal Routeing. It should be read as a 'delta' on the corresponding clause of 3GPP TS 23.018 [6]; those information elements which are the same for SOR as for the basic call without OR are not specified in this clause.

In the tables which follow, information elements are shown as mandatory (M) or conditional (C). A mandatory information element shall always be present. A conditional information element shall be present if certain conditions are fulfilled; if those conditions are not fulfilled it shall be absent.

10.1 Messages on the B interface (MSC-VLR)

10.1.1 Send Info For Outgoing Call

This message is specified in 3GPP TS 23.018 [6].

10.1.2 Send Info For Outgoing Call negative response

This message is specified in 3GPP TS 23.018 [6].

10.1.3 Send Info For Incoming Call

This message is specified in 3GPP TS 23.018 [6].

10.1.4 Send Info For Incoming Call ack

This message is specified in 3GPP TS 23.018 [6]. The following additional information elements are required:

Information element name	Required	Description
OR indicator	C	Indicates whether the call has been routed directly from a GMSC not in the same PLMN as the HLR. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
GMSC address	C	E.164 address of the GMSC. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
Call reference number	C	Call reference number used by the GMSC for this call. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
OR not supported in GMSC	C	Indicates that the GMSC does not support Optimal Routeing. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.

10.1.5 Send Info For Incoming Call negative response

This message is specified in 3GPP TS 23.018 [6].

10.1.6 Complete Call

This message is specified in 3GPP TS 23.018 [6]. The following additional information elements are required:

Information element name	Required	Description
OR indicator	C	Indicates whether the call has been routed directly from a GMSC not in the same PLMN as the HLR. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
GMSC address	C	E.164 address of the GMSC. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.

10.1.7 Process Call Waiting

This message is specified in 3GPP TS 23.018 [6]. The following additional information elements are required:

Information element name	Required	Description
OR indicator	C	Indicates whether the call has been routed directly from a GMSC not in the same PLMN as the HLR. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.
GMSC address	C	E.164 address of the GMSC. Shall be present if it was received in the Provide Roaming Number, otherwise shall be absent.

10.2 Messages on the C interface (MSC-HLR)

10.2.1 Send Routeing Info

This message is specified in 3GPP TS 23.018 [6]. The following additional information elements are required:

Information element name	Required	Description
Interrogation type	M	Indicates the type of interrogation: basic(for routeing information for an MT call) or forwarding (when the GMSC has been asked to resume call handling for OR of late call forwarding).
OR interrogation indicator	C	Indicates that the interrogation is from a GMSC not in the same PLMN as the HLR. Shall be present if the interrogation is from a GMSC not in the same PLMN as the HLR, otherwise shall be absent.
OR capability	C	Indicates the phase of OR which the GMSC supports. Shall be present if the GMSC supports OR, otherwise shall be absent.
GMSC or gsmSCF address	M	E.164 address of the GMSC.
Call reference number	C	Call reference number used by the GMSC for this call. Shall be present if the interrogation type=basic call, otherwise shall be absent.
Forwarding reason	C	Indicates the reason for forwarding (on busy, on no subscriber reply, or on mobile subscriber not reachable). Shall be present if the Interrogation type=forwarding, otherwise shall be absent.
Basic service group	C	Basic service group which applies for this call. Shall be present if the Interrogation type=forwarding, otherwise shall be absent.
Basic service group 2	C	Basic service group which applies for this call. Shall be present if the Interrogation type=forwarding and if the VMSC has determined that the forwarded call is to be treated as a SCUDIF call in accordance with the rules in 3GPP TS 23.172[x], otherwise shall be absent.

10.2.2 Send Routeing Info ack

This message is specified in 3GPP TS 23.018 [6]. Two new information elements are required, and the condition for the presence of one existing information element is changed, as shown in the following table.

Information element name	Required	Description
Forwarding interrogation required	C	Indicates that the GMSC shall interrogate the HLR for routeing information for late call forwarding. Shall be present if the SRI ack contains an MSRN and GMSC has to interrogate the HLR for routeing information for late call forwarding, otherwise shall be absent.
VMSC address	C	E.164 address of the VMSC in whose area the B subscriber is currently registered. Shall be present in the Send Routeing Info ack if the OR interrogation indicator in the Send Routeing Info was present and the HLR supports optimal routeing of basic mobile-to-mobile calls and the HLR has not determined that the call is to be forwarded, otherwise shall be absent.
Roaming number	C	E.164 address required to route the call to the VMSC of the B party. Shall be present in the Send Routeing Info ack which is sent in response to a Send Routeing Info with Interrogation type=basic if the HLR has determined that the charging requirements for optimal routeing are not contravened and that the call is not to be forwarded, otherwise shall be absent.

10.2.3 Send Routeing Info negative response

This message is specified in 3GPP TS 23.018 [6]. The negative response information element can take the following values in addition to those specified in 3GPP TS 23.018 [6]:

- OR not allowed.
- Busy subscriber.
- No subscriber reply.

10.3 Messages on the D interface (VLR-HLR)

10.3.1 Provide Roaming Number

This message is specified in 3GPP TS 23.018 [6]. The following additional information elements are required:

Information element name	Required	Description
GMSC address	C	E.164 address of the GMSC. Shall be present if it was received by the HLR in the Send Routeing Info, otherwise shall be absent.
Call reference number	C	Call reference number used by the GMSC for this call. Shall be present if it was received by the HLR in the Send Routeing Info, otherwise shall be absent.
OR interrogation indicator	C	Indicates that the HLR received the corresponding Send Routeing Info from a GMSC not in the same PLMN as the HLR. Shall be present if the HLR received the Send Routeing Info from a GMSC not in the same PLMN as the HLR, otherwise shall be absent.
OR not supported in GMSC	C	Indicates that the GMSC does not support OR, and that RCH shall not be sent. Shall be present if the HLR received the Send Routeing Info from the GMSC without the OR-capability information Element, otherwise shall be absent.

10.3.2 Provide Roaming Number ack

This message is specified in 3GPP TS 23.018 [6].

10.3.3 Provide Roaming Number negative response

This message is specified in 3GPP TS 23.018 [6].

10.3.4 Provide Subscriber Information

This message is specified in 3GPP TS 23.018 [6].

10.3.5 Provide Subscriber Information ack

This message is specified in 3GPP TS 23.018 [6].

10.4 Messages on the E interface (MSC-MSC)

10.4.1 Resume Call Handling

The following information elements are required:

Information element name	Required	Description
Call reference number	M	Call reference number used by the GMSC for this call.
Forwarding reason	M	Indicates the reason for forwarding (on call deflection, on busy, on no subscriber reply, or on mobile subscriber not reachable).
Basic service group	M	Basic service group which applies for this call. For SCUDIF calls, see 3GPP TS 23.172 [x] for the use of this information element.
IMSI	M	IMSI of the B subscriber.
Forwarded-to number	M	E.164 number of the C subscriber.
Notification to calling party	M	Indication of whether the calling party is to be notified that the call has been forwarded.
Forwarded-to subaddress	C	Subaddress of the C subscriber (see 3GPP TS 23.003 [5]). Shall be present if a forwarded-to subaddress is stored in the VLR in association with the forwarded-to number; otherwise shall be absent.
Redirecting presentation	C	Indication of whether the MSISDN of the B subscriber shall be presented to the C subscriber. Shall be present if VMSCB supports the handling of the redirecting number, otherwise shall be absent.
MSISDN	C	E.164 number which identifies the B subscriber. It will be used to create the redirecting number presented to the C subscriber. Shall be present if VMSCB supports the handling of the redirecting number, otherwise shall be absent.
CUG interlock	C	For the definition of this IE, see 3GPP TS 23.085 [8]. Shall be present if the VLR has determined that the forwarded call is to be treated as a CUG call in accordance with the rules in 3GPP TS 23.085 [8], otherwise shall be absent.
CUG outgoing access	C	For the definition of this IE, see 3GPP TS 23.085 [8]. Shall be present if the VLR has determined that the forwarded call is to be treated as a CUG call with outgoing access in accordance with the rules in 3GPP TS 23.085 [8], otherwise shall be absent.
Basic service group 2	C	For the definition of this IE, see 3GPP TS 23.172 [x]. Shall be present if the VMSC has determined that the forwarded call is to be treated as a SCUDIF call in accordance with the rules in 3GPP TS 23.172[x], otherwise shall be absent.

10.4.2 Resume Call Handling ack

This message contains no information elements.

10.4.3 Resume Call Handling negative response

The negative response information element can take the following values:

- OR not allowed.

- Forwarding failed.

3GPP TSG CN WG4 Meeting #20 **N4-031058**
Sophia Antipolis, FRANCE, 25th – 29th August 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **613** ⌘**rev** **3** ⌘ Current version: **5.6.2** ⌘

*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:	⌘	HLR Interrogation for SCUDIF calls
Source:	⌘	CN4
Work item code:	⌘	SCUDIF
Date:	⌘	25/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:
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:	⌘	No proper checking of subscription and forwarding options are performed by the GMSC for services provided by SCUDIF (speech and multimedia)
Summary of change:	⌘	The Send Routing Information request is updated to allow the subscription check of both services, and the response to allow the transport of information for both services.
Consequences if not approved:	⌘	No check is possible in the GMSC for one of the services (speech or multimedia) requested in the codec list. The subscription and call forwarding state of the services offered by the SCUDIF feature (speech and multimedia) cannot be properly checked.

Clauses affected:	⌘	2, 7.6, 7.6.3, 7.6.4, 7.6.9, 10.1, 17.7.3

Other specs affected:	⌘	Y	N		⌘	
		X		Other core specifications		23.172-016
			X	Test specifications		
			X	O&M Specifications		

Other comments:	⌘	Updates: ServiceStatus is renamed AllowedServices ; definitions for Bearer Service 2, Teleservice 2, SS-Code 2 have been added. AllowedServices is a bit string, "no subscriber reply" is remove from UnavailabilityCause

First modified section

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

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

[2] 3GPP TS 22.001: "Digital cellular telecommunications system (Phase 2+); Principles of telecommunication services supported by a Public Land Mobile Network (PLMN)".

[3] 3GPP TS 22.002: "Bearer Services Supported by a Public Land Mobile Network (PLMN)".

[4] 3GPP TS 22.003: "Circuit Teleservices Supported by a Public Land Mobile Network (PLMN)".

[5] 3GPP TS 22.004: "General on Supplementary Services".

[6] 3GPP TS 42.009: "Digital cellular telecommunications system (Phase 2+); Security aspects".

[7] 3GPP TS 22.016: "International Mobile station Equipment Identities (IMEI)".

[8] 3GPP TS 22.041: "Operator Determined Barring".

[9] 3GPP TS 22.081: "Line identification supplementary services - Stage 1".

[10] 3GPP TS 22.082: "Call Forwarding (CF) supplementary services - Stage 1".

[11] 3GPP TS 22.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 1".

[12] 3GPP TS 22.084: "Multi Party (MPTY) Supplementary Services - Stage 1".

[13] 3GPP TS 22.085: "Closed User Group (CUG) supplementary services - Stage 1".

[14] 3GPP TS 22.086: "Advice of charge (AoC) Supplementary Services - Stage 1".

[15] 3GPP TS 22.088: "Call Barring (CB) supplementary services - Stage 1".

[16] 3GPP TS 22.090: "Unstructured Supplementary Service Data (USSD); - Stage 1".

[17] 3GPP TS 23.003: "Numbering, addressing and identification".

[18] Void

[19] 3GPP TS 23.007: "Restoration procedures".

[20] 3GPP TS 23.008: "Organisation of subscriber data".

[21] 3GPP TS 23.009: "Handover procedures".

[22] 3GPP TS 23.011: "Technical realization of Supplementary Services - General Aspects".

[23] 3GPP TS 23.012: "Location registration procedures".

[24] 3GPP TS 43.020: "Security related network functions".

[25] 3GPP TS 23.038: "Alphabets and language".

[26] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS) Point to Point (PP)".

[26a] 3GPP TS 23.271: "Functional stage2 description of LCS".

[27] 3GPP TS 23.081: "Line Identification Supplementary Services - Stage 2".

[28] 3GPP TS 23.082: "Call Forwarding (CF) Supplementary Services - Stage 2".

[29] 3GPP TS 23.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 2".

[30] 3GPP TS 23.084: "Multi Party (MPTY) Supplementary Services - Stage 2".

[31] 3GPP TS 23.085: "Closed User Group (CUG) Supplementary Services - Stage 2".

[32] 3GPP TS 23.086: "Advice of Charge (AoC) Supplementary Services - Stage 2".

[33] 3GPP TS 23.088: "Call Barring (CB) Supplementary Services - Stage 2".

[34] 3GPP TS 23.090: "Unstructured Supplementary Services Data (USSD) - Stage 2".

[34a] 3GPP TS 33.200: "3G Security; Network domain security; MAP application layer security".

[35] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3".

[36] 3GPP TS 24.010: "Mobile radio interface layer 3 Supplementary Services specification - General aspects".

[37] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[37a] 3GPP TS 44.071: "Location Services (LCS) – stage 3".

[38] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification - Formats and coding".

[39] 3GPP TS 24.081: "Line identification supplementary services - Stage 3".

[40] 3GPP TS 24.082: "Call Forwarding (CF) Supplementary Services - Stage 3".

[41] 3GPP TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3".

[42] 3GPP TS 24.084: "Multi Party (MPTY) Supplementary Services - Stage 3".

[43] 3GPP TS 24.085: "Closed User Group (CUG) Supplementary Services - Stage 3".

[44] 3GPP TS 24.086: "Advice of Charge (AoC) Supplementary Services - Stage 3".

[45] 3GPP TS 24.088: "Call Barring (CB) Supplementary Services - Stage 3".

[46] 3GPP TS 24.090: "Unstructured Supplementary Services Data - Stage 3".

[47] 3GPP TS 48.002: " Base Station System - Mobile-services Switching Centre (BSS - MSC) interface principles".

[48] 3GPP TS 48.006: "Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".

[49] 3GPP TS 48.008: "Mobile Switching Centre - Base Station System (MSC - BSS) interface; Layer 3 specification".

[49a1] 3GPP TS 48.031: "Location Services (LCS); Serving Mobile Location Centre (SMLC) – Serving Mobile Location Centre (SMLC); SMLC Peer Protocol (SMLCPP)".

[49b] 3GPP TS 48.071: "Location Services (LCS); Serving Mobile Location Centre - Base Station System (SMLC - BSS) interface Layer 3 specification".

[50] 3GPP TS 49.001: "General network interworking scenarios".

[51] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[52] Void

[53] Void

[54] Void

[55] 3GPP TS 29.006: "Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of Packet Switched data transmission services".

[56] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[57] 3GPP TS 29.008: "Application of the Base Station System Application Part (BSSAP) on the E-interface".

[58] 3GPP TS 29.010: "Information element mapping between Mobile Station - Base Station System and BSS - Mobile-services Switching Centre (MS - BSS - MSC) Signalling procedures and the Mobile Application Part (MAP)".

[59] 3GPP TS 29.011: "Signalling interworking for Supplementary Services".

[59a] 3GPP TS 49.031: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Base Station System Application Part LCS Extension (BSSAP-LE)".

[60] Void

[61] GSM 12.08: "Digital cellular telecommunications system (Phase 2); Subscriber and Equipment Trace".

[62] ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3 specifications for basic call control".

[63] ETS 300 136 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service description".

[64] ETS 300 138 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service Digital Subscriber Signalling System No.one (DSS1) protocol".

[65] ETS 300 287: "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities (TC) version 2".

[66] ETR 060: "Signalling Protocols and Switching (SPS); Guide-lines for using Abstract Syntax Notation One (ASN.1) in telecommunication application protocols".

[66b] ETR 091: "ETSI object identifier tree; Common domain Mobile domain"

[67] ITU-T Recommendation E.164: " The international public telecommunication numbering plan".

[68] ITU-T Recommendation E.212: " The international identification plan for mobile terminals and mobile users".

[69] ITU-T Recommendation E.213: " Telephone and ISDN numbering plan for land mobile stations in public land mobile networks (PLMN) ".

[70] ITU-T Recommendation E.214: " Structure of the land mobile global title for the signalling connection control part (SCCP) ".

[71] ITU-T Recommendation Q.699: " Interworking between ISDN access and non-ISDN access over ISDN User Part of Signalling System No. 7 ".

[72] ITU-T Recommendation Q.711: "Specifications of Signalling System No.7; Functional description of the Signalling Connection Control Part".

[73] ITU-T Recommendation Q.712: "Definition and function of SCCP messages".

[74] ITU-T Recommendation Q.713: "Specifications of Signalling System No.7; SCCP formats and codes".

[75] ITU-T Recommendation Q.714: "Specifications of Signalling System No.7; Signalling Connection Control Part procedures".

[76] ITU-T Recommendation Q.716: "Specifications of Signalling System No.7; Signalling connection control part (SCCP) performances".

[77] ITU-T Recommendation Q.721 (1988): "Specifications of Signalling System No.7; Functional description of the Signalling System No.7 Telephone user part".

[78] ITU-T Recommendation Q.722 (1988): "Specifications of Signalling System No.7; General function of Telephone messages and signals".

[79] ITU-T Recommendation Q.723 (1988): "Specifications of Signalling System No.7; Formats and codes".

[80] ITU-T Recommendation Q.724 (1988): "Specifications of Signalling System No.7; Signalling procedures".

[81] ITU-T Recommendation Q.725 (1988): "Specifications of Signalling System No.7; Signalling performance in the telephone application".

[82] ITU-T Recommendation Q.761 (1988): "Specifications of Signalling System No.7; Functional description of the ISDN user part of Signalling System No.7".

[83] ITU-T Recommendation Q.762 (1988): "Specifications of Signalling System No.7; General function of messages and signals".

[84] ITU-T Recommendation Q.763 (1988): "Specifications of Signalling System No.7; Formats and codes".

[85] ITU-T Recommendation Q.764 (1988): "Specifications of Signalling System No.7; Signalling procedures".

[86] ITU-T Recommendation Q.767: "Specifications of Signalling System No.7; Application of the ISDN user part of CCITT signalling System No.7 for international ISDN interconnections".

[87] ITU-T Recommendation Q.771: "Specifications of Signalling System No.7; Functional description of transaction capabilities".

[88] ITU-T Recommendation Q.772: "Specifications of Signalling System No.7; Transaction capabilities information element definitions".

[89] ITU-T Recommendation Q.773: "Specifications of Signalling System No.7; Transaction capabilities formats and encoding".

[90] ITU-T Recommendation Q.774: "Specifications of Signalling System No.7; Transaction capabilities procedures".

[91] ITU-T Recommendation Q.775: "Specifications of Signalling System No.7; Guide-lines for using transaction capabilities".

[92] ITU-T Recommendation X.200: "Reference Model of Open systems interconnection for CCITT Applications".

[93] ITU-T Recommendation X.680: "Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[93b] ITU-T Recommendation X.681: "Information technology – Abstract Syntax Notation One (ASN.1): Information object specification"

[94] ITU-T Recommendation X.690: "Information technology – ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)".

[95] ITU-T Recommendation X.210: "Open systems interconnection layer service definition conventions".

[97] 3GPP TS 23.018: "Basic Call Handling".

[98] 3GPP TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 4 - Stage 2".

[99] 3GPP TS 23.079: "Support of Optimal Routeing (SOR) - Stage 2".

[100] 3GPP TS 43.068: "Voice Group Call Service (VGCS) - Stage 2".

[101] 3GPP TS 43.069: "Voice Broadcast service (VBS) - Stage 2".

[102] ANSI T1.113: "Signaling System No. 7 (SS7) - ISDN User Part".

[103] Void

[104] 3GPP TS 23.060: "General Packet Radio Service (GPRS) Description; Stage 2".

[105] 3GPP TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface".

[106] 3GPP TS 29.018: "General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification".

[107] 3GPP TS 23.093: "Technical Realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".

[108] 3GPP TS 23.066: "Support of Mobile Number Portability (MNP); Technical Realisation Stage 2".

[109] ANSI T1.112 (1996): "Telecommunication – Signalling No. 7 - Signaling Connection Control Part (SCCP)".

[110] 3GPP TS 23.116: "Super-Charger Technical Realisation; Stage 2."

[111] Void.

[112] Void

[113] Void

[114] Void

[115] Void

[116] ITU-T Recommendation Q.850 (May 1998): "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part".

[117] 3GPP TS 22.135: "Multicall; Service description; Stage 1".

[118] 3GPP TS 23.135: "Multicall supplementary service; Stage 2".

[119] 3GPP TS 24.135: "Multicall supplementary service; Stage 3".

[120] 3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".

[121] 3GPP TS 29.202: "SS7 signalling transport in core network"

[122] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)"

[123] 3GPP TS 22.071: " Location Services (LCS); Service description, Stage 1"

[124] ITU-T Recommendation X.880: "Data networks and open system communication - Open System Interconnection - Service definitions - Remote operations: Concepts, model and notation".

[125] 3GPP TS 23.278: “Customised Applications for Mobile Network Enhanced Logic (CAMEL) Phase 4 – Stage 2 IM CN Interworking (Rel-5)”

[126] 3GPP TS 23.172: "Technical realization of Circuit Switched (CS) multimedia service; UDI/RDI fallback and service modification"

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	Location Information	7.6.2.30
Access connection status	7.6.9.3	Location Information for GPRS	7.6.2.30a
Access signalling information	7.6.9.5	Location update type	7.6.9.6
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Long Forwarded-to Number	7.6.2.22A
Additional Location Estimate	7.6.11.21	Long FTN Supported	7.6.2.22B
Additional number	7.6.2.46	Lower Layer Compatibility	7.6.3.42
Additional signal info	7.6.9.10	LSA Information	7.6.3.56
Additional SM Delivery Outcome	7.6.8.11	LSA Information Withdraw	7.6.3.58
Age Indicator	7.6.3.72	MC Information	7.6.4.48
Alert Reason	7.6.8.8	MC Subscription Data	7.6.4.47
Alert Reason Indicator	7.6.8.10	Mobile Not Reachable Reason	7.6.3.51
Alerting Pattern	7.6.3.44	Modification request for CSI	7.6.3.81
All GPRS Data	7.6.3.53	Modification request for SS Information	7.6.3.82
All Information Sent	7.6.1.5	More Messages To Send	7.6.8.7
Allowed Services	7.6.3.92		
AN-apdu	7.6.9.1	MS ISDN	7.6.2.17
APN	7.6.2.42	MSC number	7.6.2.11
Authentication set list	7.6.7.1	MSIsdn-Alert	7.6.2.29
B-subscriber Address	7.6.2.36	Multicall Bearer Information	7.6.2.52
B subscriber Number	7.6.2.48	Multiple Bearer Requested	7.6.2.53
B subscriber subaddress	7.6.2.49	Multiple Bearer Not Supported	7.6.2.54
Basic Service Group	7.6.4.40	MWD status	7.6.8.3
Bearer service	7.6.4.38	NbrUser	7.6.4.45
Bearer Service 2	7.6.4.38A		
BSSMAP Service Handover	7.6.6.5	Network Access Mode	7.6.3.50
BSSMAP Service Handover List	7.6.6.5A	Network node number	7.6.2.43
Call Barring Data	7.6.3.83	Network resources	7.6.10.1
Call barring feature	7.6.4.19	Network signal information	7.6.9.8
		Network signal information 2	7.6.9.8A
Call barring information	7.6.4.18	New password	7.6.4.20
Call Direction	7.6.5.8	No reply condition timer	7.6.4.7
Call Forwarding Data	7.6.3.84	North American Equal Access preferred Carrier Id	7.6.2.34
Call Info	7.6.9.9	Number Portability Status	7.6.5.14
Call reference	7.6.5.1	ODB Data	7.6.3.85
Call Termination Indicator	7.6.3.67	ODB General Data	7.6.3.9
Called number	7.6.2.24	ODB HPLMN Specific Data	7.6.3.10
Calling number	7.6.2.25	OMC Id	7.6.2.18
CAMEL Subscription Info	7.6.3.78	Originally dialled number	7.6.2.26

CAMEL Subscription Info Withdraw	7.6.3.38
Cancellation Type	7.6.3.52
Category	7.6.3.1
CCBS Feature	7.6.5.8
CCBS Request State	7.6.4.49
Channel Type	7.6.5.9
Chosen Channel	7.6.5.10
Chosen Radio Resource Information	7.6.6.10B
Ciphering mode	7.6.7.7
Cksn	7.6.7.5
CLI Restriction	7.6.4.5
CM service type	7.6.9.2
Complete Data List Included	7.6.3.54
CS Allocation Retention priority	7.6.3.87
CS LCS Not Supported by UE	7.6.11.9
CUG feature	7.6.3.26
CUG index	7.6.3.25
CUG info	7.6.3.22
CUG interlock	7.6.3.24
CUG Outgoing Access indicator	7.6.3.8
CUG subscription	7.6.3.23
CUG Subscription Flag	7.6.3.37
Current location area Id	7.6.2.6
Current password	7.6.4.21
Deferred MT-LR Data	7.6.11.3
Deferred MT-LR Response Indicator	7.6.11.2
eMLPP Information	7.6.4.41
Encryption Information	7.6.6.9
Equipment status	7.6.3.2
Extensible Basic Service Group	7.6.3.5
Extensible Bearer service	7.6.3.3
Extensible Call barring feature	7.6.3.21
Extensible Call barring information	7.6.3.20
Extensible Call barring information for CSE	7.6.3.79
Extensible Forwarding feature	7.6.3.16
Extensible Forwarding info	7.6.3.15
Extensible Forwarding information for CSE	7.6.3.80
Extensible Forwarding Options	7.6.3.18
Extensible No reply condition timer	7.6.3.19
Extensible QoS-Subscribed	7.6.3.74
Extensible SS-Data	7.6.3.29
Extensible SS-Info	7.6.3.14
Extensible SS-Status	7.6.3.17
Extensible Teleservice	7.6.3.4
External Signal Information	7.6.9.4
Failure Cause	7.6.7.9
Forwarded-to number	7.6.2.22
Forwarded-to subaddress	7.6.2.23
Forwarding feature	7.6.4.16
Forwarding information	7.6.4.15
Forwarding Options	7.6.4.6
GERAN Classmark	7.6.6.4
GGSN address	7.6.2.40
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
Originating entity number	7.6.2.10
Override Category	7.6.4.4
P-TMSI	7.6.2.47
PDP-Address	7.6.2.45
PDP-Context identifier	7.6.3.55
PDP-Type	7.6.2.44
Positioning Data	7.6.11.11A
Pre-paging supported	7.6.5.15
Previous location area Id	7.6.2.4
Protocol Id	7.6.9.7
Provider error	7.6.1.3
PS LCS Not Supported by UE	7.6.11.10
QoS-Subscribed	7.6.3.47
Radio Resource Information	7.6.6.10
Radio Resource List	7.6.6.10A
RANAP Service Handover	7.6.6.6
Rand	7.6.7.2
LCS-Reference Number	7.6.11.23
Regional Subscription Data	7.6.3.11
Regional Subscription Response	7.6.3.12
Relocation Number List	7.6.2.19A
Requested Info	7.6.3.31
Requested Subscription Info	7.6.3.86
Roaming number	7.6.2.19
Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Roaming Restriction Due To Unsupported Feature	7.6.3.13
Current Security Context	7.6.7.8
Selected RAB ID	7.6.2.56
Service centre address	7.6.2.27
Serving Cell Id	7.6.2.37
SGSN address	7.6.2.39
SGSN CAMEL Subscription Info	7.6.3.75
SGSN number	7.6.2.38
SIWF Number	7.6.2.35
SoLSA Support Indicator	7.6.3.57
SM Delivery Outcome	7.6.8.6
SM-RP-DA	7.6.8.1
SM-RP-MTI	7.6.8.16
SM-RP-OA	7.6.8.2
SM-RP-PRI	7.6.8.5
SM-RP-SMEA	7.6.8.17
SM-RP-UI	7.6.8.4
Sres	7.6.7.3
SS-Code	7.6.4.1
SS-Code 2	7.6.4.1A
SS-Data	7.6.4.3
SS-Event	7.6.4.42
SS-Event-Data	7.6.4.43
SS-Info	7.6.4.24
SS-Status	7.6.4.2
Stored location area Id	7.6.2.5
Subscriber State	7.6.3.30
Subscriber Status	7.6.3.7
Super-Charger Supported in HLR	7.6.3.70
Super-Charger Supported in Serving Network Entity	7.6.3.71
Offered Camel4 CSIs	7.6.3.36D
Offered Camel4 CSIs in interrogating node	7.6.3.36E
Offered Camel4 CSIs in VMSC	7.6.3.36F
Offered Camel4 CSIs in VLR	7.6.3.36B
Offered Camel4 CSIs in SGSN	7.6.3.36C
Offered Camel4 Functionalities	7.6.3.36G
Supported CAMEL Phases	7.6.3.36H
Supported CAMEL Phases in VLR	7.6.3.36

GSM bearer capability	7.6.3.6	Supported CAMEL Phases in SGSN	7.6.3.36A
		Supported CAMEL Phases in interrogating node	7.6.3.36I
gsmSCF Address	7.6.2.58	Supported GAD Shapes	7.6.11.20
gsmSCF Initiated Call	7.6.3.c	Supported LCS Capability Sets	7.6.11.17
Guidance information	7.6.4.22	Suppress Incoming Call Barring	7.6.3.b
Handover number	7.6.2.21	Suppress T-CSI	7.6.3.33
High Layer Compatibility	7.6.3.43	Suppress VT-CSI	7.6.3.a
HLR Id	7.6.2.15	Suppression of Announcement	7.6.3.32
HLR number	7.6.2.13	Target cell Id	7.6.2.8
HO-Number Not Required	7.6.6.7	Target location area Id	7.6.2.7
IMEI	7.6.2.3	Target RNC Id	7.6.2.8A
IMSI	7.6.2.1	Target MSC number	7.6.2.12
Integrity Protection Information	7.6.6.8	Teleservice	7.6.4.39
		Teleservice 2	7.6.4.39A
Inter CUG options	7.6.3.27	TMSI	7.6.2.2
Intra CUG restrictions	7.6.3.28	Trace reference	7.6.10.2
Invoke Id	7.6.1.1	Trace type	7.6.10.3
		UESBI	7.6.6.20
		Unavailability Cause	7.6.3.93
ISDN Bearer Capability	7.6.3.41	User error	7.6.1.4
IST Alert Timer	7.6.3.66	USSD Data Coding Scheme	7.6.4.36
IST Information Withdrawn	7.6.3.68	USSD String	7.6.4.37
IST Support Indicator	7.6.3.69	UU Data	7.6.5.12
LCS Codeword	7.6.11.18	UUS CF Interaction	7.6.5.13
LCS Information	7.6.3.60	VBS Data	7.6.3.40
LCS Service Type Id	7.6.11.15	VGCS Data	7.6.3.39
Kc	7.6.7.4	VLR CAMEL Subscription Info	7.6.3.35
Linked Id	7.6.1.2	VLR number	7.6.2.14
LMSI	7.6.2.16	VPLMN address allowed	7.6.3.48
		Zone Code	7.6.2.28

Next modified section

7.6.3 Subscriber management parameters

...

7.6.3.90 Suppress Incoming Call Barring

This parameter is used to suppress the invocation of Incoming Call Barrings.

7.6.3.91 gsmSCF Initiated Call

This parameter is used to indicate that the call was initiated by the gsmSCF.

7.6.3.92 Allowed Services

This parameter is used by the HLR to indicate which services are available for a call when two services have been requested, for the SCUDIF feature described in 3GPP TS 23.172 [126].

7.6.3.93 Unavailability Cause

This parameter is used to indicate the reason for the unavailability of one of the services as indicated by the Allowed Services IE (see 7.6.3.92) when two services have been requested, for the SCUDIF feature described in 3GPP TS 23.172 [126].

Next modified section

7.6.4 Supplementary services parameters

7.6.4.1 SS-Code

This parameter may refer to one supplementary service or a set of supplementary services as defined in 3GPP TS 22.004. For MAP this includes:

- Calling Line Identification Presentation service (CLIP);
- Calling Line Identification Restriction service (CLIR);
- Connected Line Identification Presentation service (COLP);
- Connected Line Identification Restriction service (COLR);
- Calling Name Presentation (CNAP);
- All Call Forwarding services, including Call Deflection;
- Call Waiting (CW);
- Call Hold (HOLD);
- Multi-Party service (MPTY);
- Closed User Group (CUG);
- All Charging services;
- All Call Restriction services;
- Explicit Call Transfer service (ECT);
- enhanced Multi-Level Precedence and Pre-emption service (eMLPP);
- Completion of Calls to Busy Subscriber, originating side (CCBS-A);
- Completion of Calls to Busy Subscriber, destination side (CCBS-B);
- All LCS privacy exceptions (see clause 7.6.4.44);
- Mobile Originating Location Request (MO-LR) (see clause 7.6.4.45);
- Multicall (MC).

7.6.4.1A SS-Code 2

This parameter is used to refer to one or a set of supplementary services (as 7.6.4.1 "SS-Code") related to Network Signal Info 2 for SCUDIF calls (see 3GPP TS 23.172 [126]).

7.6.4.2 SS-Status

This parameter refers to the state information of individual supplementary services as defined in 3GPP TS 23.011.

7.6.4.3 SS-Data

This parameter refers to the necessary set of information required in order to characterise one supplementary service:

- SS-Code (see clause 7.6.4.1);
- SS-Status (if applicable) (see clause 7.6.4.2);
- Override subscription option (see clause 7.6.4.4);
- CLI Restriction (see clause 7.6.4.5);

- Basic Service Group Code (see clause 7.6.4.40).

7.6.4.4 Override Category

This parameter refers to the subscription option Override Category attached to a supplementary service. It can take the following two values:

- Enabled;
- Disabled.

7.6.4.5 CLI Restriction Option

This parameter refers to the subscription option Restriction mode attached to the CLIR supplementary service. It can take the following three values:

- Permanent;
- Temporary (Default Restricted);
- Temporary (Default Allowed).

7.6.4.6 Forwarding Options

This parameter refers to a forwarding option attached to a supplementary service. It can take one of the following values:

- notification to forwarding party (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- notification to calling party (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- redirecting presentation (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- Forwarding reason (see 3GPP TS 22.082 [10] for the meaning of this parameter).

7.6.4.7 No reply condition timer

This parameter refers to the no reply condition timer for call forwarding on no reply.

7.6.4.8 - 7.6.4.14 Void

7.6.4.15 Forwarding information

This parameter represents the information related to each call forwarding service:

- the SS-Code of the relevant call forwarding service (see clause 7.6.4.1);
- if required, a list of forwarding feature parameters (see clause 7.6.4.16).

  the list may contain one item per Basic Service Group.

7.6.4.16 Forwarding feature

This parameter applies to each combination of call forwarding service and Basic Service Group and contains the following information, as required:

- Basic Service Group (see clause 7.6.4.40);
- SS-Status (see clause 7.6.4.2);
- forwarded-to number (see clause 7.6.2.22);
- forwarded-to subaddress (see clause 7.6.2.23);

- forwarding options (see clause 7.6.4.6);
- no reply condition timer (see clause 7.6.4.7);
- long forwarded-to number (see clause 7.6.2.22A).

If a number is required to define the forwarded-to destination then:

- If the VLR supports Long Forwarded-to Numbers then the long forwarded-to number shall be present and the forwarded-to number shall be absent.
- If the VLR does not support Long Forwarded-to Numbers then the forwarded-to number shall be present and the long forwarded-to number shall be absent.

7.6.4.17 Void

7.6.4.18 Call barring information

This parameter contains for each call barring service:

- SS-Code (see clause 7.6.4.1);
- a list of call barring feature parameters (see clause 7.6.4.19).

  The list may contain one item per Basic Service Group.

7.6.4.19 Call barring feature

This parameter gives the status of call barring services as applicable to each Basic Service Group. The parameter contains the following information:

- Basic Service Group (see clause 7.6.4.40);
- SS-Status (see clause 7.6.4.2).

7.6.4.20 New password

This parameter refers to the password which the subscriber just registered in the network.

This parameter refers to a password used by the subscriber for supplementary service control.

7.6.4.21 Current password

This parameter refers to a password used by the subscriber for supplementary service control.

7.6.4.22 Guidance information

This parameter refers to guidance information given to a subscriber who is requested to provide a password. One of the following information may be given:

- "enter password";

  this information is used for checking of the old password;
- "enter new password";

  this information is used during password registration for the request of the first new password;
- "enter new password again";

  this information is used during password registration for the request of the new password again for verification.

7.6.4.23 Void

7.6.4.24 SS-Info

This parameter refers to all the information related to a supplementary service and is a choice between:

- forwarding information (see clause 7.6.4.15);
- call barring information (see clause 7.6.4.18);
- CUG info (see clause 7.6.4.8);
- SS-Data (see clause 7.6.4.3).
- eMLPP information (see clause 7.6.4.41).

7.6.4.25 - 7.6.4.35 Void

7.6.4.36 USSD Data Coding Scheme

This parameter contains the information of the alphabet and the language used for the unstructured information in an Unstructured Supplementary Service Data operation. The coding of this parameter is according to the Cell Broadcast Data Coding Scheme as specified in 3GPP TS 23.038 [25].

7.6.4.37 USSD String

This parameter contains a string of unstructured information in an Unstructured Supplementary Service Data operation. The string is sent either by the mobile user or the network. The contents of a string sent by the MS are interpreted by the network as specified in 3GPP TS 22.090 [16].

7.6.4.38 Bearer service

This parameter may refer to a single bearer service, a set of bearer services or to all bearer services as defined in 3GPP TS 22.002 [3]. This parameter is used only for supplementary service management.

7,6,4.38A Bearer Service 2

This parameter is used to indicate the bearer service or set of bearer services (as 7.6.4.38 "Bearer service") related to Network Signal Info 2 for SCUDIF calls (see 3GPP TS 23.172 [126]).

7.6.4.39 Teleservice

This parameter may refer to a single teleservice, a set of teleservices or to all teleservices as defined in 3GPP TS 22.003 [4]. This parameter is used only for supplementary service management.

7.6.4.39A Teleservice 2

This parameter is used to indicate the teleservice or set of teleservices (as 7.6.4.39 "Teleservice") related to Network Signal Info 2 for SCUDIF calls (see 3GPP TS 23.172 [126]).

7.6.4.40 Basic Service Group

This parameter refers to the Basic Service Group either as a bearer service (see clause 7.6.4.38) or a teleservice (see clause 7.6.4.39). This parameter is used only for supplementary service management. The null value (i.e. neither bearer service nor teleservice) is used to denote the group containing all bearer services and all teleservices.

7.6.4.41 eMLPP information

This parameter contains two parameters which are associated with the eMLPP service. The following two parameters are included:

- maximum entitled priority:

- indicates the highest priority level the subscriber is allowed to apply for an outgoing call set-up;

- default priority:

  - defines the priority level which shall be assigned to a call if no explicit priority is indicated during call set-up.

7.6.4.42 SS-event

This parameter indicates the Supplementary Service for which an invocation notification is sent towards the gsmSCF. It can indicate one of the following services:

- Explicit Call Transfer (ECT)
- Call Deflection (CD)
- Multi-Party call (MPTY)
- Completion of Calls to Busy Subscriber (CCBS)

7.6.4.43 SS-event data

This parameter contains additional information related to Supplementary Service invocation. Depending on the service invoked it can contain the following information:

ECT A list with all Called Party Numbers involved.

CD The called Party number involved.

7.6.4.44 LCS Privacy Exceptions

Distinct SS codes are assigned to the following classes of LCS client in a target MS subscriber's privacy exception list.

- Universal Class;
- Call/session related value added class;
- Call/session unrelated value added class;
- PLMN operator class.
- Service type class.

7.6.4.45 Mobile Originating Location Request (MO-LR)

Distinct SS codes are assigned to the following classes of MO-LR:

- Basic Self Location;
- Autonomous Self Location;
- Transfer to Third Party.

7.6.4.46 NbrUser

This parameter indicates the maximum number of parallel bearers that may be used as defined by the user at registration of the MC SS.

7.6.4.47 MC Subscription Data

This parameter contains two parameters which are associated with the MC service. The following two parameters are included:

- NbrUser:

  indicates the maximum number of parallel bearers that may be used as defined by the user at registration of the MC SS

- NbrSB:

  indicates the maximum number of parallel bearers that may be used as defined by the user's subscription.

7.6.4.48 MC Information

This parameter contains three parameters which are associated with the MC service. The following parameters are included:

- NbrSB;
- NbrUser;
- NbrSN.

Definitions of these parameters are provided in 3GPP TS 23.135.

7.6.4.49 CCBS Request State

This parameter indicates the current state of the CCBS request. It can take one of seven values:

- request;
- recall;
- active;
- completed;
- suspended;
- frozen;
- deleted.

Next modified section

7.6.9 Access and signalling system related parameters

7.6.9.1 AN-apdu

This parameter includes one or two concatenated complete 3GPP TS 25.413 or 3GPP TS 48.006 [48] messages, as described in 3GPP TS 23.009 and 3GPP TS 29.010. The access network protocol ID indicates that the message or messages are according to either 3GPP TS 48.006 [48] or 3GPP TS 25.413. For the coding of the messages see 3GPP TS 25.413, 3GPP TS 48.006 [48] and 3GPP TS 48.008 [49].

7.6.9.2 CM service type

This parameter identifies the service category being requested by the subscriber:

- mobile originating call;
- emergency call establishment;
- short message service;
- mobile originating call re-establishment;

- mobile terminating call;
- SS request;
- Voice group call set-up;
- Voice broadcast set-up.

7.6.9.3 Access connection status

This parameter represents the following access connection status information:

- RR-connection status (established/not established);
- ciphering mode (on/off);
- authentication status (authenticated/not authenticated).

7.6.9.4 External Signal Information

This parameter contains concatenated information elements (including tag and length) which are defined by a common protocol version, preceded by the associated protocol ID. It is used to transport information of the indicated protocol via MAP interfaces.

7.6.9.5 Access signalling information

This parameter refers to any set of information elements imported from 3GPP TS 24.008 [35].

7.6.9.6 Location update type

This parameter refers to the location update type (normal, periodic or IMSI attach) contained in the 3GPP TS 24.008 [35] LOCATION REGISTRATION REQUEST message.

7.6.9.7 Protocol ID

This parameter refers to the protocol to which the coding of the content of the associated External Signal Information conforms.

The following values are defined:

- 04.08;
- 08.06;
- ETS 300 102-1.

This value indicates the protocol defined by ETS 300 102-1 (EDSS1).

7.6.9.8 Network signal information

This parameter is transported as external signal information. The protocol ID shall be set to "ETS 300 102-1".

The network signal information may include the following information elements as defined in 3GPP TS 29.007 [56]:

- ISDN BC; the tag and length are defined by ETS 300 102-1.

  For the content, see 3GPP TS 29.007 [56].

- HLC; the tag and length are defined by ETS 300 102-1.

  For the content, see 3GPP TS 29.007 [56].

- LLC; the tag and length are defined by ETS 300 102-1.

For the content, see 3GPP TS 29.007 [56].

They are contained in the Signal Information parameter according to figure 7.6/1 (irrespective of the order):

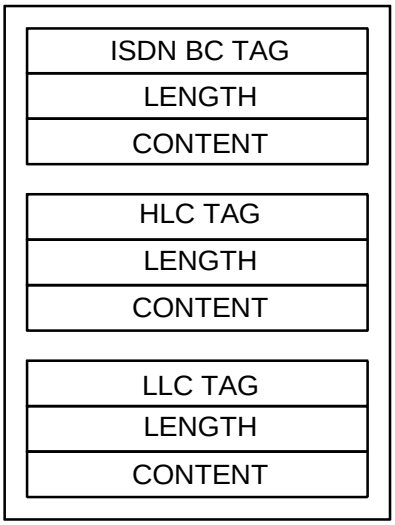


Figure 7.6/1: Network signal information parameter

7.6.9.8A Network signal information 2

This parameter is transported as additional external signal information for SCUDIF calls, described in 3GPP TS 23.172 [126]. The protocol ID and possibly included information elements are identical to Network Signal Information, defined in 7.6.9.8, "Network signal information".

7.6.9.9 Call Info

This parameter is transported as external signal information. The protocol ID shall be set to "3GPP TS 24.008 [35]".

The Call Info includes the set of information elements from the original SETUP message and is imported from 3GPP TS 24.008 [35].

7.6.9.10 Additional signal info

This parameter is transported as external signal information. The protocol ID shall be set to "ETS 300 356".

The additional signal information may include the following information elements:

- Calling Party Number as defined by ETS 300 356.
- Generic Number as defined by ETS 300 356.

They are contained in the Signal Information parameter according to figure 7.6/2 (irrespective of the order):

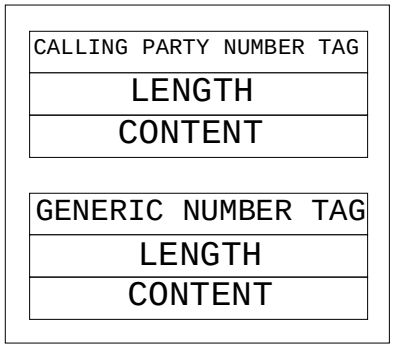


Figure 7.6/2: Additional signal information parameter

c

10.1 MAP_SEND_ROUTING_INFORMATION service

10.1.1 Definition

This service is used between the Gateway MSC and the HLR. The service is invoked by the Gateway MSC to perform the interrogation of the HLR in order to route a call towards the called MS.

This is a confirmed service using the primitives listed in table 10.1/1.

This service is also used between the GMSC and the NPLR and between the gsmSCF and the HLR.

10.1.2 Service primitives

Table 10.1/1: MAP_SEND_ROUTING_INFORMATION parameters

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Interrogation Type	M	M(=)		
GMSC or gsmSCF Address	M	M(=)		
MSISDN	M	M(=)	C	C(=)
OR Interrogation	C	C(=)		
OR Capability	C	C(=)		
CUG Interlock	C	C(=)	C	C(=)
CUG Outgoing Access	C	C(=)	C	C(=)
Number of Forwarding	C	C(=)		
Network Signal Info	C	C(=)		
Supported CAMEL Phases	C	C(=)	C	C(=)
Suppress T-CSI	C	C(=)		
Offered CAMEL 4 CSIs	C	C(=)		
Suppression of Announcement	C	C(=)		
Call Reference Number	C	C(=)		
Forwarding Reason	C	C(=)		
Basic Service Group	C	C(=)		
Alerting Pattern	C	C(=)		
CCBS Call	C	C(=)		
Supported CCBS Phase	C	C(=)		
Additional Signal Info	C	C(=)		
IST Support Indicator	C	C(=)		
Pre-paging supported	C	C(=)		
Call Diversion Treatment Indicator	C	C(=)		
Long FTN Supported	C	C(=)		
Suppress VT-CSI	C	C(=)		
Suppress Incoming Call Barring	C	C(=)		
gsmSCF Initiated Call	C	C(=)		
Network Signal Info 2	C	C(=)		
IMSI			C	C(=)
MSRN			C	C(=)
Forwarding Data			C	C(=)
Forwarding Interrogation Required			C	C(=)
VMSC address			C	C(=)
GMSC Camel Subscription Info			C	C(=)
Location Information			C	C(=)
Subscriber State			C	C(=)
Basic Service Code			C	C(=)
CUG Subscription Flag			C	C(=)
North American Equal Access preferred Carrier Id			U	C(=)
User error			C	C(=)
SS-List			U	C(=)
CCBS Target			C	C(=)
Keep CCBS Call Indicator			C	C(=)

Parameter name	Request	Indication	Response	Confirm
IST Alert Timer Number Portability Status			C U	C(=) C(=)
Supported CAMEL Phases in VMSC			C	
Offered CAMEL 4 CSIs in VMSC			C	C(=)
MSRN 2			C	C(=)
Forwarding Data 2			C	C(=)
SS-List 2			C	C(=)
Basic Service Code 2			C	C(=)
Allowed Services			C	C(=)
Unavailability Cause			C	C(=)
Provider error				O

10.1.3 Parameter use

See clause 7.6 for a definition of the parameters used in addition to the following. Note that:

- a conditional parameter whose use is defined only in 3GPP TS 23.078 shall be absent if the sending entity does not support CAMEL;
- a conditional parameter whose use is defined only in 3GPP TS 23.079 [99] shall be absent if the sending entity does not support optimal routeing;
- a conditional parameter whose use is defined only in 3GPP TS 23.078 & 3GPP TS 23.079 [99] shall be absent if the sending entity supports neither CAMEL nor optimal routeing.

Interrogation Type

See 3GPP TS 23.079 [99] for the use of this parameter.

GMSC or gsmSCF address

The E.164 address of the GMSC or the gsmSCF. This parameter contains the gsmSCF address if the gsmSCF iniated call parameter is present, otherwise it is the GMSC address.

MSISDN

This is the Mobile Subscriber ISDN number assigned to the called subscriber. In the Request & Indication it is the number received by the GMSC in the ISUP IAM. If the call is to be forwarded and the HLR supports determination of the redirecting number, the HLR inserts the basic MSISDN in the Response.

See 3GPP TS 23.066 [108] for the use of this parameter and the conditions for its presence in the response.

OR Interrogation

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

OR Capability

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

CUG Interlock

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

CUG Outgoing Access

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

Number of Forwarding

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

Network Signal Info

See 3GPP TS 23.018 [97] for the conditions for the presence of the components of this parameter.

Supported CAMEL Phases

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

T-CSI Suppression

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Offered CAMEL 4 CSIs

This parameter indicates the CAMEL phase 4 CSIs offered in the GMSC/VLR (see clause 7.6.3.36D).

Suppression Of Announcement

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Call Reference Number

The use of this parameter and the conditions for its presence are specified in 3GPP TS 23.078 [98] and 3GPP TS 23.079 [99].

Forwarding Reason

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Basic Service Group

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Alerting Pattern

See 3GPP TS 23.018 [97] and 3GPP TS 23.078 [98] for the use of this parameter and the conditions for its presence.

CCBS Call

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

Supported CCBS Phase

This parameter indicates by its presence that CCBS is supported and the phase of CCBS which is supported.

Additional Signal Info

See 3GPP TS 23.081 [27] for the conditions for the presence of the components of this parameter.

IST Support Indicator

This parameter is used to indicate to the HLR that the GMSC supports basic IST functionality, that is, the GMSC is able to terminate the subscriber call activity that originated the IST Alert when it receives the IST Alert response indicating that the call(s) shall be terminated. If this parameter is not included in the Send Routing Information indication and the subscriber is marked as an IST subscriber, then the HLR may limit the service for the call (by barring the incoming call if it is not subject to forwarding, or suppressing Call Forwarding from the GMSC), or allow the call assuming the associated risk of not having the basic IST mechanism available.

This parameter can also indicate that the GMSC supports the IST Command, including the ability to terminate all calls being carried for the identified subscriber by using the IMSI as a key. If this additional capability is not included in the Send Routing Information indication and the subscriber is marked as an IST subscriber, then the HLR may limit the service for the subscriber (by barring the incoming calls if they are not subject to forwarding, or suppressing Call Forwarding from the GMSC), or allow the incoming calls assuming the associated risk of not having the IST Command mechanism available.

Pre-paging supported

See 3GPP TS 23.018 for the use of this parameter and the conditions for its presence.

Call Diversion Treatment Indicator

This parameter indicates whether or not call diversion is allowed.

Network Signal Info 2

See 3GPP TS 23.172 [126] for the conditions for the presence of the components of this parameter.

IMSI

See 3GPP TS 23.018 [97] and 3GPP TS 23.066 [108] for the use of this parameter and the conditions for its presence.

MSRN

See 3GPP TS 23.018 [97], 3GPP TS 23.066 [108] and 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence. If the NPLR returns only the MSISDN-number without Routeing Number to the GMSC, the MSISDN-number shall be returned as MSRN.

Forwarding Data

This parameter includes a number to define the forwarded-to destination, the forwarding reason and the forwarding options Notification to calling party and Redirecting presentation, and can include the forwarded-to subaddress. See 3GPP TS 23.018 [97] and 3GPP TS 23.079 [99] for the conditions for the presence of its components.

Forwarding Interrogation Required

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Long FTN Supported

This parameter indicates that the GMSC supports Long Forwarded-to Numbers.

Suppress VT-CSI

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Suppress Incoming Call Barring

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

gsmSCF Initiated Call

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

VMSC address

See 3GPP TS 23.079 [99] and 3GPP TS 23.078 [98] for the use of this parameter and the conditions for its presence.

GMSC CAMEL Subscription Info

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Location Information

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Subscriber State

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

CUG Subscription Flag

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

North American Equal Access preferred Carrier Id

This parameter is returned to indicate the preferred carrier identity to be used to set-up the call (i.e. forwarding the call or establishing the roaming leg).

SS-List

This parameter includes SS-codes and will be returned as an operator option. The HLR shall not send PLMN-specific SS-codes across PLMN boundaries. However if the GMSC receives PLMN-specific SS-codes from a foreign PLMN's HLR the GMSC may ignore it. If the GMSC attempts to process the PLMN- specific SS- codes, this may lead to unpredictable behaviour but the GMSC shall continue call processing.

Basic Service Code

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

If the CAMEL service is not involved, this parameter includes the basic service code and will be returned as an operator option. The HLR shall not send a PLMN-specific Basic Service Code across PLMN boundaries. However if the GMSC receives a PLMN-specific Basic Service Code from a foreign PLMN's HLR the GMSC may ignore it. If the GMSC attempts to process the PLMN specific Basic Service codes, this may lead to unpredictable behaviour but the GMSC shall continue call processing.

CCBS Target

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

Keep CCBS Call Indicator

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

IST Alert Timer

It includes the IST Alert timer value that must be used to inform the HLR about the call activities that the subscriber performs. This parameter is only sent to the GMSC in response to a Send Routing Information request which indicates the the GMSC supports IST.

Number Portability Status

This parameter indicates the number portability status of the subscriber. This parameter may be present if the sender of SRIack is NPLR.

Supported CAMEL Phases in VMSC

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Offered CAMEL 4 CSIs in VMSC

This parameter is defined in clause 7.6.3.36F.

MSRN 2

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

Forwarding Data 2

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

SS-List 2

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

Basic Service Code 2

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

Allowed Services

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

Unavailability Cause

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

User error

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

- Unknown Subscriber;

  The diagnostic for the Unknown Subscriber error may indicate “NPDB Mismatch”.

- Number changed;

- Call Barred;

  This error will indicate that either incoming calls are barred for this MS or that calls are barred due to Operator Determined Barring (see 3GPP TS 22.041 [8] for a definition of this network feature);

- CUG Reject;

  The value of this error cause will indicate the reason for CUG Reject;

- Bearer Service Not Provisioned;

- Teleservice Not Provisioned;

  A subscription check has been performed and the call has not passed the check due to incompatibility with regard to the requested service. Depending on the nature of the incompatibility, either of these messages will be returned;

- Facility Not Supported;

- Absent Subscriber;

  This indicates that the location of the MS is not known (either the station is not registered and there is no location information available or the Provide Roaming Number procedure fails due to IMSI detached flag being set), or the GMSC requested forwarding information with a forwarding reason of not reachable, and the call forwarding on MS not reachable service is not active;

- Busy Subscriber;

  This indicates that Call Forwarding on Busy was not active for the specified basic service group when the GMSC requested forwarding information with a forwarding reason of busy;

  The error may also indicate that the subscriber is busy due to an outstanding CCBS recall. In the error data it may then be specified that CCBS is possible for the busy encountered call;

- No Subscriber Reply;

  This indicates that Call Forwarding on No Reply was not active for the specified basic service group when the GMSC requested forwarding information with a forwarding reason of no reply;

- OR Not Allowed;

  This indicates that the HLR is not prepared to accept an OR interrogation from the GMSC, or that calls to the specified subscriber are not allowed to be optimally routed;

- Forwarding Violation;

- System Failure;

- Data Missing;

- Unexpected Data Value.

See clause 7.6 for a definition of these errors.

Provider error

These are defined in clause 7.6.

Next modified section

17.7.3 Call handling data types

```
MAP-CH-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CH-DataTypes (13) version8 (8)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS
   SendRoutingInfoArg,
   SendRoutingInfoRes,
   ProvideRoamingNumberArg,
   ProvideRoamingNumberRes,
   ResumeCallHandlingArg,
   ResumeCallHandlingRes,
   NumberOfForwarding,
   SuppressionOfAnnouncement,
   CallReferenceNumber,
   ProvideSIWFSNumberArg,
   ProvideSIWFSNumberRes,
   SIWFSSignallingModifyArg,
   SIWFSSignallingModifyRes,
   SetReportingStateArg,
   SetReportingStateRes,
   StatusReportArg,
   StatusReportRes,
   RemoteUserFreeArg,
   RemoteUserFreeRes,
   IST-AlertArg,
   IST-AlertRes,
   IST-CommandArg,
   IST-CommandRes
;

IMPORTS
   SubscriberInfo,
   SupportedCamelPhases,
   OfferedCamel4CSIs,
   CUG-Interlock,
   O-CSI,
   D-CSI,
   O-BcsmCamelTDPCriteriaList,
   T-BCSM-CAMEL-TDP-CriteriaList,
   IST-SupportIndicator,
   IST-AlertTimerValue,
   T-CSI


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

   ForwardingOptions,
   SS-List,
   CCBS-Feature
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SS-DataTypes (14) version8 (8)}

   ISDN-AddressString,
   ISDN-SubaddressString,
   FTN-AddressString,
   ExternalSignalInfo,
   Ext-ExternalSignalInfo,
   IMSI,
   LMSI,
   Ext-BasicServiceCode,
   AlertingPattern,
   NAEA-PreferredCI


FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version8 (8)}
```

```
   ExtensionContainer
FROM MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version8 (8)}
;
```

```
CUG-CheckInfo ::= SEQUENCE {
     cug-Interlock                  CUG-Interlock,
     cug-OutgoingAccess             NULL                          OPTIONAL,
     extensionContainer             ExtensionContainer            OPTIONAL,
     ...}
```

```
NumberOfForwarding ::= INTEGER (1..5)
```

```
SendRoutingInfoArg ::= SEQUENCE {
     msisdn                              [0] ISDN-AddressString,
     cug-CheckInfo                       [1] CUG-CheckInfo                 OPTIONAL,
     numberOfForwarding                  [2] NumberOfForwarding            OPTIONAL,
     interrogationType                   [3] InterrogationType,
     or-Interrogation                    [4] NULL                          OPTIONAL,
     or-Capability                       [5] OR-Phase                      OPTIONAL,
     gmsc-OrGsmSCF-Address               [6] ISDN-AddressString,
     callReferenceNumber                 [7] CallReferenceNumber           OPTIONAL,
     forwardingReason                    [8] ForwardingReason              OPTIONAL,
     basicServiceGroup                   [9] Ext-BasicServiceCode          OPTIONAL,
     networkSignalInfo                   [10] ExternalSignalInfo           OPTIONAL,
     camelInfo                           [11] CamelInfo                    OPTIONAL,
     suppressionOfAnnouncement           [12] SuppressionOfAnnouncement    OPTIONAL,
     extensionContainer                  [13] ExtensionContainer           OPTIONAL,
     ...,
     alertingPattern                     [14] AlertingPattern              OPTIONAL,
     ccbs-Call                           [15] NULL                          OPTIONAL,
     supportedCCBS-Phase                 [16]  SupportedCCBS-Phase         OPTIONAL,
     additionalSignalInfo                [17] Ext-ExternalSignalInfo       OPTIONAL,
     istSupportIndicator                 [18] IST-SupportIndicator         OPTIONAL,
     pre-pagingSupported                 [19] NULL                         OPTIONAL,
     callDiversionTreatmentIndicator     [20] CallDiversionTreatmentIndicator   OPTIONAL,
     longFTN-Supported                   [21] NULL                         OPTIONAL,
     suppress-VT-CSI                     [22] NULL                         OPTIONAL,
     suppressIncomingCallBarring         [23] NULL                         OPTIONAL,
     gsmSCF-InitiatedCall                [24] NULL                         OPTIONAL,
     networkSignalInfo2                  [xx] ExternalSignalInfo           OPTIONAL
      }
```

```
SuppressionOfAnnouncement ::= NULL
```

```
InterrogationType ::= ENUMERATED {
     basicCall  (0),
     forwarding  (1)}
```

```
OR-Phase ::= INTEGER (1..127)
```

```
CallReferenceNumber ::= OCTET STRING (SIZE (1..8))
```

```
ForwardingReason ::= ENUMERATED {
     notReachable  (0),
     busy  (1),
     noReply  (2)}
```

```
SupportedCCBS-Phase ::= INTEGER (1..127)
-- exception handling:
-- Only value 1 is used.
-- Values in the ranges 2-127 are reserved for future use.
-- If received values 2-127 shall be mapped on to value 1.
```

```
CallDiversionTreatmentIndicator ::= OCTET STRING (SIZE(1))
--   callDiversionAllowed (xxxx xx01)
--   callDiversionNotAllowed (xxxx xx10)
--   network default is call diversion allowed
```

```
SendRoutingInfoRes ::= [3] SEQUENCE {
    imsi                                [9] IMSI                            OPTIONAL,
    -- IMSI must be present if SendRoutingInfoRes is not segmented.
    -- If the TC-Result-NL segmentation option is taken the IMSI must be
    -- present in one segmented transmission of SendRoutingInfoRes.
    extendedRoutingInfo                 ExtendedRoutingInfo                 OPTIONAL,
    cug-CheckInfo                       [3] CUG-CheckInfo                   OPTIONAL,
    cugSubscriptionFlag                 [6] NULL                            OPTIONAL,
    subscriberInfo                      [7] SubscriberInfo                  OPTIONAL,
    ss-List                             [1] SS-List                         OPTIONAL,
    basicService                        [5] Ext-BasicServiceCode            OPTIONAL,
    forwardingInterrogationRequired     [4] NULL                            OPTIONAL,
    vmsc-Address                        [2] ISDN-AddressString              OPTIONAL,
    extensionContainer                  [0] ExtensionContainer              OPTIONAL,
    ... ,
    naea-PreferredCI                    [10] NAEA-PreferredCI               OPTIONAL,
    -- naea-PreferredCI is included at the discretion of the HLR operator.
    ccbs-Indicators                     [11] CCBS-Indicators                OPTIONAL,
    msisdn                              [12] ISDN-AddressString             OPTIONAL,
    numberPortabilityStatus             [13] NumberPortabilityStatus        OPTIONAL,
    istAlertTimer                       [14] IST-AlertTimerValue            OPTIONAL,
    supportedCamelPhasesInVMSC          [15] SupportedCamelPhases           OPTIONAL,
    offeredCamel4CSIsInVMSC             [16] OfferedCamel4CSIs              OPTIONAL,
    routingInfo2                        [xx] RoutingInfo                    OPTIONAL,
    ss-List2                            [xx] SS-List                        OPTIONAL,
    basicService2                       [xx] Ext-BasicServiceCode           OPTIONAL,
    allowedServices                     [xx] AllowedServices                OPTIONAL,
    unavailabilityCause                 [xx] UnavailabilityCause            OPTIONAL
    }
```

```
AllowedServices ::= BIT STRING {
    firstServiceAllowed                 (0),
    secondServiceAllowed                (1)} (SIZE (2..8))
    --   firstService is the service indicated in the networkSignalInfo
    --   secondService is the service indicated in the networkSignalInfo2
    --   Other bits than listed above shall be discarded
```

```
UnavailabilityCause ::= ENUMERATED {
    bearerServiceNotProvisioned         (1),
    teleserviceNotProvisioned           (2),
    absentSubscriber                    (3),
    busySubscriber                      (4),
    callBarred                          (5),
    ...}
    --   exception handling:
    --   Reception of other values than the ones listed shall result in the service
    --   being unavailable for that call.
```

```
NumberPortabilityStatus ::= ENUMERATED {
    notKnownToBePorted                  (0),
    ownNumberPortedOut                  (1),
    foreignNumberPortedToForeignNetwork (2),
    ...}
    --   exception handling:
    --  reception of other values than the ones listed the receiver shall ignore the
    --  whole NumberPortabilityStatus
```

End of the Document

3GPP TSG CN WG4 Meeting #20 **N4-~~031024~~031059**
Sophia Antipolis, FRANCE, 25th – 29th August 2003

CR-Form-v7

CHANGE REQUEST

⌘	29.002	CR	614	⌘ rev	~~2~~ 3	⌘	Current version:	6.2.0	⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	HLR Interrogation for SCUDIF calls
Source:	⌘	L.M. Ericsson, NTT DoCoMo
Work item code:	⌘	SCUDIF
Date:	⌘	25/08/2003
Category:	⌘	A
Release:	⌘	Rel-6

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

Use one of the following releases:

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:	⌘	No proper checking of subscription and forwarding options are performed by the GMSC for services provided by SCUDIF (speech and multimedia)
Summary of change:	⌘	The Send Routing Information request is updated to allow the subscription check of both services, and the response to allow the transport of information for both services.
Consequences if not approved:	⌘	No check is possible in the GMSC for one of the services (speech or multimedia) requested in the codec list. The subscription and call forwarding state of the services offered by the SCUDIF feature (speech and multimedia) cannot be properly checked.

Clauses affected:	⌘	2, 7.6, 7.6.3, 7.6.4, 7.6.9, 10.1, 17.7.3

Other specs affected: ⌘	Y	N		⌘
	X		Other core specifications	23.172-016
		X	Test specifications	
		X	O&M Specifications	

Other comments:	⌘	Updates: ServiceStatus is renamed AllowedServices ; definitions for Bearer Service 2, Teleservice 2, SS-Code 2 have been added. AllowedServices is a bit string, "no subscriber reply" is remove from UnavailabilityCause

First modified section

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document.*

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

[2] 3GPP TS 22.001: "Digital cellular telecommunications system (Phase 2+); Principles of telecommunication services supported by a Public Land Mobile Network (PLMN)".

[3] 3GPP TS 22.002: "Bearer Services Supported by a Public Land Mobile Network (PLMN)".

[4] 3GPP TS 22.003: "Circuit Teleservices Supported by a Public Land Mobile Network (PLMN)".

[5] 3GPP TS 22.004: "General on Supplementary Services".

[6] 3GPP TS 42.009: "Digital cellular telecommunications system (Phase 2+); Security aspects".

[7] 3GPP TS 22.016: "International Mobile station Equipment Identities (IMEI)".

[8] 3GPP TS 22.041: "Operator Determined Barring".

[9] 3GPP TS 22.081: "Line identification supplementary services - Stage 1".

[10] 3GPP TS 22.082: "Call Forwarding (CF) supplementary services - Stage 1".

[11] 3GPP TS 22.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 1".

[12] 3GPP TS 22.084: "Multi Party (MPTY) Supplementary Services - Stage 1".

[13] 3GPP TS 22.085: "Closed User Group (CUG) supplementary services - Stage 1".

[14] 3GPP TS 22.086: "Advice of charge (AoC) Supplementary Services - Stage 1".

[15] 3GPP TS 22.088: "Call Barring (CB) supplementary services - Stage 1".

[16] 3GPP TS 22.090: "Unstructured Supplementary Service Data (USSD); - Stage 1".

[17] 3GPP TS 23.003: "Numbering, addressing and identification".

[18] Void

[19] 3GPP TS 23.007: "Restoration procedures".

[20] 3GPP TS 23.008: "Organisation of subscriber data".

[21] 3GPP TS 23.009: "Handover procedures".

[22] 3GPP TS 23.011: "Technical realization of Supplementary Services - General Aspects".

[23] 3GPP TS 23.012: "Location registration procedures".

[24] 3GPP TS 43.020: "Security related network functions".

[25] 3GPP TS 23.038: "Alphabets and language".

[26] 3GPP TS 23.040: "Technical realization of the Short Message Service (SMS) Point to Point (PP)".

[26a] 3GPP TS 23.271: "Functional stage2 description of LCS".

[27] 3GPP TS 23.081: "Line Identification Supplementary Services - Stage 2".

[28] 3GPP TS 23.082: "Call Forwarding (CF) Supplementary Services - Stage 2".

[29] 3GPP TS 23.083: "Call Waiting (CW) and Call Hold (HOLD) Supplementary Services - Stage 2".

[30] 3GPP TS 23.084: "Multi Party (MPTY) Supplementary Services - Stage 2".

[31] 3GPP TS 23.085: "Closed User Group (CUG) Supplementary Services - Stage 2".

[32] 3GPP TS 23.086: "Advice of Charge (AoC) Supplementary Services - Stage 2".

[33] 3GPP TS 23.088: "Call Barring (CB) Supplementary Services - Stage 2".

[34] 3GPP TS 23.090: "Unstructured Supplementary Services Data (USSD) - Stage 2".

[34a] 3GPP TS 33.200: "3G Security; Network domain security; MAP application layer security".

[35] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols - Stage 3".

[36] 3GPP TS 24.010: "Mobile radio interface layer 3 Supplementary Services specification - General aspects".

[37] 3GPP TS 24.011: "Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface".

[37a] 3GPP TS 44.071: "Location Services (LCS) – stage 3".

[38] 3GPP TS 24.080: "Mobile radio interface layer 3 supplementary services specification - Formats and coding".

[39] 3GPP TS 24.081: "Line identification supplementary services - Stage 3".

[40] 3GPP TS 24.082: "Call Forwarding (CF) Supplementary Services - Stage 3".

[41] 3GPP TS 24.083: "Call Waiting (CW) and Call Hold (HOLD) supplementary services - Stage 3".

[42] 3GPP TS 24.084: "Multi Party (MPTY) Supplementary Services - Stage 3".

[43] 3GPP TS 24.085: "Closed User Group (CUG) Supplementary Services - Stage 3".

[44] 3GPP TS 24.086: "Advice of Charge (AoC) Supplementary Services - Stage 3".

[45] 3GPP TS 24.088: "Call Barring (CB) Supplementary Services - Stage 3".

[46] 3GPP TS 24.090: "Unstructured Supplementary Services Data - Stage 3".

[47] 3GPP TS 48.002: " Base Station System - Mobile-services Switching Centre (BSS - MSC) interface principles".

[48] 3GPP TS 48.006: "Signalling transport mechanism specification for the Base Station System - Mobile-services Switching Centre (BSS - MSC) interface".

[49] 3GPP TS 48.008: "Mobile Switching Centre - Base Station System (MSC - BSS) interface; Layer 3 specification".

[49a1] 3GPP TS 48.031: "Location Services (LCS); Serving Mobile Location Centre (SMLC) – Serving Mobile Location Centre (SMLC); SMLC Peer Protocol (SMLCPP)".

[49b] 3GPP TS 48.071: "Location Services (LCS); Serving Mobile Location Centre - Base Station System (SMLC - BSS) interface Layer 3 specification".

[50] 3GPP TS 49.001: "General network interworking scenarios".

[51] 3GPP TS 29.002: "Mobile Application Part (MAP) specification".

[52] Void

[53] Void

[54] Void

[55] 3GPP TS 29.006: "Interworking between a Public Land Mobile Network (PLMN) and a Packet Switched Public Data Network/Integrated Services Digital Network (PSPDN/ISDN) for the support of Packet Switched data transmission services".

[56] 3GPP TS 29.007: "General requirements on interworking between the Public Land Mobile Network (PLMN) and the Integrated Services Digital Network (ISDN) or Public Switched Telephone Network (PSTN)".

[57] 3GPP TS 29.008: "Application of the Base Station System Application Part (BSSAP) on the E-interface".

[58] 3GPP TS 29.010: "Information element mapping between Mobile Station - Base Station System and BSS - Mobile-services Switching Centre (MS - BSS - MSC) Signalling procedures and the Mobile Application Part (MAP)".

[59] 3GPP TS 29.011: "Signalling interworking for Supplementary Services".

[59a] 3GPP TS 49.031: "Digital cellular telecommunications system (Phase 2+); Location Services (LCS); Base Station System Application Part LCS Extension (BSSAP-LE)".

[60] Void

[61] GSM 12.08: "Digital cellular telecommunications system (Phase 2); Subscriber and Equipment Trace".

[62] ETS 300 102-1 (1990): "Integrated Services Digital Network (ISDN); User-network interface layer 3 specifications for basic call control".

[63] ETS 300 136 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service description".

[64] ETS 300 138 (1992): "Integrated Services Digital Network (ISDN); Closed User Group (CUG) supplementary service Digital Subscriber Signalling System No.one (DSS1) protocol".

[65] ETS 300 287: "Integrated Services Digital Network (ISDN); Signalling System No.7; Transaction Capabilities (TC) version 2".

[66] ETR 060: "Signalling Protocols and Switching (SPS); Guide-lines for using Abstract Syntax Notation One (ASN.1) in telecommunication application protocols".

[66b] ETR 091: "ETSI object identifier tree; Common domain Mobile domain"

[67] ITU-T Recommendation E.164: " The international public telecommunication numbering plan".

[68] ITU-T Recommendation E.212: " The international identification plan for mobile terminals and mobile users".

[69] ITU-T Recommendation E.213: " Telephone and ISDN numbering plan for land mobile stations in public land mobile networks (PLMN) ".

[70] ITU-T Recommendation E.214: " Structure of the land mobile global title for the signalling connection control part (SCCP) ".

[71] ITU-T Recommendation Q.699: " Interworking between ISDN access and non-ISDN access over ISDN User Part of Signalling System No. 7 ".

[72] ITU-T Recommendation Q.711: "Specifications of Signalling System No.7; Functional description of the Signalling Connection Control Part".

[73] ITU-T Recommendation Q.712: "Definition and function of SCCP messages".

[74] ITU-T Recommendation Q.713: "Specifications of Signalling System No.7; SCCP formats and codes".

[75] ITU-T Recommendation Q.714: "Specifications of Signalling System No.7; Signalling Connection Control Part procedures".

[76] ITU-T Recommendation Q.716: "Specifications of Signalling System No.7; Signalling connection control part (SCCP) performances".

[77] ITU-T Recommendation Q.721 (1988): "Specifications of Signalling System No.7; Functional description of the Signalling System No.7 Telephone user part".

[78] ITU-T Recommendation Q.722 (1988): "Specifications of Signalling System No.7; General function of Telephone messages and signals".

[79] ITU-T Recommendation Q.723 (1988): "Specifications of Signalling System No.7; Formats and codes".

[80] ITU-T Recommendation Q.724 (1988): "Specifications of Signalling System No.7; Signalling procedures".

[81] ITU-T Recommendation Q.725 (1988): "Specifications of Signalling System No.7; Signalling performance in the telephone application".

[82] ITU-T Recommendation Q.761 (1988): "Specifications of Signalling System No.7; Functional description of the ISDN user part of Signalling System No.7".

[83] ITU-T Recommendation Q.762 (1988): "Specifications of Signalling System No.7; General function of messages and signals".

[84] ITU-T Recommendation Q.763 (1988): "Specifications of Signalling System No.7; Formats and codes".

[85] ITU-T Recommendation Q.764 (1988): "Specifications of Signalling System No.7; Signalling procedures".

[86] ITU-T Recommendation Q.767: "Specifications of Signalling System No.7; Application of the ISDN user part of CCITT signalling System No.7 for international ISDN interconnections".

[87] ITU-T Recommendation Q.771: "Specifications of Signalling System No.7; Functional description of transaction capabilities".

[88] ITU-T Recommendation Q.772: "Specifications of Signalling System No.7; Transaction capabilities information element definitions".

[89] ITU-T Recommendation Q.773: "Specifications of Signalling System No.7; Transaction capabilities formats and encoding".

[90] ITU-T Recommendation Q.774: "Specifications of Signalling System No.7; Transaction capabilities procedures".

[91] ITU-T Recommendation Q.775: "Specifications of Signalling System No.7; Guide-lines for using transaction capabilities".

[92] ITU-T Recommendation X.200: "Reference Model of Open systems interconnection for CCITT Applications".

[93] ITU-T Recommendation X.680: "Information technology – Abstract Syntax Notation One (ASN.1): Specification of basic notation".

[93b] ITU-T Recommendation X.681: "Information technology – Abstract Syntax Notation One (ASN.1): Information object specification"

[94] ITU-T Recommendation X.690: "Information technology – ASN.1 encoding rules: Specification of Basic Encoding Rules (BER), Canonical Encoding Rules (CER) and Distinguished Encoding Rules (DER)".

[95] ITU-T Recommendation X.210: "Open systems interconnection layer service definition conventions".

[97] 3GPP TS 23.018: "Basic Call Handling".

[98] 3GPP TS 23.078: "Customised Applications for Mobile network Enhanced Logic (CAMEL) Phase 4 - Stage 2".

[99] 3GPP TS 23.079: "Support of Optimal Routeing (SOR) - Stage 2".

[100] 3GPP TS 43.068: "Voice Group Call Service (VGCS) - Stage 2".

[101] 3GPP TS 43.069: "Voice Broadcast service (VBS) - Stage 2".

[102] ANSI T1.113: "Signaling System No. 7 (SS7) - ISDN User Part".

[103] Void

[104] 3GPP TS 23.060: "General Packet Radio Service (GPRS) Description; Stage 2".

[105] 3GPP TS 29.060: "General Packet Radio Service (GPRS); GPRS Tunnelling Protocol (GTP) across the Gn and Gp Interface".

[106] 3GPP TS 29.018: "General Packet Radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitors Location Register (VLR); Gs interface layer 3 specification".

[107] 3GPP TS 23.093: "Technical Realization of Completion of Calls to Busy Subscriber (CCBS); Stage 2".

[108] 3GPP TS 23.066: "Support of Mobile Number Portability (MNP); Technical Realisation Stage 2".

[109] ANSI T1.112 (1996): "Telecommunication – Signalling No. 7 - Signaling Connection Control Part (SCCP)".

[110] 3GPP TS 23.116: "Super-Charger Technical Realisation; Stage 2."

[111] Void.

[112] Void

[113] Void

[114] Void

[115] Void

[116] ITU-T Recommendation Q.850 (May 1998): "Usage of cause and location in the Digital Subscriber Signalling System No. 1 and the Signalling System No. 7 ISDN User Part".

[117] 3GPP TS 22.135: "Multicall; Service description; Stage 1".

[118] 3GPP TS 23.135: "Multicall supplementary service; Stage 2".

[119] 3GPP TS 24.135: "Multicall supplementary service; Stage 3".

[120] 3GPP TS 25.413: "UTRAN Iu Interface RANAP Signalling".

[121] 3GPP TS 29.202: "SS7 signalling transport in core network"

[122] 3GPP TS 23.032: "Universal Geographical Area Description (GAD)"

[123] 3GPP TS 22.071: " Location Services (LCS); Service description, Stage 1"

[124] ITU-T Recommendation X.880: "Data networks and open system communication - Open System Interconnection - Service definitions - Remote operations: Concepts, model and notation".

[125] 3GPP TS 23.278: “Customised Applications for Mobile Network Enhanced Logic (CAMEL) Phase 4 – Stage 2 IM CN Interworking (Rel-5)”

[126] 3GPP TS 23.172: "Technical realization of Circuit Switched (CS) multimedia service; UDI/RDI fallback and service modification"

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	Location Information for GPRS	7.6.2.30a
Access connection status	7.6.9.3	Location update type	7.6.9.6
Access signalling information	7.6.9.5	Long Forwarded-to Number	7.6.2.22A
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Long FTN Supported	7.6.2.22B
Additional LCS Capability Sets	7.6.11.25		
Additional Location Estimate	7.6.11.21	Lower Layer Compatibility	7.6.3.42
Additional number	7.6.2.46	LSA Information	7.6.3.56
Additional signal info	7.6.9.10	LSA Information Withdraw	7.6.3.58
Additional SM Delivery Outcome	7.6.8.11	MC Information	7.6.4.48
Age Indicator	7.6.3.72	MC Subscription Data	7.6.4.47
Alert Reason	7.6.8.8	Mobile Not Reachable Reason	7.6.3.51
Alert Reason Indicator	7.6.8.10	Modification request for CSI	7.6.3.81
Alerting Pattern	7.6.3.44	Modification request for SS Information	7.6.3.82
All GPRS Data	7.6.3.53	More Messages To Send	7.6.8.7
All Information Sent	7.6.1.5	MS ISDN	7.6.2.17
Allowed Services	7.6.3.93		
AN-apdu	7.6.9.1	MSC number	7.6.2.11
APN	7.6.2.42	MSIsdn-Alert	7.6.2.29
Authentication set list	7.6.7.1	Multicall Bearer Information	7.6.2.52
B-subscriber Address	7.6.2.36	Multiple Bearer Requested	7.6.2.53
B subscriber Number	7.6.2.48	Multiple Bearer Not Supported	7.6.2.54
B subscriber subaddress	7.6.2.49	MWD status	7.6.8.3
Basic Service Group	7.6.4.40	NbrUser	7.6.4.45
Bearer service	7.6.4.38	Network Access Mode	7.6.3.50
Bearer Service 2	7.6.4.38A		
BSSMAP Service Handover	7.6.6.5	Network node number	7.6.2.43
BSSMAP Service Handover List	7.6.6.5A	Network resources	7.6.10.1
Call Barring Data	7.6.3.83	Network signal information	7.6.9.8
		Network signal information 2	7.6.9.8A
Call barring feature	7.6.4.19	New password	7.6.4.20
Call barring information	7.6.4.18	No reply condition timer	7.6.4.7
Call barring support indicator	7.6.3.92	North American Equal Accesspreferred Carrier Id	7.6.2.34
Call Direction	7.6.5.8	Number Portability Status	7.6.5.14
Call Forwarding Data	7.6.3.84	ODB Data	7.6.3.85
Call Info	7.6.9.9	ODB General Data	7.6.3.9
Call reference	7.6.5.1	ODB HPLMN Specific Data	7.6.3.10
Call Termination Indicator	7.6.3.67	OMC Id	7.6.2.18
Called number	7.6.2.24	Originally dialled number	7.6.2.26

Calling number	7.6.2.25
CAMEL Subscription Info	7.6.3.78
CAMEL Subscription Info Withdraw	7.6.3.38
Cancellation Type	7.6.3.52
Category	7.6.3.1
CCBS Feature	7.6.5.8
CCBS Request State	7.6.4.49
Channel Type	7.6.5.9
Chosen Channel	7.6.5.10
Chosen Radio Resource Information	7.6.6.10B
Ciphering mode	7.6.7.7
Cksn	7.6.7.5
CLI Restriction	7.6.4.5
CM service type	7.6.9.2
Complete Data List Included	7.6.3.54
CS Allocation Retention priority	7.6.3.87
CS LCS Not Supported by UE	7.6.11.9
CUG feature	7.6.3.26
CUG index	7.6.3.25
CUG info	7.6.3.22
CUG interlock	7.6.3.24
CUG Outgoing Access indicator	7.6.3.8
CUG subscription	7.6.3.23
CUG Subscription Flag	7.6.3.37
Current location area Id	7.6.2.6
Current password	7.6.4.21
Deferred MT-LR Data	7.6.11.3
Deferred MT-LR Response Indicator	7.6.11.2
eMLPP Information	7.6.4.41
Encryption Information	7.6.6.9
Equipment status	7.6.3.2
Extensible Basic Service Group	7.6.3.5
Extensible Bearer service	7.6.3.3
Extensible Call barring feature	7.6.3.21
Extensible Call barring information	7.6.3.20
Extensible Call barring information for CSE	7.6.3.79
Extensible Forwarding feature	7.6.3.16
Extensible Forwarding info	7.6.3.15
Extensible Forwarding information for CSE	7.6.3.80
Extensible Forwarding Options	7.6.3.18
Extensible No reply condition timer	7.6.3.19
Extensible QoS-Subscribed	7.6.3.74
Extensible SS-Data	7.6.3.29
Extensible SS-Info	7.6.3.14
Extensible SS-Status	7.6.3.17
Extensible Teleservice	7.6.3.4
External Signal Information	7.6.9.4
Failure Cause	7.6.7.9
Forwarded-to number	7.6.2.22
Forwarded-to subaddress	7.6.2.23
Forwarding feature	7.6.4.16
Forwarding information	7.6.4.15
Forwarding Options	7.6.4.6
GERAN Classmark	7.6.6.4
GGSN address	7.6.2.40
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

Originating entity number	7.6.2.10
Override Category	7.6.4.4
P-TMSI	7.6.2.47
PDP-Address	7.6.2.45
PDP-Context identifier	7.6.3.55
PDP-Type	7.6.2.44
Positioning Data	7.6.11.11A
Pre-paging supported	7.6.5.15
Previous location area Id	7.6.2.4
Protocol Id	7.6.9.7
Provider error	7.6.1.3
PS LCS Not Supported by UE	7.6.11.10
QoS-Subscribed	7.6.3.47
Radio Resource Information	7.6.6.10
Radio Resource List	7.6.6.10A
RANAP Service Handover	7.6.6.6
Rand	7.6.7.2
LCS-Reference Number	7.6.11.23
Regional Subscription Data	7.6.3.11
Regional Subscription Response	7.6.3.12
Relocation Number List	7.6.2.19A
Requested Info	7.6.3.31
Requested Subscription Info	7.6.3.86
Roaming number	7.6.2.19
Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Roaming Restriction Due To Unsupported Feature	7.6.3.13
Current Security Context	7.6.7.8
Selected RAB ID	7.6.2.56
Service centre address	7.6.2.27
Serving Cell Id	7.6.2.37
SGSN address	7.6.2.39
SGSN CAMEL Subscription Info	7.6.3.75
SGSN number	7.6.2.38
SIWF Number	7.6.2.35
SoLSA Support Indicator	7.6.3.57
SM Delivery Outcome	7.6.8.6
SM-RP-DA	7.6.8.1
SM-RP-MTI	7.6.8.16
SM-RP-OA	7.6.8.2
SM-RP-PRI	7.6.8.5
SM-RP-SMEA	7.6.8.17
SM-RP-UI	7.6.8.4
Sres	7.6.7.3
SS-Code	7.6.4.1
SS-Code 2	7.6.4.1A
SS-Data	7.6.4.3
SS-Event	7.6.4.42
SS-Event-Data	7.6.4.43
SS-Info	7.6.4.24
SS-Status	7.6.4.2
Stored location area Id	7.6.2.5
Subscriber State	7.6.3.30
Subscriber Status	7.6.3.7
Super-Charger Supported in HLR	7.6.3.70
Super-Charger Supported in Serving Network Entity	7.6.3.71
Offered Camel4 CSIs	7.6.3.36D
Offered Camel4 CSIs in interrogating node	7.6.3.36E
Offered Camel4 CSIs in VMSC	7.6.3.36F
Offered Camel4 CSIs in VLR	7.6.3.36B
Offered Camel4 CSIs in SGSN	7.6.3.36C
Offered Camel4 Functionalities	7.6.3.36G
Supported CAMEL Phases	7.6.3.36H

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 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
Integrity Protection Information	7.6.6.8
Inter CUG options	7.6.3.27
Intra CUG restrictions	7.6.3.28
Invoke Id	7.6.1.1
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 Information	7.6.3.60
LCS Service Type Id	7.6.11.15
Kc	7.6.7.4
Linked Id	7.6.1.2
LMSI	7.6.2.16
Location Information	7.6.2.30
Supported CAMEL Phases in VLR	7.6.3.36
Supported CAMEL Phases in SGSN	7.6.3.36A
Supported CAMEL Phases in interrogating node	7.6.3.36I
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
Teleservice 2	7.6.4.39A
TMSI	7.6.2.2
Trace reference	7.6.10.2
Trace type	7.6.10.3
UESBI	7.6.6.20
Unavailability Cause	7.6.3.94
User error	7.6.1.4
USSD Data Coding Scheme	7.6.4.36
USSD String	7.6.4.37
UU Data	7.6.5.12
UUS CF Interaction	7.6.5.13
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

7.6.3 Subscriber management parameters

...

7.6.3.90 Suppress Incoming Call Barring

This parameter is used to suppress the invocation of Incoming Call Barrings.

7.6.3.91 gsmSCF Initiated Call

This parameter is used to indicate that the call was initiated by the gsmSCF.

7.6.3.92 Call barring support indicator

This parameter is used to indicate that the SGSN supports the call barring services for SMS.

7.6.3.93 Allowed Services

This parameter is used by the HLR to indicate which service is available for a call when two services have been requested, for the SCUDIF feature described in 3GPP TS 23.172 [126].

7.6.3.94 Unavailability Cause

This parameter is used to indicate the reason for the unavailability of one of the services as indicated by the Allowed Services IE (see 7.6.3.93) when two services have been requested, for the SCUDIF feature described in 3GPP TS 23.172 [126].

Next modified section

7.6.4 Supplementary services parameters

7.6.4.1 SS-Code

This parameter may refer to one supplementary service or a set of supplementary services as defined in 3GPP TS 22.004. For MAP this includes:

- Calling Line Identification Presentation service (CLIP);
- Calling Line Identification Restriction service (CLIR);
- Connected Line Identification Presentation service (COLP);
- Connected Line Identification Restriction service (COLR);
- Calling Name Presentation (CNAP);
- All Call Forwarding services, including Call Deflection;
- Call Waiting (CW);
- Call Hold (HOLD);
- Multi-Party service (MPTY);
- Closed User Group (CUG);
- All Charging services;
- All Call Restriction services;
- Explicit Call Transfer service (ECT);
- enhanced Multi-Level Precedence and Pre-emption service (eMLPP);
- Completion of Calls to Busy Subscriber, originating side (CCBS-A);
- Completion of Calls to Busy Subscriber, destination side (CCBS-B);
- All LCS privacy exceptions (see clause 7.6.4.44);
- Mobile Originating Location Request (MO-LR) (see clause 7.6.4.45);
- Multicall (MC).

7.6.4.1A SS-Code 2

This parameter is used to refer to one or a set of supplementary services (as 7.6.4.1 "SS-Code") related to Network Signal Info 2 for SCUDIF calls (see 3GPP TS 23.172 [126]).

7.6.4.2 SS-Status

This parameter refers to the state information of individual supplementary services as defined in 3GPP TS 23.011.

7.6.4.3 SS-Data

This parameter refers to the necessary set of information required in order to characterise one supplementary service:

- SS-Code (see clause 7.6.4.1);
- SS-Status (if applicable) (see clause 7.6.4.2);
- Override subscription option (see clause 7.6.4.4);
- CLI Restriction (see clause 7.6.4.5);
- Basic Service Group Code (see clause 7.6.4.40).

7.6.4.4 Override Category

This parameter refers to the subscription option Override Category attached to a supplementary service. It can take the following two values:

- Enabled;
- Disabled.

7.6.4.5 CLI Restriction Option

This parameter refers to the subscription option Restriction mode attached to the CLIR supplementary service. It can take the following three values:

- Permanent;
- Temporary (Default Restricted);
- Temporary (Default Allowed).

7.6.4.6 Forwarding Options

This parameter refers to a forwarding option attached to a supplementary service. It can take one of the following values:

- notification to forwarding party (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- notification to calling party (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- redirecting presentation (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- Forwarding reason (see 3GPP TS 22.082 [10] for the meaning of this parameter).

7.6.4.7 No reply condition timer

This parameter refers to the no reply condition timer for call forwarding on no reply.

7.6.4.8 - 7.6.4.14 Void

7.6.4.15 Forwarding information

This parameter represents the information related to each call forwarding service:

- the SS-Code of the relevant call forwarding service (see clause 7.6.4.1);

- if required, a list of forwarding feature parameters (see clause 7.6.4.16).

  the list may contain one item per Basic Service Group.

7.6.4.16 Forwarding feature

This parameter applies to each combination of call forwarding service and Basic Service Group and contains the following information, as required:

- Basic Service Group (see clause 7.6.4.40);
- SS-Status (see clause 7.6.4.2);
- forwarded-to number (see clause 7.6.2.22);
- forwarded-to subaddress (see clause 7.6.2.23);
- forwarding options (see clause 7.6.4.6);
- no reply condition timer (see clause 7.6.4.7);
- long forwarded-to number (see clause 7.6.2.22A).

If a number is required to define the forwarded-to destination then:

- If the VLR supports Long Forwarded-to Numbers then the long forwarded-to number shall be present and the forwarded-to number shall be absent.
- If the VLR does not support Long Forwarded-to Numbers then the forwarded-to number shall be present and the long forwarded-to number shall be absent.

7.6.4.17 Void

7.6.4.18 Call barring information

This parameter contains for each call barring service:

- SS-Code (see clause 7.6.4.1);
- a list of call barring feature parameters (see clause 7.6.4.19).

  The list may contain one item per Basic Service Group.

7.6.4.19 Call barring feature

This parameter gives the status of call barring services as applicable to each Basic Service Group. The parameter contains the following information:

- Basic Service Group (see clause 7.6.4.40);
- SS-Status (see clause 7.6.4.2).

7.6.4.20 New password

This parameter refers to the password which the subscriber just registered in the network.

This parameter refers to a password used by the subscriber for supplementary service control.

7.6.4.21 Current password

This parameter refers to a password used by the subscriber for supplementary service control.

7.6.4.22 Guidance information

This parameter refers to guidance information given to a subscriber who is requested to provide a password. One of the following information may be given:

- "enter password";

  this information is used for checking of the old password;

- "enter new password";

  this information is used during password registration for the request of the first new password;

- "enter new password again";

  this information is used during password registration for the request of the new password again for verification.

7.6.4.23 Void

7.6.4.24 SS-Info

This parameter refers to all the information related to a supplementary service and is a choice between:

- forwarding information (see clause 7.6.4.15);
- call barring information (see clause 7.6.4.18);
- CUG info (see clause 7.6.4.8);
- SS-Data (see clause 7.6.4.3).
- eMLPP information (see clause 7.6.4.41).

7.6.4.25 - 7.6.4.35 Void

7.6.4.36 USSD Data Coding Scheme

This parameter contains the information of the alphabet and the language used for the unstructured information in an Unstructured Supplementary Service Data operation. The coding of this parameter is according to the Cell Broadcast Data Coding Scheme as specified in 3GPP TS 23.038 [25].

7.6.4.37 USSD String

This parameter contains a string of unstructured information in an Unstructured Supplementary Service Data operation. The string is sent either by the mobile user or the network. The contents of a string sent by the MS are interpreted by the network as specified in 3GPP TS 22.090 [16].

7.6.4.38 Bearer service

This parameter may refer to a single bearer service, a set of bearer services or to all bearer services as defined in 3GPP TS 22.002 [3]. This parameter is used only for supplementary service management.

7,6,4.38A Bearer Service 2

This parameter is used to indicate the bearer service or set of bearer services (as 7.6.4.38 "Bearer service") related to Network Signal Info 2 for SCUDIF calls (see 3GPP TS 23.172 [126]).

7.6.4.39 Teleservice

This parameter may refer to a single teleservice, a set of teleservices or to all teleservices as defined in 3GPP TS 22.003 [4]. This parameter is used only for supplementary service management.

7.6.4.39A Teleservice 2

This parameter is used to indicate the teleservice or set of teleservices (as 7.6.4.39 "Teleservice") related to Network Signal Info 2 for SCUDIF calls (see 3GPP TS 23.172 [126]).

7.6.4.40 Basic Service Group

This parameter refers to the Basic Service Group either as a bearer service (see clause 7.6.4.38) or a teleservice (see clause 7.6.4.39). This parameter is used only for supplementary service management. The null value (i.e. neither bearer service nor teleservice) is used to denote the group containing all bearer services and all teleservices.

7.6.4.41 eMLPP information

This parameter contains two parameters which are associated with the eMLPP service. The following two parameters are included:

- maximum entitled priority:
  - indicates the highest priority level the subscriber is allowed to apply for an outgoing call set-up;
- default priority:
  - defines the priority level which shall be assigned to a call if no explicit priority is indicated during call set-up.

7.6.4.42 SS-event

This parameter indicates the Supplementary Service for which an invocation notification is sent towards the gsmSCF. It can indicate one of the following services:

- Explicit Call Transfer (ECT)
- Call Deflection (CD)
- Multi-Party call (MPTY)
- Completion of Calls to Busy Subscriber (CCBS)

7.6.4.43 SS-event data

This parameter contains additional information related to Supplementary Service invocation. Depending on the service invoked it can contain the following information:

ECT A list with all Called Party Numbers involved.

CD The called Party number involved.

7.6.4.44 LCS Privacy Exceptions

Distinct SS codes are assigned to the following classes of LCS client in a target MS subscriber's privacy exception list.

- Universal Class;
- Call/session related value added class;
- Call/session unrelated value added class;
- PLMN operator class.
- Service type class.

7.6.4.45 Mobile Originating Location Request (MO-LR)

Distinct SS codes are assigned to the following classes of MO-LR:

- Basic Self Location;
- Autonomous Self Location;
- Transfer to Third Party.

7.6.4.46 NbrUser

This parameter indicates the maximum number of parallel bearers that may be used as defined by the user at registration of the MC SS.

7.6.4.47 MC Subscription Data

This parameter contains two parameters which are associated with the MC service. The following two parameters are included:

- NbrUser:

  indicates the maximum number of parallel bearers that may be used as defined by the user at registration of the MC SS

- NbrSB:

  indicates the maximum number of parallel bearers that may be used as defined by the user's subscription.

7.6.4.48 MC Information

This parameter contains three parameters which are associated with the MC service. The following parameters are included:

- NbrSB;
- NbrUser;
- NbrSN.

Definitions of these parameters are provided in 3GPP TS 23.135.

7.6.4.49 CCBS Request State

This parameter indicates the current state of the CCBS request. It can take one of seven values:

- request;
- recall;
- active;
- completed;
- suspended;
- frozen;
- deleted.

Next modified section

7.6.9 Access and signalling system related parameters

7.6.9.1 AN-apdu

This parameter includes one or two concatenated complete 3GPP TS 25.413 or 3GPP TS 48.006 [48] messages, as described in 3GPP TS 23.009 and 3GPP TS 29.010. The access network protocol ID indicates that the message or messages are according to either 3GPP TS 48.006 [48] or 3GPP TS 25.413. For the coding of the messages see 3GPP TS 25.413, 3GPP TS 48.006 [48] and 3GPP TS 48.008 [49].

7.6.9.2 CM service type

This parameter identifies the service category being requested by the subscriber:

- mobile originating call;
- emergency call establishment;
- short message service;
- mobile originating call re-establishment;
- mobile terminating call;
- SS request;
- Voice group call set-up;
- Voice broadcast set-up.

7.6.9.3 Access connection status

This parameter represents the following access connection status information:

- RR-connection status (established/not established);
- ciphering mode (on/off);
- authentication status (authenticated/not authenticated).

7.6.9.4 External Signal Information

This parameter contains concatenated information elements (including tag and length) which are defined by a common protocol version, preceded by the associated protocol ID. It is used to transport information of the indicated protocol via MAP interfaces.

7.6.9.5 Access signalling information

This parameter refers to any set of information elements imported from 3GPP TS 24.008 [35].

7.6.9.6 Location update type

This parameter refers to the location update type (normal, periodic or IMSI attach) contained in the 3GPP TS 24.008 [35] LOCATION REGISTRATION REQUEST message.

7.6.9.7 Protocol ID

This parameter refers to the protocol to which the coding of the content of the associated External Signal Information conforms.

The following values are defined:

- 04.08;
- 08.06;
- ETS 300 102-1.

This value indicates the protocol defined by ETS 300 102-1 (EDSS1).

7.6.9.8 Network signal information

This parameter is transported as external signal information. The protocol ID shall be set to "ETS 300 102-1".

The network signal information may include the following information elements as defined in 3GPP TS 29.007 [56]:

- ISDN BC; the tag and length are defined by ETS 300 102-1.

  For the content, see 3GPP TS 29.007 [56].

- HLC; the tag and length are defined by ETS 300 102-1.

  For the content, see 3GPP TS 29.007 [56].

- LLC; the tag and length are defined by ETS 300 102-1.

  For the content, see 3GPP TS 29.007 [56].

They are contained in the Signal Information parameter according to figure 7.6/1 (irrespective of the order):

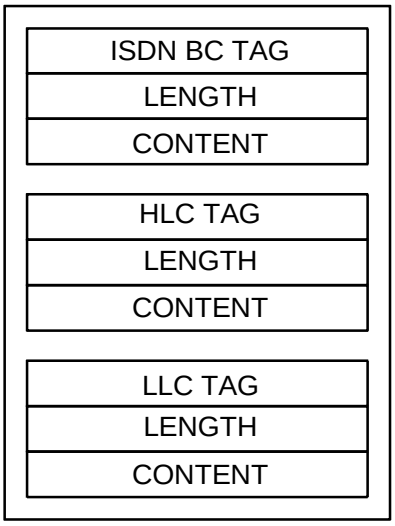


Figure 7.6/1: Network signal information parameter

7.6.9.8A Network signal information 2

This parameter is transported as additional external signal information for SCUDIF calls, described in 3GPP TS 23.172 [126]. The protocol ID and possibly included information elements are identical to Network Signal Information, defined in 7.6.9.8, "Network signal information".

7.6.9.9 Call Info

This parameter is transported as external signal information. The protocol ID shall be set to "3GPP TS 24.008 [35]".

The Call Info includes the set of information elements from the original SETUP message and is imported from 3GPP TS 24.008 [35].

7.6.9.10 Additional signal info

This parameter is transported as external signal information. The protocol ID shall be set to "ETS 300 356".

The additional signal information may include the following information elements:

- Calling Party Number as defined by ETS 300 356.
- Generic Number as defined by ETS 300 356.

They are contained in the Signal Information parameter according to figure 7.6/2 (irrespective of the order):

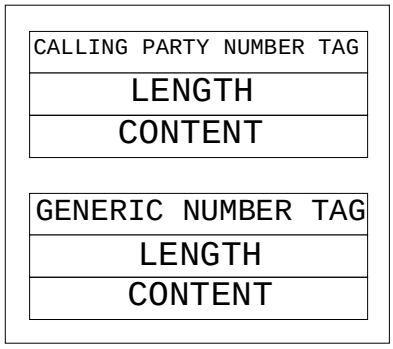


Figure 7.6/2: Additional signal information parameter

Next modified section

10.1 MAP_SEND_ROUTING_INFORMATION service

10.1.1 Definition

This service is used between the Gateway MSC and the HLR. The service is invoked by the Gateway MSC to perform the interrogation of the HLR in order to route a call towards the called MS.

This is a confirmed service using the primitives listed in table 10.1/1.

This service is also used between the GMSC and the NPLR and between the gsmSCF and the HLR.

10.1.2 Service primitives

Table 10.1/1: MAP_SEND_ROUTING_INFORMATION parameters

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Interrogation Type	M	M(=)		
GMSC or gsmSCF Address	M	M(=)		
MSISDN	M	M(=)	C	C(=)
OR Interrogation	C	C(=)		
OR Capability	C	C(=)		
CUG Interlock	C	C(=)	C	C(=)
CUG Outgoing Access	C	C(=)	C	C(=)
Number of Forwarding	C	C(=)		
Network Signal Info	C	C(=)		
Supported CAMEL Phases	C	C(=)	C	C(=)
Suppress T-CSI	C	C(=)		
Offered CAMEL 4 CSIs	C	C(=)		
Suppression of Announcement	C	C(=)		
Call Reference Number	C	C(=)		

Parameter name	Request	Indication	Response	Confirm
Forwarding Reason	C	C(=)		
Basic Service Group	C	C(=)		
Alerting Pattern	C	C(=)		
CCBS Call	C	C(=)		
Supported CCBS Phase	C	C(=)		
Additional Signal Info	C	C(=)		
IST Support Indicator	C	C(=)		
Pre-paging supported	C	C(=)		
Call Diversion Treatment Indicator	C	C(=)		
Long FTN Supported	C	C(=)		
Suppress VT-CSI	C	C(=)		
Suppress Incoming Call Barring	C	C(=)		
gsmSCF Initiated Call	C	C(=)		
Network Signal Info 2	C	C(=)		
IMSI			C	C(=)
MSRN			C	C(=)
Forwarding Data			C	C(=)
Forwarding Interrogation Required			C	C(=)
VMSC address			C	C(=)
GMSC Camel Subscription Info			C	C(=)
Location Information			C	C(=)
Subscriber State			C	C(=)
Basic Service Code			C	C(=)
CUG Subscription Flag			C	C(=)
North American Equal Access preferred Carrier Id			U	C(=)
User error			C	C(=)
SS-List			U	C(=)
CCBS Target			C	C(=)
Keep CCBS Call Indicator			C	C(=)
IST Alert Timer			C	C(=)
Number Portability Status			U	C(=)
Supported CAMEL Phases in VMSC			C	
Offered CAMEL 4 CSIs in VMSC			C	C(=)
MSRN 2			C	C(=)
Forwarding Data 2			C	C(=)
SS-List 2			C	C(=)
Basic Service Code 2			C	C(=)
Allowed Services			C	C(=)
Unavailability Cause			C	C(=)
Provider error				O

10.1.3 Parameter use

See clause 7.6 for a definition of the parameters used in addition to the following. Note that:

- a conditional parameter whose use is defined only in 3GPP TS 23.078 shall be absent if the sending entity does not support CAMEL;
- a conditional parameter whose use is defined only in 3GPP TS 23.079 [99] shall be absent if the sending entity does not support optimal routeing;
- a conditional parameter whose use is defined only in 3GPP TS 23.078 & 3GPP TS 23.079 [99] shall be absent if the sending entity supports neither CAMEL nor optimal routeing.

Interrogation Type

See 3GPP TS 23.079 [99] for the use of this parameter.

GMSC or gsmSCF address

The E.164 address of the GMSC or the gsmSCF. This parameter contains the gsmSCF address if the gsmSCF iniated call parameter is present, otherwise it is the GMSC address.

MSISDN

This is the Mobile Subscriber ISDN number assigned to the called subscriber. In the Request & Indication it is the number received by the GMSC in the ISUP IAM. If the call is to be forwarded and the HLR supports determination of the redirecting number, the HLR inserts the basic MSISDN in the Response.

See 3GPP TS 23.066 [108] for the use of this parameter and the conditions for its presence in the response.

OR Interrogation

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

OR Capability

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

CUG Interlock

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

CUG Outgoing Access

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

Number of Forwarding

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

Network Signal Info

See 3GPP TS 23.018 [97] for the conditions for the presence of the components of this parameter.

Supported CAMEL Phases

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

T-CSI Suppression

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Offered CAMEL 4 CSIs

This parameter indicates the CAMEL phase 4 CSIs offered in the GMSC/VLR (see clause 7.6.3.36D).

Suppression Of Announcement

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Call Reference Number

The use of this parameter and the conditions for its presence are specified in 3GPP TS 23.078 [98] and 3GPP TS 23.079 [99].

Forwarding Reason

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Basic Service Group

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Alerting Pattern

See 3GPP TS 23.018 [97] and 3GPP TS 23.078 [98] for the use of this parameter and the conditions for its presence.

CCBS Call

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

Supported CCBS Phase

This parameter indicates by its presence that CCBS is supported and the phase of CCBS which is supported.

Additional Signal Info

See 3GPP TS 23.081 [27] for the conditions for the presence of the components of this parameter.

IST Support Indicator

This parameter is used to indicate to the HLR that the GMSC supports basic IST functionality, that is, the GMSC is able to terminate the subscriber call activity that originated the IST Alert when it receives the IST Alert response indicating that the call(s) shall be terminated. If this parameter is not included in the Send Routing Information indication and the subscriber is marked as an IST subscriber, then the HLR may limit the service for the call (by barring the incoming call if it is not subject to forwarding, or suppressing Call Forwarding from the GMSC), or allow the call assuming the associated risk of not having the basic IST mechanism available.

This parameter can also indicate that the GMSC supports the IST Command, including the ability to terminate all calls being carried for the identified subscriber by using the IMSI as a key. If this additional capability is not included in the Send Routing Information indication and the subscriber is marked as an IST subscriber, then the HLR may limit the service for the subscriber (by barring the incoming calls if they are not subject to forwarding, or suppressing Call Forwarding from the GMSC), or allow the incoming calls assuming the associated risk of not having the IST Command mechanism available.

Pre-paging supported

See 3GPP TS 23.018 for the use of this parameter and the conditions for its presence.

Call Diversion Treatment Indicator

This parameter indicates whether or not call diversion is allowed.

Network Signal Info 2

See 3GPP TS 23.172 [126] for the conditions for the presence of the components of this parameter.

IMSI

See 3GPP TS 23.018 [97] and 3GPP TS 23.066 [108] for the use of this parameter and the conditions for its presence.

MSRN

See 3GPP TS 23.018 [97], 3GPP TS 23.066 [108] and 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence. If the NPLR returns only the MSISDN-number without Routeing Number to the GMSC, the MSISDN-number shall be returned as MSRN.

Forwarding Data

This parameter includes a number to define the forwarded-to destination, the forwarding reason and the forwarding options Notification to calling party and Redirecting presentation, and can include the forwarded-to subaddress. See 3GPP TS 23.018 [97] and 3GPP TS 23.079 [99] for the conditions for the presence of its components.

Forwarding Interrogation Required

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Long FTN Supported

This parameter indicates that the GMSC supports Long Forwarded-to Numbers.

Suppress VT-CSI

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Suppress Incoming Call Barring

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

gsmSCF Initiated Call

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

VMSC address

See 3GPP TS 23.079 [99] and 3GPP TS 23.078 [98] for the use of this parameter and the conditions for its presence.

GMSC CAMEL Subscription Info

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Location Information

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Subscriber State

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

CUG Subscription Flag

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

North American Equal Access preferred Carrier Id

This parameter is returned to indicate the preferred carrier identity to be used to set-up the call (i.e. forwarding the call or establishing the roaming leg).

SS-List

This parameter includes SS-codes and will be returned as an operator option. The HLR shall not send PLMN-specific SS-codes across PLMN boundaries. However if the GMSC receives PLMN-specific SS-codes from a foreign PLMN's HLR the GMSC may ignore it. If the GMSC attempts to process the PLMN- specific SS- codes, this may lead to unpredictable behaviour but the GMSC shall continue call processing.

Basic Service Code

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

If the CAMEL service is not involved, this parameter includes the basic service code and will be returned as an operator option. The HLR shall not send a PLMN-specific Basic Service Code across PLMN boundaries. However if the GMSC receives a PLMN-specific Basic Service Code from a foreign PLMN's HLR the GMSC may ignore it. If the GMSC attempts to process the PLMN specific Basic Service codes, this may lead to unpredictable behaviour but the GMSC shall continue call processing.

CCBS Target

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

Keep CCBS Call Indicator

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

IST Alert Timer

It includes the IST Alert timer value that must be used to inform the HLR about the call activities that the subscriber performs. This parameter is only sent to the GMSC in response to a Send Routing Information request which indicates the the GMSC supports IST.

Number Portability Status

This parameter indicates the number portability status of the subscriber. This parameter may be present if the sender of SRIack is NPLR.

Supported CAMEL Phases in VMSC

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Offered CAMEL 4 CSIs in VMSC

This parameter is defined in clause 7.6.3.36F.

MSRN 2

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

Forwarding Data 2

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

SS-List 2

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

Basic Service Code 2

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

Allowed Services

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

Unavailability Cause

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.172 [126].

User error

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

- Unknown Subscriber;

  The diagnostic for the Unknown Subscriber error may indicate “NPDB Mismatch”.

- Number changed;

- Call Barred;

  This error will indicate that either incoming calls are barred for this MS or that calls are barred due to Operator Determined Barring (see 3GPP TS 22.041 [8] for a definition of this network feature);

- CUG Reject;

  The value of this error cause will indicate the reason for CUG Reject;

- Bearer Service Not Provisioned;

- Teleservice Not Provisioned;

  A subscription check has been performed and the call has not passed the check due to incompatibility with regard to the requested service. Depending on the nature of the incompatibility, either of these messages will be returned;

- Facility Not Supported;

- Absent Subscriber;

  This indicates that the location of the MS is not known (either the station is not registered and there is no location information available or the Provide Roaming Number procedure fails due to IMSI detached flag being set), or the GMSC requested forwarding information with a forwarding reason of not reachable, and the call forwarding on MS not reachable service is not active;

- Busy Subscriber;

  This indicates that Call Forwarding on Busy was not active for the specified basic service group when the GMSC requested forwarding information with a forwarding reason of busy;

The error may also indicate that the subscriber is busy due to an outstanding CCBS recall. In the error data it may then be specified that CCBS is possible for the busy encountered call;

- No Subscriber Reply;

  This indicates that Call Forwarding on No Reply was not active for the specified basic service group when the GMSC requested forwarding information with a forwarding reason of no reply;

- OR Not Allowed;

  This indicates that the HLR is not prepared to accept an OR interrogation from the GMSC, or that calls to the specified subscriber are not allowed to be optimally routed;

- Forwarding Violation;

- System Failure;

- Data Missing;

- Unexpected Data Value.

See clause 7.6 for a definition of these errors.

Provider error

These are defined in clause 7.6.

Next modified section

17.7.3 Call handling data types

```
MAP-CH-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CH-DataTypes (13) version8 (8)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS
   SendRoutingInfoArg,
   SendRoutingInfoRes,
   ProvideRoamingNumberArg,
   ProvideRoamingNumberRes,
   ResumeCallHandlingArg,
   ResumeCallHandlingRes,
   NumberOfForwarding,
   SuppressionOfAnnouncement,
   CallReferenceNumber,
   ProvideSIWFSNumberArg,
   ProvideSIWFSNumberRes,
   SIWFSSignallingModifyArg,
   SIWFSSignallingModifyRes,
   SetReportingStateArg,
   SetReportingStateRes,
   StatusReportArg,
   StatusReportRes,
   RemoteUserFreeArg,
   RemoteUserFreeRes,
   IST-AlertArg,
   IST-AlertRes,
   IST-CommandArg,
   IST-CommandRes
;

IMPORTS
   SubscriberInfo,
   SupportedCamelPhases,
   OfferedCamel4CSIs,
   CUG-Interlock,
   O-CSI,
   D-CSI,
   O-BcsmCamelTDPCriteriaList,
   T-BCSM-CAMEL-TDP-CriteriaList,
   IST-SupportIndicator,
   IST-AlertTimerValue,
   T-CSI


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

   ForwardingOptions,
   SS-List,
   CCBS-Feature
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SS-DataTypes (14) version8 (8)}

   ISDN-AddressString,
   ISDN-SubaddressString,
   FTN-AddressString,
   ExternalSignalInfo,
   Ext-ExternalSignalInfo,
   IMSI,
   LMSI,
   Ext-BasicServiceCode,
   AlertingPattern,
   NAEA-PreferredCI


FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version8 (8)}
```

```
   ExtensionContainer
FROM MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version8 (8)}
;
```

```
CUG-CheckInfo ::= SEQUENCE {
     cug-Interlock                  CUG-Interlock,
     cug-OutgoingAccess             NULL                          OPTIONAL,
     extensionContainer             ExtensionContainer            OPTIONAL,
     ...}
```

```
NumberOfForwarding ::= INTEGER (1..5)
```

```
SendRoutingInfoArg ::= SEQUENCE {
     msisdn                              [0] ISDN-AddressString,
     cug-CheckInfo                       [1] CUG-CheckInfo                 OPTIONAL,
     numberOfForwarding                  [2] NumberOfForwarding            OPTIONAL,
     interrogationType                   [3] InterrogationType,
     or-Interrogation                    [4] NULL                          OPTIONAL,
     or-Capability                       [5] OR-Phase                      OPTIONAL,
     gmsc-OrGsmSCF-Address               [6] ISDN-AddressString,
     callReferenceNumber                 [7] CallReferenceNumber           OPTIONAL,
     forwardingReason                    [8] ForwardingReason              OPTIONAL,
     basicServiceGroup                   [9] Ext-BasicServiceCode          OPTIONAL,
     networkSignalInfo                   [10] ExternalSignalInfo           OPTIONAL,
     camelInfo                           [11] CamelInfo                    OPTIONAL,
     suppressionOfAnnouncement           [12] SuppressionOfAnnouncement    OPTIONAL,
     extensionContainer                  [13] ExtensionContainer           OPTIONAL,
     ...,
     alertingPattern                     [14] AlertingPattern              OPTIONAL,
     ccbs-Call                           [15] NULL                          OPTIONAL,
     supportedCCBS-Phase                 [16]  SupportedCCBS-Phase         OPTIONAL,
     additionalSignalInfo                [17] Ext-ExternalSignalInfo       OPTIONAL,
     istSupportIndicator                 [18] IST-SupportIndicator         OPTIONAL,
     pre-pagingSupported                 [19] NULL                         OPTIONAL,
     callDiversionTreatmentIndicator     [20] CallDiversionTreatmentIndicator   OPTIONAL,
     longFTN-Supported                   [21] NULL                         OPTIONAL,
     suppress-VT-CSI                     [22] NULL                         OPTIONAL,
     suppressIncomingCallBarring         [23] NULL                         OPTIONAL,
     gsmSCF-InitiatedCall                [24] NULL                         OPTIONAL,
     networkSignalInfo2                  [xx] ExternalSignalInfo           OPTIONAL
      }
```

```
SuppressionOfAnnouncement ::= NULL
```

```
InterrogationType ::= ENUMERATED {
     basicCall  (0),
     forwarding  (1)}
```

```
OR-Phase ::= INTEGER (1..127)
```

```
CallReferenceNumber ::= OCTET STRING (SIZE (1..8))
```

```
ForwardingReason ::= ENUMERATED {
     notReachable  (0),
     busy  (1),
     noReply  (2)}
```

```
SupportedCCBS-Phase ::= INTEGER (1..127)
-- exception handling:
-- Only value 1 is used.
-- Values in the ranges 2-127 are reserved for future use.
-- If received values 2-127 shall be mapped on to value 1.
```

```
CallDiversionTreatmentIndicator ::= OCTET STRING (SIZE(1))
--   callDiversionAllowed (xxxx xx01)
--   callDiversionNotAllowed (xxxx xx10)
--   network default is call diversion allowed
```

```
SendRoutingInfoRes ::= [3] SEQUENCE {
    imsi                                [9] IMSI                            OPTIONAL,
    -- IMSI must be present if SendRoutingInfoRes is not segmented.
    -- If the TC-Result-NL segmentation option is taken the IMSI must be
    -- present in one segmented transmission of SendRoutingInfoRes.
    extendedRoutingInfo                 ExtendedRoutingInfo                 OPTIONAL,
    cug-CheckInfo                       [3] CUG-CheckInfo                   OPTIONAL,
    cugSubscriptionFlag                 [6] NULL                            OPTIONAL,
    subscriberInfo                      [7] SubscriberInfo                  OPTIONAL,
    ss-List                             [1] SS-List                         OPTIONAL,
    basicService                        [5] Ext-BasicServiceCode            OPTIONAL,
    forwardingInterrogationRequired     [4] NULL                            OPTIONAL,
    vmsc-Address                        [2] ISDN-AddressString              OPTIONAL,
    extensionContainer                  [0] ExtensionContainer              OPTIONAL,
    ... ,
    naea-PreferredCI                    [10] NAEA-PreferredCI               OPTIONAL,
    -- naea-PreferredCI is included at the discretion of the HLR operator.
    ccbs-Indicators                     [11] CCBS-Indicators                OPTIONAL,
    msisdn                              [12] ISDN-AddressString             OPTIONAL,
    numberPortabilityStatus             [13] NumberPortabilityStatus        OPTIONAL,
    istAlertTimer                       [14] IST-AlertTimerValue            OPTIONAL,
    supportedCamelPhasesInVMSC          [15] SupportedCamelPhases           OPTIONAL,
    offeredCamel4CSIsInVMSC             [16] OfferedCamel4CSIs              OPTIONAL,
    routingInfo2                        [xx] RoutingInfo                    OPTIONAL,
    ss-List2                            [xx] SS-List                        OPTIONAL,
    basicService2                       [xx] Ext-BasicServiceCode           OPTIONAL,
    allowedServices                     [xx] AllowedServices                OPTIONAL,
    unavailabilityCause                 [xx] UnavailabilityCause            OPTIONAL
    }
```

```
AllowedServices ::= BIT STRING {
    firstServiceAllowed                 (0),
    secondServiceAllowed                (1) } (SIZE (2..8))
    --   firstService is the service indicated in the networkSignalInfo
    --   secondService is the service indicated in the networkSignalInfo2
    --   Other bits than listed above shall be discarded
```

```
UnavailabilityCause ::= ENUMERATED {
    bearerServiceNotProvisioned         (1),
    teleserviceNotProvisioned           (2),
    absentSubscriber                    (3),
    busySubscriber                      (4),
    callBarred                          (5),
    ...}
    --   exception handling:
    --   Reception of other values than the ones listed shall result in the service
    --   being unavailable for that call.
```

```
NumberPortabilityStatus ::= ENUMERATED {
    notKnownToBePorted                  (0),
    ownNumberPortedOut                  (1),
    foreignNumberPortedToForeignNetwork (2),
    ...}
    --   exception handling:
    --  reception of other values than the ones listed the receiver shall ignore the
    --  whole NumberPortabilityStatus
```

End of the Document

3GPP TSG CN WG4 Meeting #20 **N4-031056**
Sophia Antipolis, FRANCE, 25th – 29th August 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **659** ⌘ **rev** **2** ⌘ Current version: **5.6.2** ⌘

*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:	⌘	Notification of the 2nd BSG in case of Late CF with OR
Source:	⌘	CN4
Work item code:	⌘	SCUDIF
Date:	⌘	25/08/2003
Category:	⌘	**F**
Release:	⌘	Rel-5

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

Use one of the following releases:
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:	⌘	In SCUDIF calls, there is a need to handle two basic services. For Late call forwarding with Optimal Routing, GMSC has no interface to obtain the second basic service which Call Forwarding applies for.
Summary of change:	⌘	"Basic service group 2" parameter is added to Resume Call Handling and Send Routing Information.
Consequences if not approved:	⌘	GMSC would not invoke Call Forwarding appropriately, even when Late Call Forwarding is activated for two basic services.

Clauses affected:	⌘	7.6, 10.1, 10.3, 17.7.3

Other specs affected: ⌘	Y	N		
	X		Other core specifications	⌘ 23.079CR026, 23.172CR015
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<<Fisrt 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 Information	7.6.3.60
		LCS Service Type Id	7.6.11.15
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
Basic Service Group 2	7.6.4.x		
Bearer service	7.6.4.38	MWD status	7.6.8.3
BSSMAP Service Handover	7.6.6.5		
BSSMAP Service Handover List	7.6.6.5A		
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
Call Info	7.6.9.9
Call reference	7.6.5.1
Call Termination Indicator	7.6.3.67
Called number	7.6.2.24
Calling number	7.6.2.25
CAMEL Subscription Info	7.6.3.78
CAMEL Subscription Info Withdraw	7.6.3.38
Cancellation Type	7.6.3.52
Category	7.6.3.1
CCBS Feature	7.6.5.8
CCBS Request State	7.6.4.49
Channel Type	7.6.5.9
Chosen Channel	7.6.5.10
Chosen Radio Resource Information	7.6.6.10B
Ciphering mode	7.6.7.7
Cksn	7.6.7.5
CLI Restriction	7.6.4.5
CM service type	7.6.9.2
Complete Data List Included	7.6.3.54
CS Allocation Retention priority	7.6.3.87
CS LCS Not Supported by UE	7.6.11.9
CUG feature	7.6.3.26
CUG index	7.6.3.25
CUG info	7.6.3.22
CUG interlock	7.6.3.24
CUG Outgoing Access indicator	7.6.3.8
CUG subscription	7.6.3.23
CUG Subscription Flag	7.6.3.37
Current location area Id	7.6.2.6
Current password	7.6.4.21
Deferred MT-LR Data	7.6.11.3
Deferred MT-LR Response Indicator	7.6.11.2
eMLPP Information	7.6.4.41
Encryption Information	7.6.6.9
Equipment status	7.6.3.2
Extensible Basic Service Group	7.6.3.5
Extensible Bearer service	7.6.3.3
Extensible Call barring feature	7.6.3.21
Extensible Call barring information	7.6.3.20
Extensible Call barring information for CSE	7.6.3.79
Extensible Forwarding feature	7.6.3.16
Extensible Forwarding info	7.6.3.15
Extensible Forwarding information for CSE	7.6.3.80
Extensible Forwarding Options	7.6.3.18
Extensible No reply condition timer	7.6.3.19
Extensible QoS-Subscribed	7.6.3.74
Extensible SS-Data	7.6.3.29
Extensible SS-Info	7.6.3.14
Extensible SS-Status	7.6.3.17
Extensible Teleservice	7.6.3.4
External Signal Information	7.6.9.4
Failure Cause	7.6.7.9
Forwarded-to number	7.6.2.22
Forwarded-to subaddress	7.6.2.23
Forwarding feature	7.6.4.16
Forwarding information	7.6.4.15
Forwarding Options	7.6.4.6
Network signal information	7.6.9.8
New password	7.6.4.20
No reply condition timer	7.6.4.7
North American Equal Access preferred Carrier Id	7.6.2.34
Number Portability Status	7.6.5.14
ODB Data	7.6.3.85
ODB General Data	7.6.3.9
ODB HPLMN Specific Data	7.6.3.10
OMC Id	7.6.2.18
Originally dialled number	7.6.2.26
Originating entity number	7.6.2.10
Override Category	7.6.4.4
P-TMSI	7.6.2.47
PDP-Address	7.6.2.45
PDP-Context identifier	7.6.3.55
PDP-Type	7.6.2.44
Pre-paging supported	7.6.5.15
Previous location area Id	7.6.2.4
Protocol Id	7.6.9.7
Provider error	7.6.1.3
PS LCS Not Supported by UE	7.6.11.10
QoS-Subscribed	7.6.3.47
Radio Resource Information	7.6.6.10
Radio Resource List	7.6.6.10A
RANAP Service Handover	7.6.6.6
Rand	7.6.7.2
LCS-Reference Number	7.6.11.23
Regional Subscription Data	7.6.3.11
Regional Subscription Response	7.6.3.12
Relocation Number List	7.6.2.19A
Requested Info	7.6.3.31
Requested Subscription Info	7.6.3.86
Roaming number	7.6.2.19
Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Roaming Restriction Due To Unsupported Feature	7.6.3.13
Current Security Context	7.6.7.8
Selected RAB ID	7.6.2.56
Service centre address	7.6.2.27
Serving Cell Id	7.6.2.37
SGSN address	7.6.2.39
SGSN CAMEL Subscription Info	7.6.3.75
SGSN number	7.6.2.38
SIWF Number	7.6.2.35
SoLSA Support Indicator	7.6.3.57
SM Delivery Outcome	7.6.8.6
SM-RP-DA	7.6.8.1
SM-RP-MTI	7.6.8.16
SM-RP-OA	7.6.8.2
SM-RP-PRI	7.6.8.5
SM-RP-SMEA	7.6.8.17
SM-RP-UI	7.6.8.4
Sres	7.6.7.3
SS-Code	7.6.4.1
SS-Data	7.6.4.3
SS-Event	7.6.4.42
SS-Event-Data	7.6.4.43
SS-Info	7.6.4.24
SS-Status	7.6.4.2
Stored location area Id	7.6.2.5
Subscriber State	7.6.3.30
Subscriber Status	7.6.3.7
Super-Charger Supported in HLR	7.6.3.70

GERAN Classmark	7.6.6.4
GGSN address	7.6.2.40
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 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
Integrity Protection Information	7.6.6.8
Inter CUG options	7.6.3.27
Intra CUG restrictions	7.6.3.28
Super-Charger Supported in Serving Network Entity	7.6.3.71
Offered Camel4 CSIs	7.6.3.36D
Offered Camel4 CSIs in GMSC	
Offered Camel4 CSIs in VMSC	7.6.3.36E
Offered Camel4 CSIs in VLR	
Offered Camel4 CSIs in SGSN	7.6.3.36F
Offered Camel4 Functionalities	
	7.6.3.36B
	7.6.3.36C
	7.6.3.36G
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
USSD String	7.6.4.37
UU Data	7.6.5.12
UUS CF Interaction	7.6.5.13
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>>

7.6.4 Supplementary services parameters

7.6.4.1 SS-Code

This parameter may refer to one supplementary service or a set of supplementary services as defined in 3GPP TS 22.004. For MAP this includes:

- Calling Line Identification Presentation service (CLIP);
- Calling Line Identification Restriction service (CLIR);

- Connected Line Identification Presentation service (COLP);
- Connected Line Identification Restriction service (COLR);
- Calling Name Presentation (CNAP);
- All Call Forwarding services, including Call Deflection;
- Call Waiting (CW);
- Call Hold (HOLD);
- Multi-Party service (MPTY);
- Closed User Group (CUG);
- All Charging services;
- All Call Restriction services;
- Explicit Call Transfer service (ECT);
- enhanced Multi-Level Precedence and Pre-emption service (eMLPP);
- Completion of Calls to Busy Subscriber, originating side (CCBS-A);
- Completion of Calls to Busy Subscriber, destination side (CCBS-B);
- All LCS privacy exceptions (see clause 7.6.4.44);
- Mobile Originating Location Request (MO-LR) (see clause 7.6.4.45);
- Multicall (MC).

7.6.4.2 SS-Status

This parameter refers to the state information of individual supplementary services as defined in 3GPP TS 23.011.

7.6.4.3 SS-Data

This parameter refers to the necessary set of information required in order to characterise one supplementary service:

- SS-Code (see clause 7.6.4.1);
- SS-Status (if applicable) (see clause 7.6.4.2);
- Override subscription option (see clause 7.6.4.4);
- CLI Restriction (see clause 7.6.4.5);
- Basic Service Group Code (see clause 7.6.4.40).

7.6.4.4 Override Category

This parameter refers to the subscription option Override Category attached to a supplementary service. It can take the following two values:

- Enabled;
- Disabled.

7.6.4.5 CLI Restriction Option

This parameter refers to the subscription option Restriction mode attached to the CLIR supplementary service. It can take the following three values:

- Permanent;
- Temporary (Default Restricted);
- Temporary (Default Allowed).

7.6.4.6 Forwarding Options

This parameter refers to a forwarding option attached to a supplementary service. It can take one of the following values:

- notification to forwarding party (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- notification to calling party (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- redirecting presentation (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- Forwarding reason (see 3GPP TS 22.082 [10] for the meaning of this parameter).

7.6.4.7 No reply condition timer

This parameter refers to the no reply condition timer for call forwarding on no reply.

7.6.4.8 - 7.6.4.14 Void

7.6.4.15 Forwarding information

This parameter represents the information related to each call forwarding service:

- the SS-Code of the relevant call forwarding service (see clause 7.6.4.1);
- if required, a list of forwarding feature parameters (see clause 7.6.4.16).

  the list may contain one item per Basic Service Group.

7.6.4.16 Forwarding feature

This parameter applies to each combination of call forwarding service and Basic Service Group and contains the following information, as required:

- Basic Service Group (see clause 7.6.4.40);
- SS-Status (see clause 7.6.4.2);
- forwarded-to number (see clause 7.6.2.22);
- forwarded-to subaddress (see clause 7.6.2.23);
- forwarding options (see clause 7.6.4.6);
- no reply condition timer (see clause 7.6.4.7);
- long forwarded-to number (see clause 7.6.2.22A).

If a number is required to define the forwarded-to destination then:

- If the VLR supports Long Forwarded-to Numbers then the long forwarded-to number shall be present and the forwarded-to number shall be absent.
- If the VLR does not support Long Forwarded-to Numbers then the forwarded-to number shall be present and the long forwarded-to number shall be absent.

7.6.4.17 Void

7.6.4.18 Call barring information

This parameter contains for each call barring service:

- SS-Code (see clause 7.6.4.1);
- a list of call barring feature parameters (see clause 7.6.4.19).

  The list may contain one item per Basic Service Group.

7.6.4.19 Call barring feature

This parameter gives the status of call barring services as applicable to each Basic Service Group. The parameter contains the following information:

- Basic Service Group (see clause 7.6.4.40);
- SS-Status (see clause 7.6.4.2).

7.6.4.20 New password

This parameter refers to the password which the subscriber just registered in the network.

This parameter refers to a password used by the subscriber for supplementary service control.

7.6.4.21 Current password

This parameter refers to a password used by the subscriber for supplementary service control.

7.6.4.22 Guidance information

This parameter refers to guidance information given to a subscriber who is requested to provide a password. One of the following information may be given:

- "enter password";

  this information is used for checking of the old password;

- "enter new password";

  this information is used during password registration for the request of the first new password;

- "enter new password again";

  this information is used during password registration for the request of the new password again for verification.

7.6.4.23 Void

7.6.4.24 SS-Info

This parameter refers to all the information related to a supplementary service and is a choice between:

- forwarding information (see clause 7.6.4.15);
- call barring information (see clause 7.6.4.18);
- CUG info (see clause 7.6.4.8);
- SS-Data (see clause 7.6.4.3).
- eMLPP information (see clause 7.6.4.41).

7.6.4.25 - 7.6.4.35 Void

7.6.4.36 USSD Data Coding Scheme

This parameter contains the information of the alphabet and the language used for the unstructured information in an Unstructured Supplementary Service Data operation. The coding of this parameter is according to the Cell Broadcast Data Coding Scheme as specified in 3GPP TS 23.038 [25].

7.6.4.37 USSD String

This parameter contains a string of unstructured information in an Unstructured Supplementary Service Data operation. The string is sent either by the mobile user or the network. The contents of a string sent by the MS are interpreted by the network as specified in 3GPP TS 22.090 [16].

7.6.4.38 Bearer service

This parameter may refer to a single bearer service, a set of bearer services or to all bearer services as defined in 3GPP TS 22.002 [3]. This parameter is used only for supplementary service management.

7.6.4.39 Teleservice

This parameter may refer to a single teleservice, a set of teleservices or to all teleservices as defined in 3GPP TS 22.003 [4]. This parameter is used only for supplementary service management.

7.6.4.40 Basic Service Group

This parameter refers to the Basic Service Group either as a bearer service (see clause 7.6.4.38) or a teleservice (see clause 7.6.4.39). This parameter is used only for supplementary service management. The null value (i.e. neither bearer service nor teleservice) is used to denote the group containing all bearer services and all teleservices.

7.6.4.41 eMLPP information

This parameter contains two parameters which are associated with the eMLPP service. The following two parameters are included:

- maximum entitled priority:
  - indicates the highest priority level the subscriber is allowed to apply for an outgoing call set-up;
- default priority:
  - defines the priority level which shall be assigned to a call if no explicit priority is indicated during call set-up.

7.6.4.42 SS-event

This parameter indicates the Supplementary Service for which an invocation notification is sent towards the gsmSCF. It can indicate one of the following services:

- Explicit Call Transfer (ECT)
- Call Deflection (CD)
- Multi-Party call (MPTY)
- Completion of Calls to Busy Subscriber (CCBS)

7.6.4.43 SS-event data

This parameter contains additional information related to Supplementary Service invocation. Depending on the service invoked it can contain the following information:

ECT A list with all Called Party Numbers involved.

CD The called Party number involved.

7.6.4.44 LCS Privacy Exceptions

Distinct SS codes are assigned to the following classes of LCS client in a target MS subscriber's privacy exception list.

- Universal Class;
- Call/session related value added class;
- Call/session unrelated value added class;
- PLMN operator class.
- Service type class.

7.6.4.45 Mobile Originating Location Request (MO-LR)

Distinct SS codes are assigned to the following classes of MO-LR:

- Basic Self Location;
- Autonomous Self Location;
- Transfer to Third Party.

7.6.4.46 NbrUser

This parameter indicates the maximum number of parallel bearers that may be used as defined by the user at registration of the MC SS.

7.6.4.47 MC Subscription Data

This parameter contains two parameters which are associated with the MC service. The following two parameters are included:

- NbrUser:

  indicates the maximum number of parallel bearers that may be used as defined by the user at registration of the MC SS

- NbrSB:

  indicates the maximum number of parallel bearers that may be used as defined by the user's subscription.

7.6.4.48 MC Information

This parameter contains three parameters which are associated with the MC service. The following parameters are included:

- NbrSB;
- NbrUser;
- NbrSN.

Definitions of these parameters are provided in 3GPP TS 23.135.

7.6.4.49 CCBS Request State

This parameter indicates the current state of the CCBS request. It can take one of seven values:

- request;

- recall;
- active;
- completed;
- suspended;
- frozen;
- deleted.

7.6.4.x Basic Service Group 2

This parameter refers to the Basic Service Group either as a bearer service (see clause 7.6.4.38) or a teleservice (see clause 7.6.4.39). This parameter is used only for supplementary service management.

<<Next Modified Section>>

10.1 MAP_SEND_ROUTING_INFORMATION service

10.1.1 Definition

This service is used between the Gateway MSC and the HLR. The service is invoked by the Gateway MSC to perform the interrogation of the HLR in order to route a call towards the called MS.

This is a confirmed service using the primitives listed in table 10.1/1.

This service is also used between the GMSC and the NPLR and between the gsmSCF and the HLR.

10.1.2 Service primitives

Table 10.1/1: MAP_SEND_ROUTING_INFORMATION parameters

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Interrogation Type	M	M(=)		
GMSC or gsmSCF Address	M	M(=)		
MSISDN	M	M(=)	C	C(=)
OR Interrogation	C	C(=)		
OR Capability	C	C(=)		
CUG Interlock	C	C(=)	C	C(=)
CUG Outgoing Access	C	C(=)	C	C(=)
Number of Forwarding	C	C(=)		
Network Signal Info	C	C(=)		
Supported CAMEL Phases	C	C(=)	C	C(=)
Suppress T-CSI	C	C(=)		
Offered CAMEL 4 CSIs	C	C(=)		
Suppression of Announcement	C	C(=)		
Call Reference Number	C	C(=)		
Forwarding Reason	C	C(=)		
Basic Service Group	C	C(=)		
Basic Service Group 2	C	C(=)		
Alerting Pattern	C	C(=)		
CCBS Call	C	C(=)		
Supported CCBS Phase	C	C(=)		
Additional Signal Info	C	C(=)		
IST Support Indicator	C	C(=)		
Pre-paging supported	C	C(=)		
Call Diversion Treatment Indicator	C	C(=)		
Long FTN Supported	C	C(=)		

Parameter name	Request	Indication	Response	Confirm
Suppress VT-CSI	C	C(=)		
Suppress Incoming Call Barring	C	C(=)		
gsmSCF Initiated Call	C	C(=)		
IMSI			C	C(=)
MSRN			C	C(=)
Forwarding Data			C	C(=)
Forwarding Interrogation Required			C	C(=)
VMSC address			C	C(=)
GMSC Camel Subscription Info			C	C(=)
Location Information			C	C(=)
Subscriber State			C	C(=)
Basic Service Code			C	C(=)
CUG Subscription Flag			C	C(=)
North American Equal Access preferred Carrier Id			U	C(=)
User error			C	C(=)
SS-List			U	C(=)
CCBS Target			C	C(=)
Keep CCBS Call Indicator			C	C(=)
IST Alert Timer			C	C(=)
Number Portability Status			U	C(=)
Supported CAMEL Phases in VMSC			C	
Offered CAMEL 4 CSIs in VMSC			C	C(=)
Provider error				O

10.1.3 Parameter use

See clause 7.6 for a definition of the parameters used in addition to the following. Note that:

- a conditional parameter whose use is defined only in 3GPP TS 23.078 shall be absent if the sending entity does not support CAMEL;
- a conditional parameter whose use is defined only in 3GPP TS 23.079 [99] shall be absent if the sending entity does not support optimal routeing;
- a conditional parameter whose use is defined only in 3GPP TS 23.078 & 3GPP TS 23.079 [99] shall be absent if the sending entity supports neither CAMEL nor optimal routeing.

Interrogation Type

See 3GPP TS 23.079 [99] for the use of this parameter.

GMSC or gsmSCF address

The E.164 address of the GMSC or the gsmSCF. This parameter contains the gsmSCF address if the gsmSCF iniated call parameter is present, otherwise it is the GMSC address.

MSISDN

This is the Mobile Subscriber ISDN number assigned to the called subscriber. In the Request & Indication it is the number received by the GMSC in the ISUP IAM. If the call is to be forwarded and the HLR supports determination of the redirecting number, the HLR inserts the basic MSISDN in the Response.

See 3GPP TS 23.066 [108] for the use of this parameter and the conditions for its presence in the response.

OR Interrogation

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

OR Capability

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

CUG Interlock

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

CUG Outgoing Access

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

Number of Forwarding

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

Network Signal Info

See 3GPP TS 23.018 [97] for the conditions for the presence of the components of this parameter.

Supported CAMEL Phases

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

T-CSI Suppression

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Offered CAMEL 4 CSIs

This parameter indicates the CAMEL phase 4 CSIs offered in the GMSC/VLR (see clause 7.6.3.36D).

Suppression Of Announcement

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Call Reference Number

The use of this parameter and the conditions for its presence are specified in 3GPP TS 23.078 [98] and 3GPP TS 23.079 [99].

Forwarding Reason

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Basic Service Group

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Basic Service Group 2

See 3GPP TS 23.079[99] for the use of this parameter and the conditions for its presence.

Alerting Pattern

See 3GPP TS 23.018 [97] and 3GPP TS 23.078 [98] for the use of this parameter and the conditions for its presence.

CCBS Call

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

Supported CCBS Phase

This parameter indicates by its presence that CCBS is supported and the phase of CCBS which is supported.

Additional Signal Info

See 3GPP TS 23.081 [27] for the conditions for the presence of the components of this parameter.

IST Support Indicator

This parameter is used to indicate to the HLR that the GMSC supports basic IST functionality, that is, the GMSC is able to terminate the subscriber call activity that originated the IST Alert when it receives the IST Alert response indicating that the call(s) shall be terminated. If this parameter is not included in the Send Routing Information indication and the subscriber is marked as an IST subscriber, then the HLR may limit the service for the call (by barring the incoming call if it is not subject to forwarding, or suppressing Call Forwarding from the GMSC), or allow the call assuming the associated risk of not having the basic IST mechanism available.

This parameter can also indicate that the GMSC supports the IST Command, including the ability to terminate all calls being carried for the identified subscriber by using the IMSI as a key. If this additional capability is not included in the Send Routing Information indication and the subscriber is marked as an IST subscriber, then the HLR may limit the service for the subscriber (by barring the incoming calls if they are not subject to forwarding, or suppressing Call Forwarding from the GMSC), or allow the incoming calls assuming the associated risk of not having the IST Command mechanism available.

Pre-paging supported

See 3GPP TS 23.018 for the use of this parameter and the conditions for its presence.

Call Diversion Treatment Indicator

This parameter indicates whether or not call diversion is allowed.

IMSI

See 3GPP TS 23.018 [97] and 3GPP TS 23.066 [108] for the use of this parameter and the conditions for its presence.

MSRN

See 3GPP TS 23.018 [97], 3GPP TS 23.066 [108] and 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence. If the NPLR returns only the MSISDN-number without Routeing Number to the GMSC, the MSISDN-number shall be returned as MSRN.

Forwarding Data

This parameter includes a number to define the forwarded-to destination, the forwarding reason and the forwarding options Notification to calling party and Redirecting presentation, and can include the forwarded-to subaddress. See 3GPP TS 23.018 [97] and 3GPP TS 23.079 [99] for the conditions for the presence of its components.

Forwarding Interrogation Required

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Long FTN Supported

This parameter indicates that the GMSC supports Long Forwarded-to Numbers.

Suppress VT-CSI

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Suppress Incoming Call Barring

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

gsmSCF Initiated Call

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

VMSC address

See 3GPP TS 23.079 [99] and 3GPP TS 23.078 [98] for the use of this parameter and the conditions for its presence.

GMSC CAMEL Subscription Info

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Location Information

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Subscriber State

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

CUG Subscription Flag

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

North American Equal Access preferred Carrier Id

This parameter is returned to indicate the preferred carrier identity to be used to set-up the call (i.e. forwarding the call or establishing the roaming leg).

SS-List

This parameter includes SS-codes and will be returned as an operator option. The HLR shall not send PLMN-specific SS-codes across PLMN boundaries. However if the GMSC receives PLMN-specific SS-codes from a foreign PLMN's HLR the GMSC may ignore it. If the GMSC attempts to process the PLMN- specific SS- codes, this may lead to unpredictable behaviour but the GMSC shall continue call processing.

Basic Service Code

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

If the CAMEL service is not involved, this parameter includes the basic service code and will be returned as an operator option. The HLR shall not send a PLMN-specific Basic Service Code across PLMN boundaries. However if the GMSC receives a PLMN-specific Basic Service Code from a foreign PLMN's HLR the GMSC may ignore it. If the GMSC attempts to process the PLMN specific Basic Service codes, this may lead to unpredictable behaviour but the GMSC shall continue call processing.

CCBS Target

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

Keep CCBS Call Indicator

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

IST Alert Timer

It includes the IST Alert timer value that must be used to inform the HLR about the call activities that the subscriber performs. This parameter is only sent to the GMSC in response to a Send Routing Information request which indicates the the GMSC supports IST.

Number Portability Status

This parameter indicates the number portability status of the subscriber. This parameter may be present if the sender of SRIack is NPLR.

Supported CAMEL Phases in VMSC

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Offered CAMEL 4 CSIs in VMSC

This parameter is defined in clause 7.6.3.36F.

User error

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

- Unknown Subscriber;

  The diagnostic for the Unknown Subscriber error may indicate “NPDB Mismatch”.

- Number changed;

- Call Barred;

  This error will indicate that either incoming calls are barred for this MS or that calls are barred due to Operator Determined Barring (see 3GPP TS 22.041 [8] for a definition of this network feature);

- CUG Reject;

  The value of this error cause will indicate the reason for CUG Reject;

- Bearer Service Not Provisioned;

- Teleservice Not Provisioned;

  A subscription check has been performed and the call has not passed the check due to incompatibility with regard to the requested service. Depending on the nature of the incompatibility, either of these messages will be returned;

- Facility Not Supported;

- Absent Subscriber;

  This indicates that the location of the MS is not known (either the station is not registered and there is no location information available or the Provide Roaming Number procedure fails due to IMSI detached flag being set), or the GMSC requested forwarding information with a forwarding reason of not reachable, and the call forwarding on MS not reachable service is not active;

- Busy Subscriber;

  This indicates that Call Forwarding on Busy was not active for the specified basic service group when the GMSC requested forwarding information with a forwarding reason of busy;

  The error may also indicate that the subscriber is busy due to an outstanding CCBS recall. In the error data it may then be specified that CCBS is possible for the busy encountered call;

- No Subscriber Reply;

  This indicates that Call Forwarding on No Reply was not active for the specified basic service group when the GMSC requested forwarding information with a forwarding reason of no reply;

- OR Not Allowed;

  This indicates that the HLR is not prepared to accept an OR interrogation from the GMSC, or that calls to the specified subscriber are not allowed to be optimally routed;

- Forwarding Violation;

- System Failure;

- Data Missing;

- Unexpected Data Value.

See clause 7.6 for a definition of these errors.

Provider error

These are defined in clause 7.6.

<<Next Modified Section>>

10.3 MAP_RESUME_CALL_HANDLING service

10.3.1 Definition

This service is used between the terminating VMSC and the GMSC. The service is invoked by the terminating VMSC to request the GMSC to resume handling the call and forward it to the specified destination.

This is a confirmed service which uses the Primitives listed in table 10.3/1.

10.3.2 Service primitives

Table 10.3/1: MAP_RESUME_CALL_HANDLING parameters

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Call Reference Number	C	C(=)		
Basic Service Group	C	C(=)		
Basic Service Group 2	C	C(=)		
IMSI	C	C(=)		
Forwarding Data	C	C(=)		
CUG Interlock	C	C(=)		
CUG Outgoing Access	C	C(=)		
O-CSI	C	C(=)		
D-CSI	C	C(=)		
CCBS Target	C	C(=)		
UU Data	C	C(=)		
UUS CF Interaction	C	C(=)		
All Information Sent	C	C(=)		
MSISDN User error	C	C(=)	 C	 C(=)
Provider error				O

10.3.3 Parameter use

Information received in subsequent segment of a segmented dialogue shall not overwrite information received in an earlier segment.

See clause 7.6 for a definition of the parameters used, in addition to the following.

Call Reference Number

See 3GPP TS 23.079 [99] for the use of this parameter. This parameter shall be present in ~~a~~ the first segment of the dialogue.

Basic Service Group

See 3GPP TS 23.079 [99] for the use of this parameter. This parameter shall be present in the~~a~~ first segment of the dialogue.

Basic Service Group 2

See 3GPP TS 23.079[99] for the use of this parameter. If this parameter is present, it shall be in a first segment of the dialogue.

IMSI

This is the IMSI of the forwarding Subscriber. This parameter shall be present in ~~a~~ the first segment of the dialogue.

Forwarding Data

This parameter includes a number to define the forwarded-to destination, the forwarding reason and the forwarding options Notification to calling party and Redirecting presentation, and can include the forwarded-to subaddress. See 3GPP TS 23.079 [99] for the conditions for the presence of its components. This parameter shall be present in a first segment of the dialogue.

CUG Interlock

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

CUG Outgoing Access

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

O-CSI

See 3GPP TS 23.078 for the use of this parameter and the conditions for its presence.

For CAMEL phases 1 & 2, the O-CSI shall contain only one set of O-BCSM TDP data.

D-CSI

The Dialled Services-CSI.

See 3GPP TS 23.078 for the use of this parameter and the conditions for its presence.

CCBS Target

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

UU Data

See 3GPP TS 23.087 for the use of this parameter and the conditions for its presence.

UUS CF Interaction

See 3GPP TS 23.087 for the use of this parameter and the conditions for its presence.

All Information Sent

This parameter is set when the VMSC has sent all information to GMSC.

MSISDN

This parameter is the basic MSISDN of the forwarding subscriber. It shall be present if the VMSC supports determination of the redirecting number.

User error

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

- Optimal Routeing not allowed;
- Forwarding failed;
- Unexpected Data Value;
- Data Missing.

Provider error

These are defined in clause 7.6.

<<Next Modified Section>>

17.7.3 Call handling data types

```
MAP-CH-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CH-DataTypes (13) version8 (8)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS
   SendRoutingInfoArg,
   SendRoutingInfoRes,
   ProvideRoamingNumberArg,
   ProvideRoamingNumberRes,
   ResumeCallHandlingArg,
   ResumeCallHandlingRes,
   NumberOfForwarding,
   SuppressionOfAnnouncement,
   CallReferenceNumber,
   ProvideSIWFSNumberArg,
   ProvideSIWFSNumberRes,
   SIWFSSignallingModifyArg,
   SIWFSSignallingModifyRes,
   SetReportingStateArg,
   SetReportingStateRes,
   StatusReportArg,
   StatusReportRes,
   RemoteUserFreeArg,
   RemoteUserFreeRes,
   IST-AlertArg,
   IST-AlertRes,
   IST-CommandArg,
   IST-CommandRes
;

IMPORTS
   SubscriberInfo,
   SupportedCamelPhases,
   OfferedCamel4CSIs,
   CUG-Interlock,
   O-CSI,
   D-CSI,
   O-BcsmCamelTDPCriteriaList,
   T-BCSM-CAMEL-TDP-CriteriaList,
   IST-SupportIndicator,
   IST-AlertTimerValue,
   T-CSI


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

   ForwardingOptions,
   SS-List,
   CCBS-Feature
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SS-DataTypes (14) version8 (8)}

   ISDN-AddressString,
   ISDN-SubaddressString,
   FTN-AddressString,
   ExternalSignalInfo,
   Ext-ExternalSignalInfo,
   IMSI,
   LMSI,
   Ext-BasicServiceCode,
   AlertingPattern,
   NAEA-PreferredCI


FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version8 (8)}
```

```
   ExtensionContainer
FROM MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version8 (8)}
;
```

```
CUG-CheckInfo ::= SEQUENCE {
     cug-Interlock                    CUG-Interlock,
     cug-OutgoingAccess               NULL                          OPTIONAL,
     extensionContainer               ExtensionContainer            OPTIONAL,
     ...}
```

```
NumberOfForwarding ::= INTEGER (1..5)
```

```
SendRoutingInfoArg ::= SEQUENCE {
     msisdn                           [0] ISDN-AddressString,
     cug-CheckInfo                    [1] CUG-CheckInfo             OPTIONAL,
     numberOfForwarding               [2] NumberOfForwarding        OPTIONAL,
     interrogationType                [3] InterrogationType,
     or-Interrogation                 [4] NULL                      OPTIONAL,
     or-Capability                    [5] OR-Phase                  OPTIONAL,
     gmsc-OrGsmSCF-Address            [6] ISDN-AddressString,
     callReferenceNumber              [7] CallReferenceNumber       OPTIONAL,
     forwardingReason                 [8] ForwardingReason          OPTIONAL,
     basicServiceGroup                [9] Ext-BasicServiceCode      OPTIONAL,
     networkSignalInfo                [10] ExternalSignalInfo       OPTIONAL,
     camelInfo                        [11] CamelInfo                OPTIONAL,
     suppressionOfAnnouncement        [12] SuppressionOfAnnouncement OPTIONAL,
     extensionContainer               [13] ExtensionContainer       OPTIONAL,
     ...,
     alertingPattern                  [14] AlertingPattern          OPTIONAL,
     ccbs-Call                        [15] NULL                      OPTIONAL,
     supportedCCBS-Phase              [16]  SupportedCCBS-Phase     OPTIONAL,
     additionalSignalInfo             [17] Ext-ExternalSignalInfo   OPTIONAL,
     istSupportIndicator              [18] IST-SupportIndicator     OPTIONAL,
     pre-pagingSupported              [19] NULL                     OPTIONAL,
     callDiversionTreatmentIndicator  [20] CallDiversionTreatmentIndicator   OPTIONAL,
     longFTN-Supported                [21] NULL                     OPTIONAL,
     suppress-VT-CSI                  [22] NULL                     OPTIONAL,
     suppressIncomingCallBarring      [23] NULL                     OPTIONAL,
     gsmSCF-InitiatedCall             [24] NULL                     OPTIONAL,
     basicServiceGroup2               [x] Ext-BasicServiceCode      OPTIONAL
      }
```

```
SuppressionOfAnnouncement ::= NULL
```

```
InterrogationType ::= ENUMERATED {
     basicCall  (0),
     forwarding  (1)}
```

```
OR-Phase ::= INTEGER (1..127)
```

```
CallReferenceNumber ::= OCTET STRING (SIZE (1..8))
```

```
ForwardingReason ::= ENUMERATED {
     notReachable  (0),
     busy  (1),
     noReply  (2)}
```

```
SupportedCCBS-Phase ::= INTEGER (1..127)
-- exception handling:
-- Only value 1 is used.
-- Values in the ranges 2-127 are reserved for future use.
-- If received values 2-127 shall be mapped on to value 1.
```

```
CallDiversionTreatmentIndicator ::= OCTET STRING (SIZE(1))
--   callDiversionAllowed (xxxx xx01)
--   callDiversionNotAllowed (xxxx xx10)
--   network default is call diversion allowed
```

```
SendRoutingInfoRes ::= [3] SEQUENCE {
    imsi                              [9] IMSI                          OPTIONAL,
    -- IMSI must be present if SendRoutingInfoRes is not segmented.
    -- If the TC-Result-NL segmentation option is taken the IMSI must be
    -- present in one segmented transmission of SendRoutingInfoRes.
    extendedRoutingInfo               ExtendedRoutingInfo               OPTIONAL,
    cug-CheckInfo                     [3] CUG-CheckInfo                 OPTIONAL,
    cugSubscriptionFlag               [6] NULL                          OPTIONAL,
    subscriberInfo                    [7] SubscriberInfo                OPTIONAL,
    ss-List                           [1] SS-List                       OPTIONAL,
    basicService                      [5] Ext-BasicServiceCode          OPTIONAL,
    forwardingInterrogationRequired   [4] NULL                          OPTIONAL,
    vmsc-Address                      [2] ISDN-AddressString            OPTIONAL,
    extensionContainer                [0] ExtensionContainer            OPTIONAL,
    ... ,
    naea-PreferredCI                  [10] NAEA-PreferredCI             OPTIONAL,
    -- naea-PreferredCI is included at the discretion of the HLR operator.
    ccbs-Indicators                   [11] CCBS-Indicators              OPTIONAL,
    msisdn                            [12] ISDN-AddressString           OPTIONAL,
    numberPortabilityStatus           [13] NumberPortabilityStatus      OPTIONAL,
    istAlertTimer                     [14] IST-AlertTimerValue          OPTIONAL,
    supportedCamelPhasesInVMSC        [15] SupportedCamelPhases         OPTIONAL,
    offeredCamel4CSIsInVMSC           [16] OfferedCamel4CSIs            OPTIONAL
    }
```

```
NumberPortabilityStatus ::= ENUMERATED {
    notKnownToBePorted                (0),
    ownNumberPortedOut                (1),
    foreignNumberPortedToForeignNetwork (2),
    ...}
    --   exception handling:
    --  reception of other values than the ones listed the receiver shall ignore the
    --  whole NumberPortabilityStatus
```

```
CCBS-Indicators ::= SEQUENCE {
    ccbs-Possible                     [0]  NULL                         OPTIONAL,
    keepCCBS-CallIndicator            [1]  NULL                         OPTIONAL,
    extensionContainer                [2]  ExtensionContainer           OPTIONAL,
    ...}
```

```
RoutingInfo ::= CHOICE {
    roamingNumber                     ISDN-AddressString,
    forwardingData                    ForwardingData}
```

```
ForwardingData ::= SEQUENCE {
    forwardedToNumber                 [5] ISDN-AddressString            OPTIONAL,
    -- When this datatype is sent from an HLR which supports CAMEL Phase 2
    -- to a GMSC which supports CAMEL Phase 2 the GMSC shall not check the
    -- format of the number
    forwardedToSubaddress             [4] ISDN-SubaddressString         OPTIONAL,
    forwardingOptions                 [6] ForwardingOptions             OPTIONAL,
    extensionContainer                [7] ExtensionContainer            OPTIONAL,
    ...,
    longForwardedToNumber             [8] FTN-AddressString             OPTIONAL}
```

```
ProvideRoamingNumberArg ::= SEQUENCE {
     imsi                                 [0] IMSI,
     msc-Number                           [1] ISDN-AddressString,
     msisdn                               [2] ISDN-AddressString             OPTIONAL,
     lmsi                                 [4] LMSI                           OPTIONAL,
     gsm-BearerCapability                 [5] ExternalSignalInfo             OPTIONAL,
     networkSignalInfo                    [6] ExternalSignalInfo             OPTIONAL,
     suppressionOfAnnouncement            [7] SuppressionOfAnnouncement      OPTIONAL,
     gmsc-Address                         [8] ISDN-AddressString             OPTIONAL,
     callReferenceNumber                  [9] CallReferenceNumber            OPTIONAL,
     or-Interrogation                     [10] NULL                          OPTIONAL,
     extensionContainer                   [11] ExtensionContainer            OPTIONAL,
     ... ,
     alertingPattern                      [12] AlertingPattern               OPTIONAL,
     ccbs-Call                            [13] NULL                          OPTIONAL,
     supportedCamelPhasesInInterrogatingNode  [15] SupportedCamelPhases      OPTIONAL,
     additionalSignalInfo                 [14] Ext-ExternalSignalInfo        OPTIONAL,
     orNotSupportedInGMSC                 [16] NULL                          OPTIONAL,
     pre-pagingSupported                  [17] NULL                          OPTIONAL,
     longFTN-Supported                    [18] NULL                          OPTIONAL,
     suppress-VT-CSI                      [19] NULL                          OPTIONAL,
     offeredCamel4CSIsInInterrogatingNode [20] OfferedCamel4CSIs             OPTIONAL
      }
```

```
ProvideRoamingNumberRes ::= SEQUENCE {
     roamingNumber                        ISDN-AddressString,
     extensionContainer                   ExtensionContainer                 OPTIONAL,
     ...}
```

```
ResumeCallHandlingArg ::= SEQUENCE {
     callReferenceNumber                  [0] CallReferenceNumber            OPTIONAL,
     basicServiceGroup                    [1] Ext-BasicServiceCode           OPTIONAL,
     forwardingData                       [2] ForwardingData                 OPTIONAL,
     imsi                                 [3] IMSI                           OPTIONAL,
     cug-CheckInfo                        [4] CUG-CheckInfo                  OPTIONAL,
     o-CSI                                [5] O-CSI                          OPTIONAL,
     extensionContainer                   [7] ExtensionContainer             OPTIONAL,
     ccbs-Possible                        [8]  NULL                          OPTIONAL,
     msisdn                               [9]  ISDN-AddressString            OPTIONAL,
     uu-Data                              [10] UU-Data                       OPTIONAL,
     allInformationSent                   [11] NULL                          OPTIONAL,
     ...,
     d-csi                                [12] D-CSI                         OPTIONAL,
     o-BcsmCamelTDPCriteriaList           [13] O-BcsmCamelTDPCriteriaList    OPTIONAL,
     basicServiceGroup2                   [x] Ext-BasicServiceCode           OPTIONAL
      }
```

3GPP TSG CN WG4 Meeting #20 **N4-031057**
Sophia Antipolis, FRANCE, 25th – 29th August 2003

CR-Form-v7

CHANGE REQUEST

⌘ **29.002** **CR** **660** ⌘ **rev** **2** ⌘ Current version: **6.2.0** ⌘

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

Proposed change affects: UICC apps⌘ ☐ ME ☐ Radio Access Network ☐ Core Network ☒

Title:	⌘	Notification of the 2nd BSG in case of Late CF with OR
Source:	⌘	CN4
Work item code:	⌘	SCUDIF
Date:	⌘	25/08/2003
Category:	⌘	**A**
Release:	⌘	Rel-6

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

Use one of the following releases:
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:	⌘	In SCUDIF calls, there is a need to handle two basic services. For Late call forwarding with Optimal Routing, GMSC has no interface to obtain the second basic service which Call Forwarding applies for.
Summary of change:	⌘	"Basic service group 2" parameter is added to Resume Call Handling and Send Routing Information.
Consequences if not approved:	⌘	GMSC would not invoke Call Forwarding appropriately, even when Late Call Forwarding is activated for two basic services.

Clauses affected:	⌘	7.6, 10.1, 10.3, 17.7.3

Other specs affected: ⌘	Y	N		
	X		Other core specifications	⌘ 23.079CR026, 23.172CR015
		X	Test specifications	
		X	O&M Specifications	

Other comments: ⌘

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

1) Fill out the above form. The symbols above marked ⌘ contain pop-up help information about the field that they are closest to.
2) Obtain the latest version for the release of the specification to which the change is proposed. Use the MS Word "revision marks" feature (also known as "track changes") when making the changes. All 3GPP specifications can be downloaded from the 3GPP server under ftp://ftp.3gpp.org/specs/ For the latest version, look for the directory name with the latest date e.g. 2001-03 contains the specifications resulting from the March 2001 TSG meetings.

3) With "track changes" disabled, paste the entire CR form (use CTRL-A to select it) into the specification just in front of the clause containing the first piece of changed text. Delete those parts of the specification which are not relevant to the change request.

<<Fisrt 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	Location Information for GPRS	7.6.2.30a
Access connection status	7.6.9.3	Location update type	7.6.9.6
Access signalling information	7.6.9.5	Long Forwarded-to Number	7.6.2.22A
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Long FTN Supported	7.6.2.22B
Additional LCS Capability Sets	7.6.11.25		
Additional Location Estimate	7.6.11.21	Lower Layer Compatibility	7.6.3.42
Additional number	7.6.2.46	LSA Information	7.6.3.56
Additional signal info	7.6.9.10	LSA Information Withdraw	7.6.3.58
Additional SM Delivery Outcome	7.6.8.11	MC Information	7.6.4.48
Age Indicator	7.6.3.72	MC Subscription Data	7.6.4.47
Alert Reason	7.6.8.8	Mobile Not Reachable Reason	7.6.3.51
Alert Reason Indicator	7.6.8.10	Modification request for CSI	7.6.3.81
Alerting Pattern	7.6.3.44	Modification request for SS Information	7.6.3.82
All GPRS Data	7.6.3.53	More Messages To Send	7.6.8.7
All Information Sent	7.6.1.5	MS ISDN	7.6.2.17
AN-apdu	7.6.9.1	MSC number	7.6.2.11
APN	7.6.2.42	MSIsdn-Alert	7.6.2.29
Authentication set list	7.6.7.1	Multicall Bearer Information	7.6.2.52
B-subscriber Address	7.6.2.36	Multiple Bearer Requested	7.6.2.53
B subscriber Number	7.6.2.48	Multiple Bearer Not Supported	7.6.2.54
B subscriber subaddress	7.6.2.49	MWD status	7.6.8.3
Basic Service Group	7.6.4.40	NbrUser	7.6.4.45
Basic Service Group 2	7.6.4.x		
Bearer service	7.6.4.38	Network Access Mode	7.6.3.50
BSSMAP Service Handover	7.6.6.5	Network node number	7.6.2.43
BSSMAP Service Handover List	7.6.6.5A	Network resources	7.6.10.1
Call Barring Data	7.6.3.83	Network signal information	7.6.9.8
Call barring feature	7.6.4.19	New password	7.6.4.20
Call barring information	7.6.4.18	No reply condition timer	7.6.4.7
Call barring support indicator	7.6.3.92	North American Equal Accesspreferred Carrier Id	7.6.2.34
Call Direction	7.6.5.8	Number Portability Status	7.6.5.14
Call Forwarding Data	7.6.3.84	ODB Data	7.6.3.85
Call Info	7.6.9.9	ODB General Data	7.6.3.9
Call reference	7.6.5.1	ODB HPLMN Specific Data	7.6.3.10
Call Termination Indicator	7.6.3.67	OMC Id	7.6.2.18
Called number	7.6.2.24	Originally dialled number	7.6.2.26
Calling number	7.6.2.25	Originating entity number	7.6.2.10
CAMEL Subscription Info	7.6.3.78	Override Category	7.6.4.4

CAMEL Subscription Info Withdraw	7.6.3.38
Cancellation Type	7.6.3.52
Category	7.6.3.1
CCBS Feature	7.6.5.8
CCBS Request State	7.6.4.49
Channel Type	7.6.5.9
Chosen Channel	7.6.5.10
Chosen Radio Resource Information	7.6.6.10B
Ciphering mode	7.6.7.7
Cksn	7.6.7.5
CLI Restriction	7.6.4.5
CM service type	7.6.9.2
Complete Data List Included	7.6.3.54
CS Allocation Retention priority	7.6.3.87
CS LCS Not Supported by UE	7.6.11.9
CUG feature	7.6.3.26
CUG index	7.6.3.25
CUG info	7.6.3.22
CUG interlock	7.6.3.24
CUG Outgoing Access indicator	7.6.3.8
CUG subscription	7.6.3.23
CUG Subscription Flag	7.6.3.37
Current location area Id	7.6.2.6
Current password	7.6.4.21
Deferred MT-LR Data	7.6.11.3
Deferred MT-LR Response Indicator	7.6.11.2
eMLPP Information	7.6.4.41
Encryption Information	7.6.6.9
Equipment status	7.6.3.2
Extensible Basic Service Group	7.6.3.5
Extensible Bearer service	7.6.3.3
Extensible Call barring feature	7.6.3.21
Extensible Call barring information	7.6.3.20
Extensible Call barring information for CSE	7.6.3.79
Extensible Forwarding feature	7.6.3.16
Extensible Forwarding info	7.6.3.15
Extensible Forwarding information for CSE	7.6.3.80
Extensible Forwarding Options	7.6.3.18
Extensible No reply condition timer	7.6.3.19
Extensible QoS-Subscribed	7.6.3.74
Extensible SS-Data	7.6.3.29
Extensible SS-Info	7.6.3.14
Extensible SS-Status	7.6.3.17
Extensible Teleservice	7.6.3.4
External Signal Information	7.6.9.4
Failure Cause	7.6.7.9
Forwarded-to number	7.6.2.22
Forwarded-to subaddress	7.6.2.23
Forwarding feature	7.6.4.16
Forwarding information	7.6.4.15
Forwarding Options	7.6.4.6
GERAN Classmark	7.6.6.4
GGSN address	7.6.2.40
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
P-TMSI	7.6.2.47
PDP-Address	7.6.2.45
PDP-Context identifier	7.6.3.55
PDP-Type	7.6.2.44
Positioning Data	7.6.11.11A
Pre-paging supported	7.6.5.15
Previous location area Id	7.6.2.4
Protocol Id	7.6.9.7
Provider error	7.6.1.3
PS LCS Not Supported by UE	7.6.11.10
QoS-Subscribed	7.6.3.47
Radio Resource Information	7.6.6.10
Radio Resource List	7.6.6.10A
RANAP Service Handover	7.6.6.6
Rand	7.6.7.2
LCS-Reference Number	7.6.11.23
Regional Subscription Data	7.6.3.11
Regional Subscription Response	7.6.3.12
Relocation Number List	7.6.2.19A
Requested Info	7.6.3.31
Requested Subscription Info	7.6.3.86
Roaming number	7.6.2.19
Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Roaming Restriction Due To Unsupported Feature	7.6.3.13
Current Security Context	7.6.7.8
Selected RAB ID	7.6.2.56
Service centre address	7.6.2.27
Serving Cell Id	7.6.2.37
SGSN address	7.6.2.39
SGSN CAMEL Subscription Info	7.6.3.75
SGSN number	7.6.2.38
SIWF Number	7.6.2.35
SoLSA Support Indicator	7.6.3.57
SM Delivery Outcome	7.6.8.6
SM-RP-DA	7.6.8.1
SM-RP-MTI	7.6.8.16
SM-RP-OA	7.6.8.2
SM-RP-PRI	7.6.8.5
SM-RP-SMEA	7.6.8.17
SM-RP-UI	7.6.8.4
Sres	7.6.7.3
SS-Code	7.6.4.1
SS-Data	7.6.4.3
SS-Event	7.6.4.42
SS-Event-Data	7.6.4.43
SS-Info	7.6.4.24
SS-Status	7.6.4.2
Stored location area Id	7.6.2.5
Subscriber State	7.6.3.30
Subscriber Status	7.6.3.7
Super-Charger Supported in HLR	7.6.3.70
Super-Charger Supported in Serving Network Entity	7.6.3.71
Offered Camel4 CSIs	7.6.3.36D
Offered Camel4 CSIs in interrogating node	7.6.3.36E
Offered Camel4 CSIs in VMSC	7.6.3.36F
Offered Camel4 CSIs in VLR	7.6.3.36B
Offered Camel4 CSIs in SGSN	7.6.3.36C
Offered Camel4 Functionalities	7.6.3.36G
Supported CAMEL Phases	7.6.3.36H
Supported CAMEL Phases in VLR	7.6.3.36
Supported CAMEL Phases in SGSN	7.6.3.36A
Supported CAMEL Phases in	7.6.3.36I

GSM bearer capability	7.6.3.6
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
Integrity Protection Information	7.6.6.8
Inter CUG options	7.6.3.27
Intra CUG restrictions	7.6.3.28
Invoke Id	7.6.1.1
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 Information	7.6.3.60
LCS Service Type Id	7.6.11.15
Kc	7.6.7.4
Linked Id	7.6.1.2
LMSI	7.6.2.16
Location Information	7.6.2.30
interrogating node	
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
UESBI	7.6.6.20
User error	7.6.1.4
USSD Data Coding Scheme	7.6.4.36
USSD String	7.6.4.37
UU Data	7.6.5.12
UUS CF Interaction	7.6.5.13
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>>

7.6.4 Supplementary services parameters

7.6.4.1 SS-Code

This parameter may refer to one supplementary service or a set of supplementary services as defined in 3GPP TS 22.004. For MAP this includes:

- Calling Line Identification Presentation service (CLIP);
- Calling Line Identification Restriction service (CLIR);
- Connected Line Identification Presentation service (COLP);
- Connected Line Identification Restriction service (COLR);
- Calling Name Presentation (CNAP);
- All Call Forwarding services, including Call Deflection;
- Call Waiting (CW);
- Call Hold (HOLD);
- Multi-Party service (MPTY);
- Closed User Group (CUG);
- All Charging services;
- All Call Restriction services;

- Explicit Call Transfer service (ECT);
- enhanced Multi-Level Precedence and Pre-emption service (eMLPP);
- Completion of Calls to Busy Subscriber, originating side (CCBS-A);
- Completion of Calls to Busy Subscriber, destination side (CCBS-B);
- All LCS privacy exceptions (see clause 7.6.4.44);
- Mobile Originating Location Request (MO-LR) (see clause 7.6.4.45);
- Multicall (MC).

7.6.4.2 SS-Status

This parameter refers to the state information of individual supplementary services as defined in 3GPP TS 23.011.

7.6.4.3 SS-Data

This parameter refers to the necessary set of information required in order to characterise one supplementary service:

- SS-Code (see clause 7.6.4.1);
- SS-Status (if applicable) (see clause 7.6.4.2);
- Override subscription option (see clause 7.6.4.4);
- CLI Restriction (see clause 7.6.4.5);
- Basic Service Group Code (see clause 7.6.4.40).

7.6.4.4 Override Category

This parameter refers to the subscription option Override Category attached to a supplementary service. It can take the following two values:

- Enabled;
- Disabled.

7.6.4.5 CLI Restriction Option

This parameter refers to the subscription option Restriction mode attached to the CLIR supplementary service. It can take the following three values:

- Permanent;
- Temporary (Default Restricted);
- Temporary (Default Allowed).

7.6.4.6 Forwarding Options

This parameter refers to a forwarding option attached to a supplementary service. It can take one of the following values:

- notification to forwarding party (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- notification to calling party (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- redirecting presentation (see 3GPP TS 22.082 [10] for the meaning of this parameter);
- Forwarding reason (see 3GPP TS 22.082 [10] for the meaning of this parameter).

7.6.4.7 No reply condition timer

This parameter refers to the no reply condition timer for call forwarding on no reply.

7.6.4.8 - 7.6.4.14 Void

7.6.4.15 Forwarding information

This parameter represents the information related to each call forwarding service:

- the SS-Code of the relevant call forwarding service (see clause 7.6.4.1);
- if required, a list of forwarding feature parameters (see clause 7.6.4.16).

  the list may contain one item per Basic Service Group.

7.6.4.16 Forwarding feature

This parameter applies to each combination of call forwarding service and Basic Service Group and contains the following information, as required:

- Basic Service Group (see clause 7.6.4.40);
- SS-Status (see clause 7.6.4.2);
- forwarded-to number (see clause 7.6.2.22);
- forwarded-to subaddress (see clause 7.6.2.23);
- forwarding options (see clause 7.6.4.6);
- no reply condition timer (see clause 7.6.4.7);
- long forwarded-to number (see clause 7.6.2.22A).

If a number is required to define the forwarded-to destination then:

- If the VLR supports Long Forwarded-to Numbers then the long forwarded-to number shall be present and the forwarded-to number shall be absent.
- If the VLR does not support Long Forwarded-to Numbers then the forwarded-to number shall be present and the long forwarded-to number shall be absent.

7.6.4.17 Void

7.6.4.18 Call barring information

This parameter contains for each call barring service:

- SS-Code (see clause 7.6.4.1);
- a list of call barring feature parameters (see clause 7.6.4.19).

  The list may contain one item per Basic Service Group.

7.6.4.19 Call barring feature

This parameter gives the status of call barring services as applicable to each Basic Service Group. The parameter contains the following information:

- Basic Service Group (see clause 7.6.4.40);
- SS-Status (see clause 7.6.4.2).

7.6.4.20 New password

This parameter refers to the password which the subscriber just registered in the network.

This parameter refers to a password used by the subscriber for supplementary service control.

7.6.4.21 Current password

This parameter refers to a password used by the subscriber for supplementary service control.

7.6.4.22 Guidance information

This parameter refers to guidance information given to a subscriber who is requested to provide a password. One of the following information may be given:

- "enter password";

  this information is used for checking of the old password;

- "enter new password";

  this information is used during password registration for the request of the first new password;

- "enter new password again";

  this information is used during password registration for the request of the new password again for verification.

7.6.4.23 Void

7.6.4.24 SS-Info

This parameter refers to all the information related to a supplementary service and is a choice between:

- forwarding information (see clause 7.6.4.15);
- call barring information (see clause 7.6.4.18);
- CUG info (see clause 7.6.4.8);
- SS-Data (see clause 7.6.4.3).
- eMLPP information (see clause 7.6.4.41).

7.6.4.25 - 7.6.4.35 Void

7.6.4.36 USSD Data Coding Scheme

This parameter contains the information of the alphabet and the language used for the unstructured information in an Unstructured Supplementary Service Data operation. The coding of this parameter is according to the Cell Broadcast Data Coding Scheme as specified in 3GPP TS 23.038 [25].

7.6.4.37 USSD String

This parameter contains a string of unstructured information in an Unstructured Supplementary Service Data operation. The string is sent either by the mobile user or the network. The contents of a string sent by the MS are interpreted by the network as specified in 3GPP TS 22.090 [16].

7.6.4.38 Bearer service

This parameter may refer to a single bearer service, a set of bearer services or to all bearer services as defined in 3GPP TS 22.002 [3]. This parameter is used only for supplementary service management.

7.6.4.39 Teleservice

This parameter may refer to a single teleservice, a set of teleservices or to all teleservices as defined in 3GPP TS 22.003 [4]. This parameter is used only for supplementary service management.

7.6.4.40 Basic Service Group

This parameter refers to the Basic Service Group either as a bearer service (see clause 7.6.4.38) or a teleservice (see clause 7.6.4.39). This parameter is used only for supplementary service management. The null value (i.e. neither bearer service nor teleservice) is used to denote the group containing all bearer services and all teleservices.

7.6.4.41 eMLPP information

This parameter contains two parameters which are associated with the eMLPP service. The following two parameters are included:

- maximum entitled priority:
  - indicates the highest priority level the subscriber is allowed to apply for an outgoing call set-up;
- default priority:
  - defines the priority level which shall be assigned to a call if no explicit priority is indicated during call set-up.

7.6.4.42 SS-event

This parameter indicates the Supplementary Service for which an invocation notification is sent towards the gsmSCF. It can indicate one of the following services:

- Explicit Call Transfer (ECT)
- Call Deflection (CD)
- Multi-Party call (MPTY)
- Completion of Calls to Busy Subscriber (CCBS)

7.6.4.43 SS-event data

This parameter contains additional information related to Supplementary Service invocation. Depending on the service invoked it can contain the following information:

ECT A list with all Called Party Numbers involved.

CD The called Party number involved.

7.6.4.44 LCS Privacy Exceptions

Distinct SS codes are assigned to the following classes of LCS client in a target MS subscriber’s privacy exception list.

- Universal Class;
- Call/session related value added class;
- Call/session unrelated value added class;
- PLMN operator class.
- Service type class.

7.6.4.45 Mobile Originating Location Request (MO-LR)

Distinct SS codes are assigned to the following classes of MO-LR:

- Basic Self Location;
- Autonomous Self Location;
- Transfer to Third Party.

7.6.4.46 NbrUser

This parameter indicates the maximum number of parallel bearers that may be used as defined by the user at registration of the MC SS.

7.6.4.47 MC Subscription Data

This parameter contains two parameters which are associated with the MC service. The following two parameters are included:

- NbrUser:

  indicates the maximum number of parallel bearers that may be used as defined by the user at registration of the MC SS

- NbrSB:

  indicates the maximum number of parallel bearers that may be used as defined by the user's subscription.

7.6.4.48 MC Information

This parameter contains three parameters which are associated with the MC service. The following parameters are included:

- NbrSB;
- NbrUser;
- NbrSN.

Definitions of these parameters are provided in 3GPP TS 23.135.

7.6.4.49 CCBS Request State

This parameter indicates the current state of the CCBS request. It can take one of seven values:

- request;
- recall;
- active;
- completed;
- suspended;
- frozen;
- deleted.

7.6.4.x Basic Service Group 2

This parameter refers to the Basic Service Group either as a bearer service (see clause 7.6.4.38) or a teleservice (see clause 7.6.4.39). This parameter is used only for supplementary service management.

<<Next Modified Section>>

10.1 MAP_SEND_ROUTING_INFORMATION service

10.1.1 Definition

This service is used between the Gateway MSC and the HLR. The service is invoked by the Gateway MSC to perform the interrogation of the HLR in order to route a call towards the called MS.

This is a confirmed service using the primitives listed in table 10.1/1.

This service is also used between the GMSC and the NPLR and between the gsmSCF and the HLR.

10.1.2 Service primitives

Table 10.1/1: MAP_SEND_ROUTING_INFORMATION parameters

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Interrogation Type	M	M(=)		
GMSC or gsmSCF Address	M	M(=)		
MSISDN	M	M(=)	C	C(=)
OR Interrogation	C	C(=)		
OR Capability	C	C(=)		
CUG Interlock	C	C(=)	C	C(=)
CUG Outgoing Access	C	C(=)	C	C(=)
Number of Forwarding	C	C(=)		
Network Signal Info	C	C(=)		
Supported CAMEL Phases	C	C(=)	C	C(=)
Suppress T-CSI	C	C(=)		
Offered CAMEL 4 CSIs	C	C(=)		
Suppression of Announcement	C	C(=)		
Call Reference Number	C	C(=)		
Forwarding Reason	C	C(=)		
Basic Service Group	C	C(=)		
Basic Service Group 2	C	C(=)		
Alerting Pattern	C	C(=)		
CCBS Call	C	C(=)		
Supported CCBS Phase	C	C(=)		
Additional Signal Info	C	C(=)		
IST Support Indicator	C	C(=)		
Pre-paging supported	C	C(=)		
Call Diversion Treatment Indicator	C	C(=)		
Long FTN Supported	C	C(=)		
Suppress VT-CSI	C	C(=)		
Suppress Incoming Call Barring	C	C(=)		
gsmSCF Initiated Call	C	C(=)		
IMSI			C	C(=)
MSRN			C	C(=)
Forwarding Data			C	C(=)
Forwarding Interrogation Required			C	C(=)
VMSC address			C	C(=)
GMSC Camel Subscription Info			C	C(=)
Location Information			C	C(=)
Subscriber State			C	C(=)
Basic Service Code			C	C(=)
CUG Subscription Flag			C	C(=)
North American Equal Access preferred Carrier Id			U	C(=)
User error			C	C(=)
SS-List			U	C(=)
CCBS Target			C	C(=)
Keep CCBS Call Indicator			C	C(=)
IST Alert Timer			C	C(=)

Parameter name	Request	Indication	Response	Confirm
Number Portability Status			U	C(=)
Supported CAMEL Phases in VMSC			C	
Offered CAMEL 4 CSIs in VMSC			C	C(=)
Provider error				O

10.1.3 Parameter use

See clause 7.6 for a definition of the parameters used in addition to the following. Note that:

- a conditional parameter whose use is defined only in 3GPP TS 23.078 shall be absent if the sending entity does not support CAMEL;
- a conditional parameter whose use is defined only in 3GPP TS 23.079 [99] shall be absent if the sending entity does not support optimal routeing;
- a conditional parameter whose use is defined only in 3GPP TS 23.078 & 3GPP TS 23.079 [99] shall be absent if the sending entity supports neither CAMEL nor optimal routeing.

Interrogation Type

See 3GPP TS 23.079 [99] for the use of this parameter.

GMSC or gsmSCF address

The E.164 address of the GMSC or the gsmSCF. This parameter contains the gsmSCF address if the gsmSCF iniated call parameter is present, otherwise it is the GMSC address.

MSISDN

This is the Mobile Subscriber ISDN number assigned to the called subscriber. In the Request & Indication it is the number received by the GMSC in the ISUP IAM. If the call is to be forwarded and the HLR supports determination of the redirecting number, the HLR inserts the basic MSISDN in the Response.

See 3GPP TS 23.066 [108] for the use of this parameter and the conditions for its presence in the response.

OR Interrogation

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

OR Capability

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

CUG Interlock

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

CUG Outgoing Access

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

Number of Forwarding

See 3GPP TS 23.018 [97] for the use of this parameter and the conditions for its presence.

Network Signal Info

See 3GPP TS 23.018 [97] for the conditions for the presence of the components of this parameter.

Supported CAMEL Phases

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

T-CSI Suppression

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Offered CAMEL 4 CSIs

This parameter indicates the CAMEL phase 4 CSIs offered in the GMSC/VLR (see clause 7.6.3.36D).

Suppression Of Announcement

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Call Reference Number

The use of this parameter and the conditions for its presence are specified in 3GPP TS 23.078 [98] and 3GPP TS 23.079 [99].

Forwarding Reason

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Basic Service Group

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Basic Service Group 2

See 3GPP TS 23.079[99] for the use of this parameter and the conditions for its presence.

Alerting Pattern

See 3GPP TS 23.018 [97] and 3GPP TS 23.078 [98] for the use of this parameter and the conditions for its presence.

CCBS Call

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

Supported CCBS Phase

This parameter indicates by its presence that CCBS is supported and the phase of CCBS which is supported.

Additional Signal Info

See 3GPP TS 23.081 [27] for the conditions for the presence of the components of this parameter.

IST Support Indicator

This parameter is used to indicate to the HLR that the GMSC supports basic IST functionality, that is, the GMSC is able to terminate the subscriber call activity that originated the IST Alert when it receives the IST Alert response indicating that the call(s) shall be terminated. If this parameter is not included in the Send Routing Information indication and the subscriber is marked as an IST subscriber, then the HLR may limit the service for the call (by barring the incoming call if it is not subject to forwarding, or suppressing Call Forwarding from the GMSC), or allow the call assuming the associated risk of not having the basic IST mechanism available.

This parameter can also indicate that the GMSC supports the IST Command, including the ability to terminate all calls being carried for the identified subscriber by using the IMSI as a key. If this additional capability is not included in the Send Routing Information indication and the subscriber is marked as an IST subscriber, then the HLR may limit the service for the subscriber (by barring the incoming calls if they are not subject to forwarding, or suppressing Call Forwarding from the GMSC), or allow the incoming calls assuming the associated risk of not having the IST Command mechanism available.

Pre-paging supported

See 3GPP TS 23.018 for the use of this parameter and the conditions for its presence.

Call Diversion Treatment Indicator

This parameter indicates whether or not call diversion is allowed.

IMSI

See 3GPP TS 23.018 [97] and 3GPP TS 23.066 [108] for the use of this parameter and the conditions for its presence.

MSRN

See 3GPP TS 23.018 [97], 3GPP TS 23.066 [108] and 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence. If the NPLR returns only the MSISDN-number without Routeing Number to the GMSC, the MSISDN-number shall be returned as MSRN.

Forwarding Data

This parameter includes a number to define the forwarded-to destination, the forwarding reason and the forwarding options Notification to calling party and Redirecting presentation, and can include the forwarded-to subaddress. See 3GPP TS 23.018 [97] and 3GPP TS 23.079 [99] for the conditions for the presence of its components.

Forwarding Interrogation Required

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

Long FTN Supported

This parameter indicates that the GMSC supports Long Forwarded-to Numbers.

Suppress VT-CSI

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Suppress Incoming Call Barring

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

gsmSCF Initiated Call

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

VMSC address

See 3GPP TS 23.079 [99] and 3GPP TS 23.078 [98] for the use of this parameter and the conditions for its presence.

GMSC CAMEL Subscription Info

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Location Information

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Subscriber State

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

CUG Subscription Flag

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

North American Equal Access preferred Carrier Id

This parameter is returned to indicate the preferred carrier identity to be used to set-up the call (i.e. forwarding the call or establishing the roaming leg).

SS-List

This parameter includes SS-codes and will be returned as an operator option. The HLR shall not send PLMN-specific SS-codes across PLMN boundaries. However if the GMSC receives PLMN-specific SS-codes from a foreign PLMN's HLR the GMSC may ignore it. If the GMSC attempts to process the PLMN- specific SS- codes, this may lead to unpredictable behaviour but the GMSC shall continue call processing.

Basic Service Code

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

If the CAMEL service is not involved, this parameter includes the basic service code and will be returned as an operator option. The HLR shall not send a PLMN-specific Basic Service Code across PLMN boundaries. However if the GMSC receives a PLMN-specific Basic Service Code from a foreign PLMN's HLR the GMSC may ignore it. If the GMSC attempts to process the PLMN specific Basic Service codes, this may lead to unpredictable behaviour but the GMSC shall continue call processing.

CCBS Target

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

Keep CCBS Call Indicator

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

IST Alert Timer

It includes the IST Alert timer value that must be used to inform the HLR about the call activities that the subscriber performs. This parameter is only sent to the GMSC in response to a Send Routing Information request which indicates the the GMSC supports IST.

Number Portability Status

This parameter indicates the number portability status of the subscriber. This parameter may be present if the sender of SRIack is NPLR.

Supported CAMEL Phases in VMSC

The use of this parameter and the requirements for its presence are specified in 3GPP TS 23.078.

Offered CAMEL 4 CSIs in VMSC

This parameter is defined in clause 7.6.3.36F.

User error

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

- Unknown Subscriber;

  The diagnostic for the Unknown Subscriber error may indicate “NPDB Mismatch”.

- Number changed;

- Call Barred;

  This error will indicate that either incoming calls are barred for this MS or that calls are barred due to Operator Determined Barring (see 3GPP TS 22.041 [8] for a definition of this network feature);

- CUG Reject;

  The value of this error cause will indicate the reason for CUG Reject;

- Bearer Service Not Provisioned;

- Teleservice Not Provisioned;

A subscription check has been performed and the call has not passed the check due to incompatibility with regard to the requested service. Depending on the nature of the incompatibility, either of these messages will be returned;

- Facility Not Supported;
- Absent Subscriber;

  This indicates that the location of the MS is not known (either the station is not registered and there is no location information available or the Provide Roaming Number procedure fails due to IMSI detached flag being set), or the GMSC requested forwarding information with a forwarding reason of not reachable, and the call forwarding on MS not reachable service is not active;

- Busy Subscriber;

  This indicates that Call Forwarding on Busy was not active for the specified basic service group when the GMSC requested forwarding information with a forwarding reason of busy;

  The error may also indicate that the subscriber is busy due to an outstanding CCBS recall. In the error data it may then be specified that CCBS is possible for the busy encountered call;

- No Subscriber Reply;

  This indicates that Call Forwarding on No Reply was not active for the specified basic service group when the GMSC requested forwarding information with a forwarding reason of no reply;

- OR Not Allowed;

  This indicates that the HLR is not prepared to accept an OR interrogation from the GMSC, or that calls to the specified subscriber are not allowed to be optimally routed;

- Forwarding Violation;
- System Failure;
- Data Missing;
- Unexpected Data Value.

See clause 7.6 for a definition of these errors.

Provider error

These are defined in clause 7.6.

<<Next Modified Section>>

10.3 MAP_RESUME_CALL_HANDLING service

10.3.1 Definition

This service is used between the terminating VMSC and the GMSC. The service is invoked by the terminating VMSC to request the GMSC to resume handling the call and forward it to the specified destination.

This is a confirmed service which uses the Primitives listed in table 10.3/1.

10.3.2 Service primitives

Table 10.3/1: MAP_RESUME_CALL_HANDLING parameters

Parameter name	Request	Indication	Response	Confirm

Invoke Id	M	M(=)	M(=)	M(=)
Call Reference Number	C	C(=)		
Basic Service Group	C	C(=)		
Basic Service Group 2	C	C(=)		
IMSI	C	C(=)		
Forwarding Data	C	C(=)		
CUG Interlock	C	C(=)		
CUG Outgoing Access	C	C(=)		
O-CSI	C	C(=)		
D-CSI	C	C(=)		
CCBS Target	C	C(=)		
UU Data	C	C(=)		
UUS CF Interaction	C	C(=)		
All Information Sent	C	C(=)		
MSISDN User error	C	C(=)	 C	 C(=)
Provider error				O

10.3.3 Parameter use

Information received in subsequent segment of a segmented dialogue shall not overwrite information received in an earlier segment.

See clause 7.6 for a definition of the parameters used, in addition to the following.

Call Reference Number

See 3GPP TS 23.079 [99] for the use of this parameter. This parameter shall be present in ~~a~~ the first segment of the dialogue.

Basic Service Group

See 3GPP TS 23.079 [99] for the use of this parameter. This parameter shall be present in ~~a~~ the first segment of the dialogue.

Basic Service Group 2

See 3GPP TS 23.079[99] for the use of this parameter. If this parameter is present, it shall be in the first segment of the dialogue.

IMSI

This is the IMSI of the forwarding Subscriber. This parameter shall be present in ~~a~~ the first segment of the dialogue.

Forwarding Data

This parameter includes a number to define the forwarded-to destination, the forwarding reason and the forwarding options Notification to calling party and Redirecting presentation, and can include the forwarded-to subaddress. See 3GPP TS 23.079 [99] for the conditions for the presence of its components. This parameter shall be present in a first segment of the dialogue.

CUG Interlock

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

CUG Outgoing Access

See 3GPP TS 23.079 [99] for the use of this parameter and the conditions for its presence.

O-CSI

See 3GPP TS 23.078 for the use of this parameter and the conditions for its presence.

For CAMEL phases 1 & 2, the O-CSI shall contain only one set of O-BCSM TDP data.

D-CSI

The Dialled Services-CSI.

See 3GPP TS 23.078 for the use of this parameter and the conditions for its presence.

CCBS Target

See 3GPP TS 23.093 [107] for the use of this parameter and the conditions for its presence.

UU Data

See 3GPP TS 23.087 for the use of this parameter and the conditions for its presence.

UUS CF Interaction

See 3GPP TS 23.087 for the use of this parameter and the conditions for its presence.

All Information Sent

This parameter is set when the VMSC has sent all information to GMSC.

MSISDN

This parameter is the basic MSISDN of the forwarding subscriber. It shall be present if the VMSC supports determination of the redirecting number.

User error

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

- Optimal Routeing not allowed;
- Forwarding failed;
- Unexpected Data Value;
- Data Missing.

Provider error

These are defined in clause 7.6.

<<Next Modified Section>>

17.7.3 Call handling data types

```
MAP-CH-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CH-DataTypes (13) version8 (8)}

DEFINITIONS

IMPLICIT TAGS

::=

BEGIN

EXPORTS
   SendRoutingInfoArg,
   SendRoutingInfoRes,
   ProvideRoamingNumberArg,
   ProvideRoamingNumberRes,
   ResumeCallHandlingArg,
   ResumeCallHandlingRes,
   NumberOfForwarding,
   SuppressionOfAnnouncement,
   CallReferenceNumber,
   ProvideSIWFSNumberArg,
   ProvideSIWFSNumberRes,
   SIWFSSignallingModifyArg,
   SIWFSSignallingModifyRes,
   SetReportingStateArg,
   SetReportingStateRes,
   StatusReportArg,
   StatusReportRes,
   RemoteUserFreeArg,
   RemoteUserFreeRes,
   IST-AlertArg,
   IST-AlertRes,
   IST-CommandArg,
   IST-CommandRes
;

IMPORTS
   SubscriberInfo,
   SupportedCamelPhases,
   OfferedCamel4CSIs,
   CUG-Interlock,
   O-CSI,
   D-CSI,
   O-BcsmCamelTDPCriteriaList,
   T-BCSM-CAMEL-TDP-CriteriaList,
   IST-SupportIndicator,
   IST-AlertTimerValue,
   T-CSI


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

   ForwardingOptions,
   SS-List,
   CCBS-Feature
FROM MAP-SS-DataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-SS-DataTypes (14) version8 (8)}

   ISDN-AddressString,
   ISDN-SubaddressString,
   FTN-AddressString,
   ExternalSignalInfo,
   Ext-ExternalSignalInfo,
   IMSI,
   LMSI,
   Ext-BasicServiceCode,
   AlertingPattern,
   NAEA-PreferredCI


FROM MAP-CommonDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-CommonDataTypes (18) version8 (8)}
```

```
   ExtensionContainer
FROM MAP-ExtensionDataTypes {
   itu-t identified-organization (4) etsi (0) mobileDomain (0)
   gsm-Network (1) modules (3) map-ExtensionDataTypes (21) version8 (8)}
;
```

```
CUG-CheckInfo ::= SEQUENCE {
     cug-Interlock                    CUG-Interlock,
     cug-OutgoingAccess               NULL                          OPTIONAL,
     extensionContainer               ExtensionContainer            OPTIONAL,
     ...}
```

```
NumberOfForwarding ::= INTEGER (1..5)
```

```
SendRoutingInfoArg ::= SEQUENCE {
     msisdn                           [0] ISDN-AddressString,
     cug-CheckInfo                    [1] CUG-CheckInfo             OPTIONAL,
     numberOfForwarding               [2] NumberOfForwarding        OPTIONAL,
     interrogationType                [3] InterrogationType,
     or-Interrogation                 [4] NULL                      OPTIONAL,
     or-Capability                    [5] OR-Phase                  OPTIONAL,
     gmsc-OrGsmSCF-Address            [6] ISDN-AddressString,
     callReferenceNumber              [7] CallReferenceNumber       OPTIONAL,
     forwardingReason                 [8] ForwardingReason          OPTIONAL,
     basicServiceGroup                [9] Ext-BasicServiceCode      OPTIONAL,
     networkSignalInfo                [10] ExternalSignalInfo       OPTIONAL,
     camelInfo                        [11] CamelInfo                OPTIONAL,
     suppressionOfAnnouncement        [12] SuppressionOfAnnouncement OPTIONAL,
     extensionContainer               [13] ExtensionContainer       OPTIONAL,
     ...,
     alertingPattern                  [14] AlertingPattern          OPTIONAL,
     ccbs-Call                        [15] NULL                      OPTIONAL,
     supportedCCBS-Phase              [16]  SupportedCCBS-Phase     OPTIONAL,
     additionalSignalInfo             [17] Ext-ExternalSignalInfo   OPTIONAL,
     istSupportIndicator              [18] IST-SupportIndicator     OPTIONAL,
     pre-pagingSupported              [19] NULL                     OPTIONAL,
     callDiversionTreatmentIndicator  [20] CallDiversionTreatmentIndicator   OPTIONAL,
     longFTN-Supported                [21] NULL                     OPTIONAL,
     suppress-VT-CSI                  [22] NULL                     OPTIONAL,
     suppressIncomingCallBarring      [23] NULL                     OPTIONAL,
     gsmSCF-InitiatedCall             [24] NULL                     OPTIONAL,
     basicServiceGroup2               [x] Ext-BasicServiceCode      OPTIONAL
      }
```

```
SuppressionOfAnnouncement ::= NULL
```

```
InterrogationType ::= ENUMERATED {
     basicCall  (0),
     forwarding  (1)}
```

```
OR-Phase ::= INTEGER (1..127)
```

```
CallReferenceNumber ::= OCTET STRING (SIZE (1..8))
```

```
ForwardingReason ::= ENUMERATED {
     notReachable  (0),
     busy  (1),
     noReply  (2)}
```

```
SupportedCCBS-Phase ::= INTEGER (1..127)
-- exception handling:
-- Only value 1 is used.
-- Values in the ranges 2-127 are reserved for future use.
-- If received values 2-127 shall be mapped on to value 1.
```

```
CallDiversionTreatmentIndicator ::= OCTET STRING (SIZE(1))
--   callDiversionAllowed (xxxx xx01)
--   callDiversionNotAllowed (xxxx xx10)
--   network default is call diversion allowed
```

```
SendRoutingInfoRes ::= [3] SEQUENCE {
    imsi                              [9] IMSI                          OPTIONAL,
    -- IMSI must be present if SendRoutingInfoRes is not segmented.
    -- If the TC-Result-NL segmentation option is taken the IMSI must be
    -- present in one segmented transmission of SendRoutingInfoRes.
    extendedRoutingInfo               ExtendedRoutingInfo               OPTIONAL,
    cug-CheckInfo                     [3] CUG-CheckInfo                 OPTIONAL,
    cugSubscriptionFlag               [6] NULL                          OPTIONAL,
    subscriberInfo                    [7] SubscriberInfo                OPTIONAL,
    ss-List                           [1] SS-List                       OPTIONAL,
    basicService                      [5] Ext-BasicServiceCode          OPTIONAL,
    forwardingInterrogationRequired   [4] NULL                          OPTIONAL,
    vmsc-Address                      [2] ISDN-AddressString            OPTIONAL,
    extensionContainer                [0] ExtensionContainer            OPTIONAL,
    ... ,
    naea-PreferredCI                  [10] NAEA-PreferredCI             OPTIONAL,
    -- naea-PreferredCI is included at the discretion of the HLR operator.
    ccbs-Indicators                   [11] CCBS-Indicators              OPTIONAL,
    msisdn                            [12] ISDN-AddressString           OPTIONAL,
    numberPortabilityStatus           [13] NumberPortabilityStatus      OPTIONAL,
    istAlertTimer                     [14] IST-AlertTimerValue          OPTIONAL,
    supportedCamelPhasesInVMSC        [15] SupportedCamelPhases         OPTIONAL,
    offeredCamel4CSIsInVMSC           [16] OfferedCamel4CSIs            OPTIONAL
    }
```

```
NumberPortabilityStatus ::= ENUMERATED {
    notKnownToBePorted                (0),
    ownNumberPortedOut                (1),
    foreignNumberPortedToForeignNetwork (2),
    ...}
    --   exception handling:
    --  reception of other values than the ones listed the receiver shall ignore the
    --  whole NumberPortabilityStatus
```

```
CCBS-Indicators ::= SEQUENCE {
    ccbs-Possible                     [0]  NULL                         OPTIONAL,
    keepCCBS-CallIndicator            [1]  NULL                         OPTIONAL,
    extensionContainer                [2]  ExtensionContainer           OPTIONAL,
    ...}
```

```
RoutingInfo ::= CHOICE {
    roamingNumber                     ISDN-AddressString,
    forwardingData                    ForwardingData}
```

```
ForwardingData ::= SEQUENCE {
    forwardedToNumber                 [5] ISDN-AddressString            OPTIONAL,
    -- When this datatype is sent from an HLR which supports CAMEL Phase 2
    -- to a GMSC which supports CAMEL Phase 2 the GMSC shall not check the
    -- format of the number
    forwardedToSubaddress             [4] ISDN-SubaddressString         OPTIONAL,
    forwardingOptions                 [6] ForwardingOptions             OPTIONAL,
    extensionContainer                [7] ExtensionContainer            OPTIONAL,
    ...,
    longForwardedToNumber             [8] FTN-AddressString             OPTIONAL}
```

```
ProvideRoamingNumberArg ::= SEQUENCE {
     imsi                                 [0] IMSI,
     msc-Number                           [1] ISDN-AddressString,
     msisdn                               [2] ISDN-AddressString             OPTIONAL,
     lmsi                                 [4] LMSI                           OPTIONAL,
     gsm-BearerCapability                 [5] ExternalSignalInfo             OPTIONAL,
     networkSignalInfo                    [6] ExternalSignalInfo             OPTIONAL,
     suppressionOfAnnouncement            [7] SuppressionOfAnnouncement      OPTIONAL,
     gmsc-Address                         [8] ISDN-AddressString             OPTIONAL,
     callReferenceNumber                  [9] CallReferenceNumber            OPTIONAL,
     or-Interrogation                     [10] NULL                          OPTIONAL,
     extensionContainer                   [11] ExtensionContainer            OPTIONAL,
     ... ,
     alertingPattern                      [12] AlertingPattern               OPTIONAL,
     ccbs-Call                            [13] NULL                          OPTIONAL,
     supportedCamelPhasesInInterrogatingNode  [15] SupportedCamelPhases      OPTIONAL,
     additionalSignalInfo                 [14] Ext-ExternalSignalInfo        OPTIONAL,
     orNotSupportedInGMSC                 [16] NULL                          OPTIONAL,
     pre-pagingSupported                  [17] NULL                          OPTIONAL,
     longFTN-Supported                    [18] NULL                          OPTIONAL,
     suppress-VT-CSI                      [19] NULL                          OPTIONAL,
     offeredCamel4CSIsInInterrogatingNode [20] OfferedCamel4CSIs             OPTIONAL
      }
```

```
ProvideRoamingNumberRes ::= SEQUENCE {
     roamingNumber                        ISDN-AddressString,
     extensionContainer                   ExtensionContainer                 OPTIONAL,
     ...}
```

```
ResumeCallHandlingArg ::= SEQUENCE {
     callReferenceNumber                  [0] CallReferenceNumber            OPTIONAL,
     basicServiceGroup                    [1] Ext-BasicServiceCode           OPTIONAL,
     forwardingData                       [2] ForwardingData                 OPTIONAL,
     imsi                                 [3] IMSI                           OPTIONAL,
     cug-CheckInfo                        [4] CUG-CheckInfo                  OPTIONAL,
     o-CSI                                [5] O-CSI                          OPTIONAL,
     extensionContainer                   [7] ExtensionContainer             OPTIONAL,
     ccbs-Possible                        [8]  NULL                          OPTIONAL,
     msisdn                               [9]  ISDN-AddressString            OPTIONAL,
     uu-Data                              [10] UU-Data                       OPTIONAL,
     allInformationSent                   [11] NULL                          OPTIONAL,
     ...,
     d-csi                                [12] D-CSI                         OPTIONAL,
     o-BcsmCamelTDPCriteriaList           [13] O-BcsmCamelTDPCriteriaList    OPTIONAL,
     basicServiceGroup2                   [x] Ext-BasicServiceCode           OPTIONAL
      }
```