

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

NP-020456

Source: TSG CN WG4
Title: Shared Networks
Agenda item: 8.9
Document for: APPROVAL

The SNA access information transported at MAP level.

Spec	CR	Rev	Doc-2nd-Level	Phase	Subject	Cat	Ver_C
29.002	466	1	N4-021102	Rel5	Support for Shared Network in connected mode	B	5.2.0
29.010	058	1	N4-021103	Rel5	Support for Shared Network in connected mode	B	5.0.0

CHANGE REQUEST

⌘ **29.002 CR 466** ⌘ 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:	⌘	Support for Shared Network in connected mode	
Source:	⌘	CN4	
Work item code:	⌘	TEI5	Date: ⌘ 09/07/2002
Category:	⌘	B	Release: ⌘ REL-5
		Use <u>one</u> of the following categories: F (correction) A (corresponds to a correction in an earlier release) B (addition of feature), C (functional modification of feature) D (editorial modification) Detailed explanations of the above categories can be found in 3GPP TR 21.900.	Use <u>one</u> of the following releases: 2 (GSM Phase 2) R96 (Release 1996) R97 (Release 1997) R98 (Release 1998) R99 (Release 1999) Rel-4 (Release 4) Rel-5 (Release 5) Rel-6 (Release 6)

Reason for change:	⌘	RAN#3 has agreed on a solution for the support of Shared Networks in connected mode in Release 5. See TR R3:012 available in LS N4-020865 (R3-021816). The agreed solution is based on the concept of SNA, which is basically a collection of Location Areas. A set of allowed SNA's is associated to each IMSI serie. The set of allowed SNA's, the SNA Access Information, is signalled to the Radio Network when a call is setup, so that the Radio Network can decide whether a subscriber can be handed over when moving to a new Location Area, i.e. if he has authorization to get service in that Location Area. During the Handover procedure the anchor MSC has to inform the non-anchor MSC about the SNA Access Information of the subscriber so that non-anchor MSC shall be able to forward this information to the Radio Network when performing subsequent intra-MSC handovers. The allowed SNA's are added to PrepareHandover.
Summary of change:	⌘	The list of allowed SNA's is added to MAP PrepareHandover.
Consequences if not approved:	⌘	Support of Shared Network in connected mode would not be available after an inter-MSC Handover.

Clauses affected:	⌘	7.6, 7.6.6.4, 8.4.1.2, 8.4.1.3, 17.7.1
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Other specs	⌘	Y	N	Other core specifications	⌘	29.010 CR 058 23.003 CR 050 23.009 CR 080
		X				
affected:			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.

**** **FIRST MODIFIED SECTION** ****

7.6 Definition of parameters

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

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

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

Absent Subscriber Diagnostic SM	7.6.8.9	Invoke Id	7.6.1.1
Access connection status	7.6.9.3	ISDN Bearer Capability	7.6.3.41
		IST Alert Timer	7.6.3.66
		IST Information Withdrawn	7.6.3.68
		IST Support Indicator	7.6.3.69
		LCS Codeword	7.6.11.18
		LCS Codeword Applicability	7.6.11.19
		LCS Information	7.6.3.60
		LCS Service Type Id	7.6.11.15
		LCS Codeword Notification	7.6.11.22
Access signalling information	7.6.9.5	Kc	7.6.7.4
Additional Absent Subscriber Diagnostic SM	7.6.8.12	Linked Id	7.6.1.2
Additional Location Estimate	7.6.11.21	LMSI	7.6.2.16
Additional number	7.6.2.46	Location Information	7.6.2.30

Additional signal info	7.6.9.10	Location Information for GPRS	7.6.2.30a
Additional SM Delivery Outcome	7.6.8.11	Location update type	7.6.9.6
Age Indicator	7.6.3.72	Long Forwarded-to Number	7.6.2.22A
Alert Reason	7.6.8.8	Long FTN Supported	7.6.2.22B
Alert Reason Indicator	7.6.8.10	Lower Layer Compatibility	7.6.3.42
Alerting Pattern	7.6.3.44	LSA Information	7.6.3.56
All GPRS Data	7.6.3.53	LSA Information Withdraw	7.6.3.58
All Information Sent	7.6.1.5	MC Information	7.6.4.48
AN-apdu	7.6.9.1	MC Subscription Data	7.6.4.47
APN	7.6.2.42	Mobile Not Reachable Reason	7.6.3.51
Authentication set list	7.6.7.1	Modification request for CSI	7.6.3.81
B-subscriber Address	7.6.2.36	Modification request for SS Information	7.6.3.82
B subscriber Number	7.6.2.48	More Messages To Send	7.6.8.7
B subscriber subaddress	7.6.2.49	MS ISDN	7.6.2.17
Basic Service Group	7.6.4.40	MSC number	7.6.2.11
Bearer service	7.6.4.38	MSIsdn-Alert	7.6.2.29
BSSMAP Service Handover	7.6.6.5	Multicall Bearer Information	7.6.2.52
Call Barring Data	7.6.3.83	Multiple Bearer Requested	7.6.2.53
Call barring feature	7.6.4.19	Multiple Bearer Not Supported	7.6.2.54
Call barring information	7.6.4.18	MWD status	7.6.8.3
Call Direction	7.6.5.8	NbrUser	7.6.4.45
Call Forwarding Data	7.6.3.84	Network Access Mode	7.6.3.50
Call Info	7.6.9.9	Network node number	7.6.2.43
Call reference	7.6.5.1	Network resources	7.6.10.1
Call Termination Indicator	7.6.3.67	Network signal information	7.6.9.8
Called number	7.6.2.24	New password	7.6.4.20
Calling number	7.6.2.25	No reply condition timer	7.6.4.7
CAMEL Subscription Info	7.6.3.78	North American Equal Access preferred Carrier Id	7.6.2.34
CAMEL Subscription Info Withdraw	7.6.3.38	Number Portability Status	7.6.5.14
Cancellation Type	7.6.3.52	ODB Data	7.6.3.85
Category	7.6.3.1	ODB General Data	7.6.3.9
CCBS Feature	7.6.5.8	ODB HPLMN Specific Data	7.6.3.10
CCBS Request State	7.6.4.49	OMC Id	7.6.2.18
Channel Type	7.6.5.9	Originally dialled number	7.6.2.26
Chosen Channel	7.6.5.10	Originating entity number	7.6.2.10
Chosen Radio Resource Information	7.6.6.10B	Override Category	7.6.4.4
Ciphering mode	7.6.7.7	P-TMSI	7.6.2.47
Cksn	7.6.7.5	PDP-Address	7.6.2.45
CLI Restriction	7.6.4.5	PDP-Context identifier	7.6.3.55
CM service type	7.6.9.2	PDP-Type	7.6.2.44
Complete Data List Included	7.6.3.54	Pre-paging supported	7.6.5.15
CS Allocation Retention priority	7.6.3.87	Previous location area Id	7.6.2.4
CS LCS Not Supported by UE	7.6.11.9	Protocol Id	7.6.9.7
CUG feature	7.6.3.26	Provider error	7.6.1.3
CUG index	7.6.3.25	PS LCS Not Supported by UE	7.6.11.10
CUG info	7.6.3.22	QoS-Subscribed	7.6.3.47
CUG interlock	7.6.3.24	Radio Resource Information	7.6.6.10
CUG Outgoing Access indicator	7.6.3.8	Radio Resource List	7.6.6.10A
CUG subscription	7.6.3.23	RANAP Service Handover	7.6.6.6
CUG Subscription Flag	7.6.3.37	Rand	7.6.7.2
Current location area Id	7.6.2.6	Regional Subscription Data	7.6.3.11
Current password	7.6.4.21	Regional Subscription Response	7.6.3.12
Deferred MT-LR Data	7.6.11.3	Relocation Number List	7.6.2.19A
Deferred MT-LR Response Indicator	7.6.11.2	Requested Info	7.6.3.31
eMLPP Information	7.6.4.41	Requested Subscription Info	7.6.3.86
Encryption Information	7.6.6.9	Roaming number	7.6.2.19
Equipment status	7.6.3.2	Roaming Restricted In SGSN Due To Unsupported Feature	7.6.3.49
Extensible Basic Service Group	7.6.3.5	Roaming Restriction Due To Unsupported Feature	7.6.3.13
Extensible Bearer service	7.6.3.3	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

Extensible Call barring feature	7.6.3.21	SGSN number	7.6.2.38
Extensible Call barring information	7.6.3.20	<u>SNA Access Information</u>	<u>7.6.6.4</u>
Extensible Call barring information for CSE	7.6.3.79	SIWF Number	7.6.2.35
Extensible Forwarding feature	7.6.3.16	SoLSA Support Indicator	7.6.3.57
Extensible Forwarding info	7.6.3.15	SM Delivery Outcome	7.6.8.6
Extensible Forwarding information for CSE	7.6.3.80	SM-RP-DA	7.6.8.1
Extensible Forwarding Options	7.6.3.18	SM-RP-MTI	7.6.8.16
Extensible No reply condition timer	7.6.3.19	SM-RP-OA	7.6.8.2
Extensible QoS-Subscribed	7.6.3.74	SM-RP-PRI	7.6.8.5
Extensible SS-Data	7.6.3.29	SM-RP-SMEA	7.6.8.17
Extensible SS-Info	7.6.3.14	SM-RP-UI	7.6.8.4
Extensible SS-Status	7.6.3.17	Sres	7.6.7.3
Extensible Teleservice	7.6.3.4	SS-Code	7.6.4.1
External Signal Information	7.6.9.4	SS-Data	7.6.4.3
Failure Cause	7.6.7.9	SS-Event	7.6.4.42
Forwarded-to number	7.6.2.22	SS-Event-Data	7.6.4.43
Forwarded-to subaddress	7.6.2.23	SS-Info	7.6.4.24
Forwarding feature	7.6.4.16	SS-Status	7.6.4.2
Forwarding information	7.6.4.15	Stored location area Id	7.6.2.5
Forwarding Options	7.6.4.6	Subscriber State	7.6.3.30
GGSN address	7.6.2.40	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
		Supported Camel4 Subsets	7.6.3.36D
		Supported Camel4 Subsets in GMSC	7.6.3.36E
		Supported Camel4 Subsets in VMSC	7.6.3.36F
		Supported Camel4 Subsets in VLR	7.6.3.36B
		Supported Camel4 Subsets in SGSN	7.6.3.36C
		Supported CAMEL Phases in VLR	7.6.3.36
		Supported CAMEL Phases in SGSN	7.6.3.36A
		Supported GAD Shapes	7.6.11.20
		Supported LCS Capability Sets	7.6.11.17
		Suppress Incoming Call Barring	7.6.3.b
		Suppress T-CSI	7.6.3.33
		Suppress VT-CSI	7.6.3.a
		Suppression of Announcement	7.6.3.32
		Target cell Id	7.6.2.8
		Target location area Id	7.6.2.7
		Target RNC Id	7.6.2.8A
		Target MSC number	7.6.2.12
		Teleservice	7.6.4.39
		TMSI	7.6.2.2
		Trace reference	7.6.10.2
		Trace type	7.6.10.3
		User error	7.6.1.4
		USSD Data Coding Scheme	7.6.4.36
		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
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		

**** NEXT MODIFIED SECTION ****

7.6.6 Radio parameters

7.6.6.1 - 7.6.6.34 Void

7.6.6.4 SNA Access Information

This parameter refers to the information element SNA Access Information information element defined in 3GPP TS 25.413.

**** NEXT MODIFIED SECTION ****

8.4 Handover services

It should be noted that the handover services used on the B-interface have not been updated for Release 99. The B-interface is not fully operational specified. It is strongly recommended not to implement the B-interface as an external interface.

8.4.1 MAP_PREPARE_HANDOVER service

8.4.1.1 Definition

This service is used between MSC-A and MSC-B (E-interface) when a call is to be handed over or relocated from MSC-A to MSC-B.

The MAP_PREPARE_HANDOVER service is a confirmed service using the primitives from table 8.4/1.

8.4.1.2 Service primitives

Table 8.4/1: MAP_PREPARE_HANDOVER

Parameter name	Request	Indication	Response	Confirm
Invoke Id	M	M(=)	M(=)	M(=)
Target Cell Id	C	C(=)		
Target RNC Id	C	C(=)		
HO-NumberNotRequired	C	C(=)		
IMSI	C	C(=)		
Integrity Protection Information	C	C(=)		
Encryption Information	C	C(=)		
Radio Resource Information	C	C(=)		
AN-APDU	C	C(=)	C	C(=)
Allowed GSM Algorithms	C	C(=)		
Allowed UMTS Algorithms	C	C(=)		
Radio Resource List	C	C(=)		
RAB ID	C	C(=)		
BSSMAP Service Handover	C	C(=)		

RANAP Service Handover	C	C(=)		
<u>SNA Access Information</u>	<u>C</u>	<u>C(=)</u>		
Handover Number			C	C(=)
Relocation Number List			C	C(=)
Multicall Bearer Information			C	C(=)
Multiple Bearer Requested	C	C(=)		
Multiple Bearer Not Supported			C	C(=)
Selected UMTS Algorithms			C	C(=)
Chosen Radio Resource Information			C	C(=)
User error			C	C(=)
Provider error				O

8.4.1.3 Parameter use

Invoke Id

For definition of this parameter see clause 7.6.1.

Target Cell Id

For definition of this parameter see clause 7.6.2. This parameter is only included if the service is not in an ongoing transaction. This parameter shall also be excluded if the service is a part of the Inter-MSC SRNS Relocation procedure or the inter-system handover GSM to UMTS procedure described in 3G TS 23.009.

Target RNC Id

For definition of this parameter see clause 7.6.2. This parameter shall be included if the service is a part of the Inter-MSC SRNS Relocation procedure or the inter-system handover GSM to UMTS procedure described in 3G TS 23.009.

HO-Number Not Required

For definition of this parameter see clause 7.6.6.

IMSI

For definition of this parameter see clause 7.6.2. This UMTS parameter shall be included if:

- available and
- if the access network protocol is BSSAP and
- there is an indication that the MS also supports UMTS.

Integrity Protection Information

For definition of this parameter see clause 7.6.6. This UMTS parameter shall be included if available and if the access network protocol is BSSAP.

Encryption Information

For definition of this parameter see clause 7.6.6. This UMTS parameter shall be included if available and if the access network protocol is BSSAP.

Radio Resource Information

For definition of this parameter see clause 7.6.6. This GSM parameter shall be included if the access network protocol is RANAP and there is an indication that the UE also supports GSM. If the parameter Radio Resource List is sent, the parameter Radio Resource Information shall not be sent.

AN-APDU

For definition of this parameter see clause 7.6.9.

Allowed GSM Algorithms

For definition of this parameter see clause 7.6.6. This parameters includes allowed GSM algorithms. This GSM parameter shall be included if:

- the service is a part of the Inter-MSC SRNS Relocation procedure and
- Ciphering or Security Mode Setting procedure has been performed.and
- there is an indication that the UE also supports GSM.

Allowed UMTS Algorithms

For definition of this parameter see clause 7.6.6. This UMTS parameter shall be included if all of the following conditions apply:

- access network protocol is BSSAP and
- Integrity Protection Information and Encryption Information are not available and

Ciphering or Security Mode Setting procedure has been performed.

Radio Resource List

For definition of this parameter see clause 7.6.6. This parameter shall be included if the access network protocol is RANAP and there is an indication that the UE also supports GSM. This parameter shall be sent when MSC-A requests multiple bearers to MSC-B. If the parameter Radio Resource Information is sent , the parameter Radio Resource List shall not be sent.

RAB ID

For definition of this parameter see subclause 7.6.2. This parameter shall be included when MSC-A supports multiple bearers and access network protocol is BSSAP and the RAB ID has a value other than 1.

BSSMAP Service Handover

For definition of this parameter see clause 7.6.6. It shall be present if it is available.

RANAP Service Handover

For definition of this parameter see clause 7.6.6. It shall be present if it is available.

SNA Access Information

For definition of this parameter see clause 7.6.6. It shall be present if it is available and the UE is not currently involved in an Emergency Call. This parameter shall not be included if the access network protocol is RANAP.

Handover Number

For definition of this parameter see clause 7.6.2. This parameter shall be returned at handover, unless the parameter HO-NumberNotRequired is sent. If the parameter Handover Number is returned, the parameter Relocation Number List shall not be returned.

Relocation Number List

For definition of this parameter see clause 7.6.2. This parameter shall be returned at relocation, unless the parameter HO-NumberNotRequired is sent. If the parameter Relocation Number List is returned, the parameter Handover Number shall not be returned.

Multicall Bearer Information

For a definition of this parameter see clause 7.6.2. This parameter shall be returned at relocation in the case that MSC-B supports multiple bearers.

Multiple Bearer Requested

For a definition of this parameter see clause 7.6.2. This parameter shall be sent when MSC-A requests multiple bearers to MSC-B.

Multiple Bearer Not Supported

For a definition of this parameter see clause 7.6.2. This parameter shall be returned at relocation when MSC-B receives Multiple Bearer Requested parameter and MSC-B does not support multiple bearers.

Selected UMTS Algorithms

For definition of this parameter see clause 7.6.6. This parameters includes the UMTS integrity and optionally encryption algorithms selected by RNC under the control of MSC-B. This UMTS parameter shall be included if the service is a part of the inter MSC inter system handover from GSM to UMTS.

Chosen Radio Resource Information

For definition of this parameter see clause 7.6.6. This parameter shall be returned at relocation if the encapsulated PDU is RANAP RAB Assignment Response and MS is in GSM access.

User error

For definition of this parameter see clause 7.6.1. The following errors defined in clause 7.6.1 may be used, depending on the nature of the fault:

- No handover number available.
- Target cell outside group call area;
- System failure.
- Unexpected data value.
- Data Missing.

Provider error

See definition of provider errors in clause 7.6.1.

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

17.7 MAP constants and data types

17.7.1 Mobile Service data types

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

DEFINITIONS

****** Unchanged text removed for clarity ******

-- handover types

```
ForwardAccessSignalling-Arg ::= [3] SEQUENCE {
  an-APDU                               AccessNetworkSignalInfo,
  integrityProtectionInfo                [0] IntegrityProtectionInformation OPTIONAL,
  encryptionInfo                        [1] EncryptionInformation          OPTIONAL,
  keyStatus                              [2] KeyStatus                    OPTIONAL,
  allowedGSM-Algorithms                  [4] AllowedGSM-Algorithms          OPTIONAL,
  allowedUMTS-Algorithms                 [5] AllowedUMTS-Algorithms        OPTIONAL,
  radioResourceInformation               [6] RadioResourceInformation      OPTIONAL,
  extensionContainer                     [3] ExtensionContainer            OPTIONAL,
  ...,
  radioResourceList                     [7] RadioResourceList             OPTIONAL,
  bssmap-ServiceHandover                 [9] BSSMAP-ServiceHandover        OPTIONAL,
  ranap-ServiceHandover                  [8] RANAP-ServiceHandover         OPTIONAL }
```

```
AllowedGSM-Algorithms ::= OCTET STRING (SIZE (1))
-- internal structure is coded as Algorithm identifier octet from
-- Permitted Algorithms defined in 3G TS 48.008
-- A node shall mark all GSM algorithms that are allowed in MSC-B
```

```
AllowedUMTS-Algorithms ::= SEQUENCE {
  integrityProtectionAlgorithms          [0] PermittedIntegrityProtectionAlgorithms
  OPTIONAL,
  encryptionAlgorithms                  [1] PermittedEncryptionAlgorithms  OPTIONAL,
  extensionContainer                     [2] ExtensionContainer            OPTIONAL,
  ...}
```

```
PermittedIntegrityProtectionAlgorithms ::=
  OCTET STRING (SIZE (1..maxPermittedIntegrityProtectionAlgorithmsLength))
-- Octets contain a complete PermittedIntegrityProtectionAlgorithms data type
-- as defined in 3G TS 25.413, encoded according to the encoding scheme
-- mandated by 3G TS 25.413.
-- Padding bits are included, if needed, in the least significant bits of the
-- last octet of the octet string.
```

```
maxPermittedIntegrityProtectionAlgorithmsLength INTEGER ::= 9
```

```
PermittedEncryptionAlgorithms ::=
  OCTET STRING (SIZE (1..maxPermittedEncryptionAlgorithmsLength))
-- Octets contain a complete PermittedEncryptionAlgorithms data type
-- as defined in 3G TS 25.413, encoded according to the encoding scheme
-- mandated by 3G TS 25.413
-- Padding bits are included, if needed, in the least significant bits of the
-- last octet of the octet string.
```

```
maxPermittedEncryptionAlgorithmsLength INTEGER ::= 9
```

```
KeyStatus ::= ENUMERATED {
  old (0),
  new (1),
  ...}
-- exception handling:
-- received values in range 2-31 shall be treated as "old"
-- received values greater than 31 shall be treated as "new"
```

```

PrepareHO-Arg ::= [3] SEQUENCE {
    targetCellId                [0] GlobalCellId                OPTIONAL,
    ho-NumberNotRequired        NULL                        OPTIONAL,
    targetRNCId                 [1] RNCId                        OPTIONAL,
    an-APDU                     [2] AccessNetworkSignalInfo    OPTIONAL,
    multipleBearerRequested     [3] NULL                        OPTIONAL,
    imsi                        [4] IMSI                        OPTIONAL,
    integrityProtectionInfo     [5] IntegrityProtectionInformation OPTIONAL,
    encryptionInfo              [6] EncryptionInformation      OPTIONAL,
    radioResourceInformation     [7] RadioResourceInformation   OPTIONAL,
    allowedGSM-Algorithms       [9] AllowedGSM-Algorithms      OPTIONAL,
    allowedUMTS-Algorithms      [10] AllowedUMTS-Algorithms   OPTIONAL,
    radioResourceList           [11] RadioResourceList         OPTIONAL,
    extensionContainer           [8] ExtensionContainer         OPTIONAL,
    ... ,
    rab-Id                      [12] RAB-Id                    OPTIONAL,
    bssmap-ServiceHandover      [13] BSSMAP-ServiceHandover    OPTIONAL,
    ranap-ServiceHandover       [14] RANAP-ServiceHandover     OPTIONAL,
    sna-AccessInformation       [15] SNA-AccessInformation     OPTIONAL
}

```

```

BSSMAP-ServiceHandover ::= OCTET STRING (SIZE (1))
-- Octets are coded according the Service Handover information element in
-- 3G TS 48.008.

```

```

RANAP-ServiceHandover ::= OCTET STRING (SIZE (1))
-- Octet contains a complete Service-Handover data type
-- as defined in 3G TS 25.413, encoded according to the encoding scheme
-- mandated by 3G TS 25.413
-- Padding bits are included in the least significant bits.

```

```

RadioResourceList ::= SEQUENCE SIZE (2.. maxNumOfRadioResources) OF
    RadioResource

```

```

RadioResource ::= SEQUENCE {
    radioResourceInformation    RadioResourceInformation,
    rab-Id                     RAB-Id,
    -- RAB Identity is needed to relate the radio resources with the radio access bearers.
    ...}

```

```

maxNumOfRadioResources INTEGER ::= 7

```

```

SNA-AccessInformation ::= OCTET STRING (SIZE (5..maxNumOfSNAAccessInfoLength))
-- Octets contain a complete SNA Access Information data type
-- as defined in 3G TS 25.413, encoded according to the encoding scheme
-- mandated by 3G TS 25.413
-- Padding bits are included, if needed, in the least significant bits of the
-- last octet of the octet string.

```

```

maxNumOfSNAAccessInfoLength INTEGER ::= 200

```

```

PrepareHO-Res ::= [3] SEQUENCE {
    handoverNumber              [0] ISDN-AddressString        OPTIONAL,
    relocationNumberList        [1] RelocationNumberList      OPTIONAL,
    an-APDU                     [2] AccessNetworkSignalInfo    OPTIONAL,
    multicallBearerInfo         [3] MulticallBearerInfo        OPTIONAL,
    multipleBearerNotSupported  NULL                        OPTIONAL,
    selectedUMTS-Algorithms     [5] SelectedUMTS-Algorithms   OPTIONAL,
    chosenRadioResourceInformation [6] ChosenRadioResourceInformation OPTIONAL,
    extensionContainer           [4] ExtensionContainer         OPTIONAL,
    ...}

```

```

SelectedUMTS-Algorithms ::= SEQUENCE {
    integrityProtectionAlgorithm [0] ChosenIntegrityProtectionAlgorithm OPTIONAL,
    encryptionAlgorithm          [1] ChosenEncryptionAlgorithm  OPTIONAL,
    extensionContainer           [2] ExtensionContainer          OPTIONAL,
    ...}

```

```

ChosenIntegrityProtectionAlgorithm ::= OCTET STRING (SIZE (1))
-- Octet contains a complete IntegrityProtectionAlgorithm data type
-- as defined in 3G TS 25.413, encoded according to the encoding scheme
-- mandated by 3G TS 25.413
-- Padding bits are included in the least significant bits.

```

```

ChosenEncryptionAlgorithm ::= OCTET STRING (SIZE (1))
  -- Octet contains a complete EncryptionAlgorithm data type
  -- as defined in 3G TS 25.413, encoded according to the encoding scheme
  -- mandated by 3G TS 25.413
  -- Padding bits are included in the least significant bits.

```

```

ChosenRadioResourceInformation ::= SEQUENCE {
  chosenChannelInfo          [0] ChosenChannelInfo          OPTIONAL,
  chosenSpeechVersion        [1] ChosenSpeechVersion        OPTIONAL,
  ...}

```

```

ChosenChannelInfo ::= OCTET STRING (SIZE (1))
  -- Octets are coded according the Chosen Channel information element in 3G TS 48.008

```

```

ChosenSpeechVersion ::= OCTET STRING (SIZE (1))
  -- Octets are coded according the Speech Version (chosen) information element in 3G TS
  -- 48.008

```

```

PrepareSubsequentHO-Arg ::= [3] SEQUENCE {
  targetCellId              [0] GlobalCellId                OPTIONAL,
  targetMSC-Number          [1] ISDN-AddressString,
  targetRNCId               [2] RNCId                      OPTIONAL,
  an-APDU                   [3] AccessNetworkSignalInfo    OPTIONAL,
  selectedRab-Id            [4] RAB-Id                    OPTIONAL,
  extensionContainer         [5] ExtensionContainer          OPTIONAL,
  ...}

```

```

PrepareSubsequentHO-Res ::= [3] SEQUENCE {
  an-APDU                   AccessNetworkSignalInfo,
  extensionContainer         [0] ExtensionContainer          OPTIONAL,
  ...}

```

```

ProcessAccessSignalling-Arg ::= [3] SEQUENCE {
  an-APDU                   AccessNetworkSignalInfo,
  selectedUMTS-Algorithms   [1] SelectedUMTS-Algorithms    OPTIONAL,
  selectedGSM-Algorithm     [2] SelectedGSM-Algorithm       OPTIONAL,
  chosenRadioResourceInformation [3] ChosenRadioResourceInformation OPTIONAL,
  selectedRab-Id            [4] RAB-Id                    OPTIONAL,
  extensionContainer         [0] ExtensionContainer          OPTIONAL,
  ...}

```

```

SelectedGSM-Algorithm ::= OCTET STRING (SIZE (1))
  -- internal structure is coded as Algorithm identifier octet from Chosen Encryption
  -- Algorithm defined in 3G TS 48.008
  -- A node shall mark only the selected GSM algorithm

```

```

SendEndSignal-Arg ::= [3] SEQUENCE {
  an-APDU                   AccessNetworkSignalInfo,
  extensionContainer         [0] ExtensionContainer          OPTIONAL,
  ...}

```

```

SendEndSignal-Res ::= SEQUENCE {
  extensionContainer         [0] ExtensionContainer          OPTIONAL,
  ...}

```

```

RNCId ::= OCTET STRING (SIZE (7))
  -- The internal structure is defined as follows:
  -- octet 1 bits 4321      Mobile Country Code 1st digit
  --      bits 8765        Mobile Country Code 2nd digit
  -- octet 2 bits 4321      Mobile Country Code 3rd digit
  --      bits 8765        Mobile Network Code 3rd digit
  --                        or filler (1111) for 2nd digit MNCs
  -- octet 3 bits 4321      Mobile Network Code 1st digit
  --      bits 8765        Mobile Network Code 2nd digit
  -- octets 4 and 5        Location Area Code according to 3G TS 24.008
  -- octets 6 and 7        RNC Id value according to 3G TS 25.413

```

```

RelocationNumberList ::= SEQUENCE SIZE (1..maxNumOfRelocationNumber) OF
  RelocationNumber

```

```

MulticallBearerInfo ::= INTEGER (1..maxNumOfRelocationNumber)

```

```
RelocationNumber ::= SEQUENCE {
    handoverNumber
    rab-Id          ISDN-AddressString,
                  RAB-Id,
    -- RAB Identity is needed to relate the calls with the radio access bearers.
    ...}
```

```
RAB-Id ::= INTEGER (1..maxNrOfRABs)
```

```
maxNrOfRABs INTEGER ::= 255
```

```
maxNumOfRelocationNumber INTEGER ::= 7
```

```
RadioResourceInformation ::= OCTET STRING (SIZE (3..13))
    -- Octets are coded according the Channel Type information element in 3G TS 48.008
```

```
IntegrityProtectionInformation ::= OCTET STRING (SIZE (18..maxNumOfIntegrityInfo))
    -- Octets contain a complete IntegrityProtectionInformation data type
    -- as defined in 3G TS 25.413, encoded according to the encoding scheme
    -- mandated by 3G TS 25.413
    -- Padding bits are included, if needed, in the least significant bits of the
    -- last octet of the octet string.
```

```
maxNumOfIntegrityInfo INTEGER ::= 100
```

```
EncryptionInformation ::= OCTET STRING (SIZE (18..maxNumOfEncryptionInfo))
    -- Octets contain a complete EncryptionInformation data type
    -- as defined in 3G TS 25.413, encoded according to the encoding scheme
    -- mandated by 3G TS 25.413
    -- Padding bits are included, if needed, in the least significant bits of the
    -- last octet of the octet string.
```

```
maxNumOfEncryptionInfo INTEGER ::= 100
```

**** Unchanged text removed for clarity ****

**** END OF MODIFICATIONS ****

CHANGE REQUEST

⌘ **29.010 CR 058** ⌘ rev **1** ⌘ Current version: **5.0.0** ⌘

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

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

Title:	⌘ Support for Shared Network in connected mode		
Source:	⌘ CN4		
Work item code:	⌘ TEI5	Date:	⌘ 09/07/2002
Category:	⌘ B	Release:	⌘ REL-5
	<p>Use <u>one</u> of the following categories:</p> <p>F (correction)</p> <p>A (corresponds to a correction in an earlier release)</p> <p>B (addition of feature),</p> <p>C (functional modification of feature)</p> <p>D (editorial modification)</p> <p>Detailed explanations of the above categories can be found in 3GPP TR 21.900.</p>		<p>Use <u>one</u> of the following releases:</p> <p>2 (GSM Phase 2)</p> <p>R96 (Release 1996)</p> <p>R97 (Release 1997)</p> <p>R98 (Release 1998)</p> <p>R99 (Release 1999)</p> <p>Rel-4 (Release 4)</p> <p>Rel-5 (Release 5)</p> <p>Rel-6 (Release 6)</p>

Reason for change:	<p>⌘ RAN#3 has agreed on a solution for the support of Shared Networks in connected mode in Release 5. See TR R3:012 available in LS N4-020865 (R3-021816).</p> <p>The agreed solution is based on the concept of SNA, which is basically a collection of Location Areas.</p> <p>A set of allowed SNA's is associated to each IMSI serie.</p> <p>The set of allowed SNA's, the SNA Access Information, is signalled to the Radio Network when a call is setup, so that the Radio Network can decide whether a subscriber can be handed over when moving to a new Location Area, i.e. if he has authorization to get service in that Location Area.</p> <p>During the Handover procedure the anchor MSC has to inform the non-anchor MSC about the SNA Access Information of the subscriber so that non-anchor MSC shall be able to forward this information to the Radio Network when performing subsequent intra-MSC handovers. The allowed SNA's are added to PrepareHandover.</p>
Summary of change:	⌘ The list of allowed SNA's is added to MAP PrepareHandover.
Consequences if not approved:	⌘ Support of Shared Network in connected mode would not be available after an inter-MSC Handover.

Clauses affected:	⌘
--------------------------	---

Other specs	⌘	Y	N	Other core specifications	⌘	29.002 CR 466 23.003 CR 050 23.009 CR 080
		X				
affected:			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.

**** FIRST MODIFIED SECTION ****

4.5 Inter-MSC Handover

...

4.5.5 Processing in MSC-B, and information transfer on E-interface

The following parameters require processing (e.g. to store the parameter, to internally generate the parameter) in MSC-B. The relevant BSSMAP procedures are mentioned to ease the comprehension, their detailed description is the scope of 3GPP TS 48.008. Each BSSMAP message listed in 3GPP TS 49.008 being transferred on E-interface shall use the mechanisms given in subclause 4.5.4 and is described in 3GPP TS 48.008.

For intra-MSC-B handover/relocation and security interworking, after inter-MSC handover from GSM to GSM, the 3G_MSC-B needs additional information to be able to perform security mode and integrity protection procedures. These RANAP informations are transferred between MSC-A and 3G-MSC-B in MAP messages, defined in 3GPP TS 29.002.

For subsequent handover/relocation, after inter-MSC handover from GSM to GSM, the 3G_MSC-B needs additional information to be able to perform service handover procedures. The relevant information is transferred between MSC-A and 3G-MSC-B in MAP messages, defined in 3GPP TS 29.002.

For subsequent handover/relocation, after inter-MSC handover from GSM to GSM, the 3G_MSC-B needs additional information to be able to forward access rights information in the context of Shared Network to the RAN. The relevant information is transferred between MSC-A and 3G-MSC-B in MAP messages, defined in 3GPP TS 29.002.

**** NEXT ADDED SECTION ****

4.5.5.12 SNA Access Information

This information shall be stored by 3G_MSC-B and sent to an RNS in the Relocation Request message when 3G_MSC-B performs handover to UMTS.

Transfer of information:

The SNA Access Information is transferred to 3G_MSC-B in:

– the Prepare Handover Request MAP message.

**** NEXT MODIFIED SECTION ****

4.7 Inter-MSC Handover (GSM to UMTS)

...

4.7.1 Basic Inter-MSC Handover

When a Mobile Station is handed over between two MSCs, the establishment of a connection between them (described in 3GPP TS 23.009) requires interworking between A-Interface, Iu-Interface and E-Interface.

The signalling at initiation, execution and completion of the Basic Inter-MSC handover procedure is shown in figures 37 to 42 with both possible positive or negative outcomes.

Additionally figure 37b shows the possible interworking when the trace related message is transparently transferred on the E-Interface at Basic Inter-MSC Handover initiation.

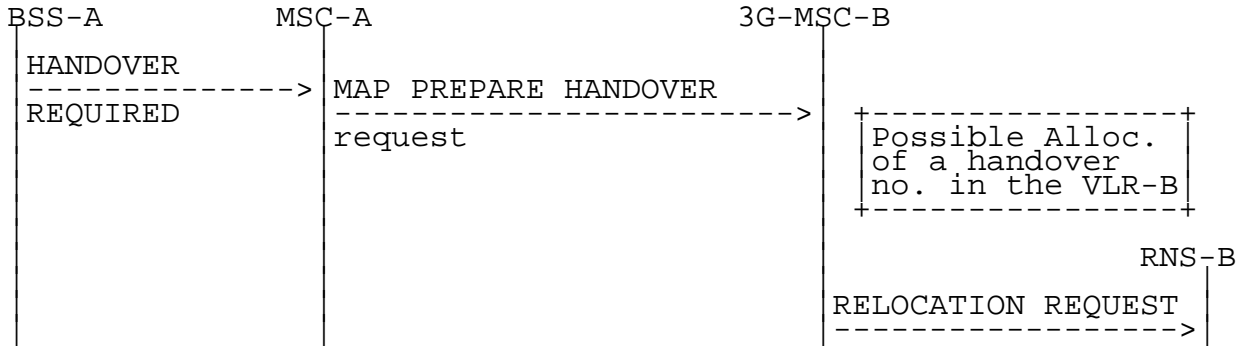


Figure 37a: Signalling for Basic Inter-MSC Handover initiation (no trace related messages transferred)

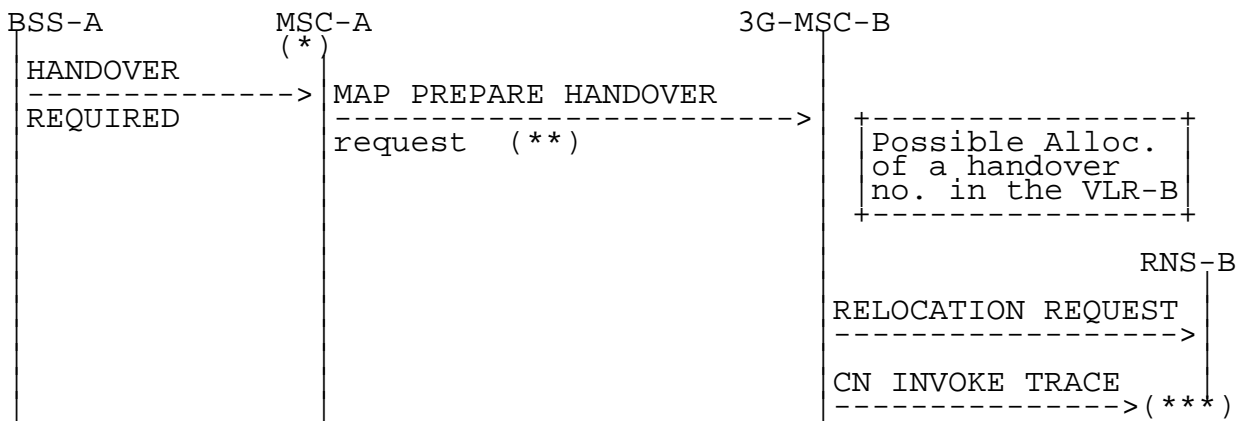


Figure 37b: Signalling for Basic Inter-MSC Handover initiation (CN invoke trace message transferred)

- (*): Tracing invocation has been received from VLR.
- (**): In that case, HANOVER REQUEST and MSC INVOKE TRACE messages are included within the AN-apdu parameter.
- (***): CN INVOKE TRACE is forwarded to RNS-B if supported by 3G_MSC-B.

Possible Positive outcomes: successful radio resources allocation and handover number allocation (if performed):

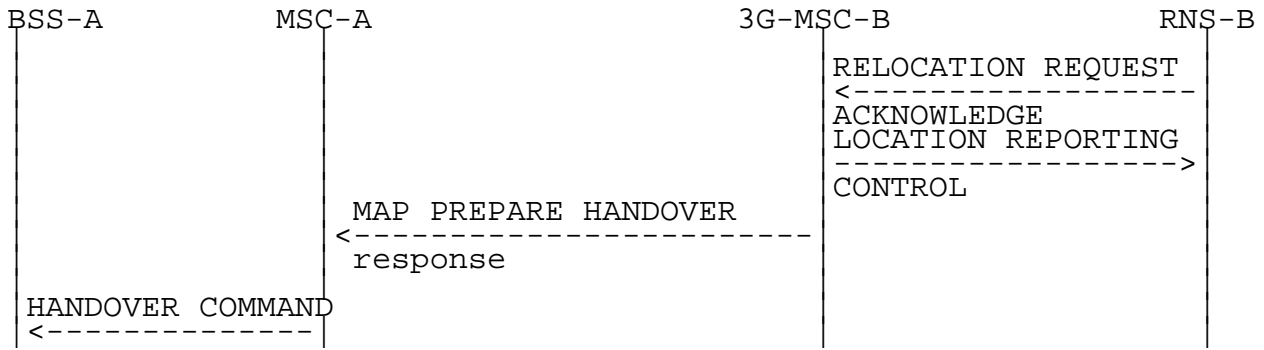
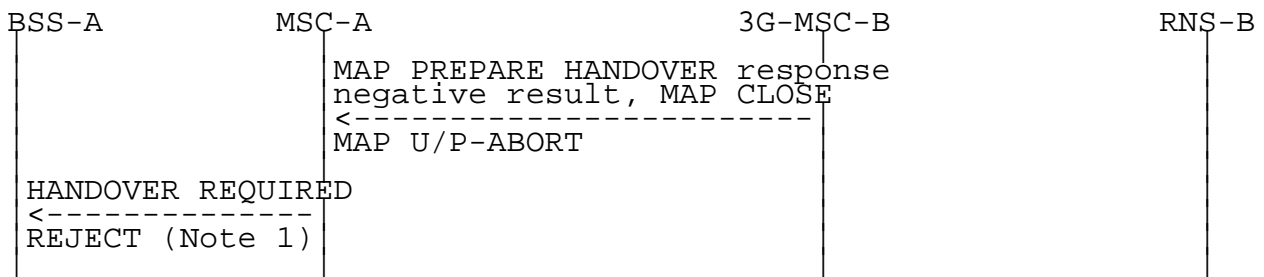


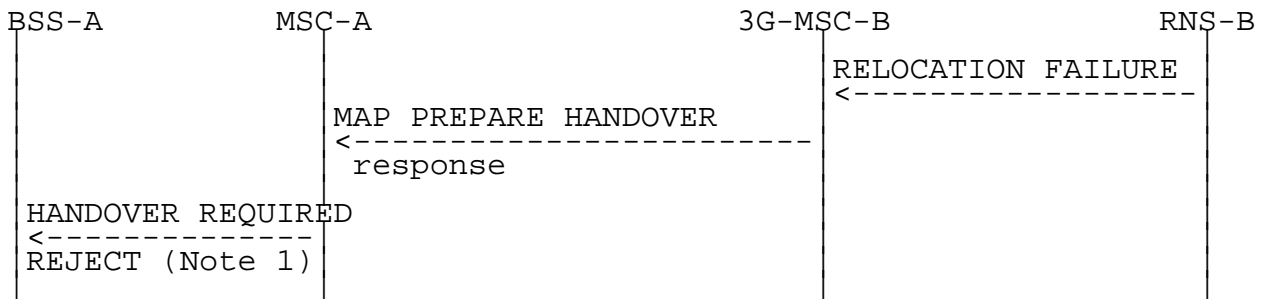
Figure 38: Signalling for Basic Inter-MS-C Handover execution (Positive outcome)

Possible Negative outcomes:

- a) user error detected, or handover number allocation unsuccessful (if performed), or component rejection or dialogue abortion performed by 3G-MS-C-B:



- b) radio resources allocation failure:



- c) unsuccessful handover execution (Reversion to the old radio resources):

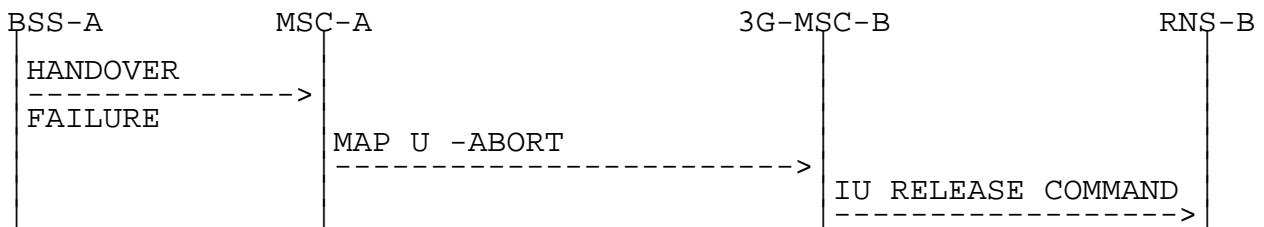


Figure 39: Signalling for Basic Inter-MS-C Handover execution (Negative outcomes)

NOTE 1: Possible rejection of the handover because of the negative outcome of MAP or RANAP procedure.

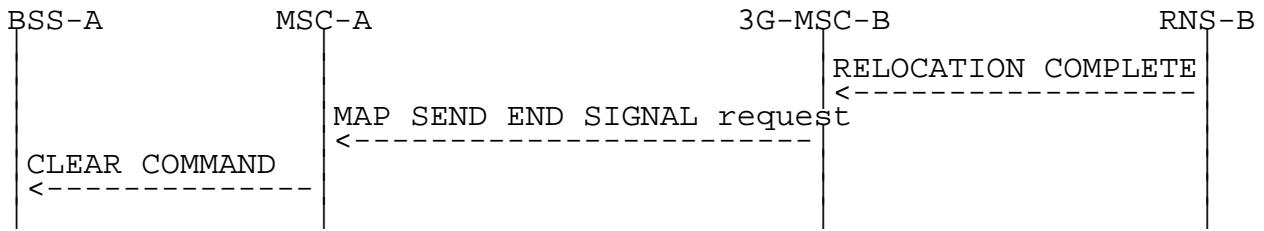


Figure 40: Signalling for Basic Inter-MSC Handover completion

Positive outcome:

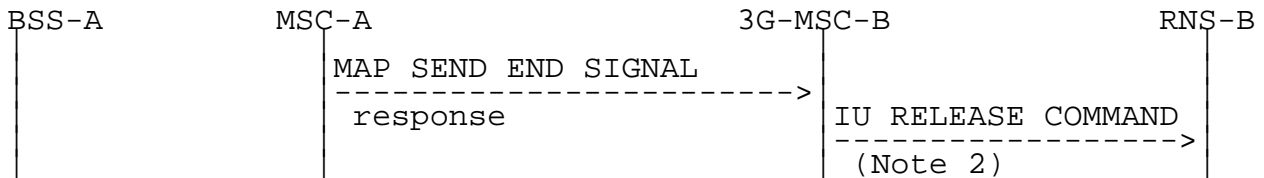


Figure 41: Signalling for Basic Inter-MSC Handover completion (Positive outcome)

Negative outcome:

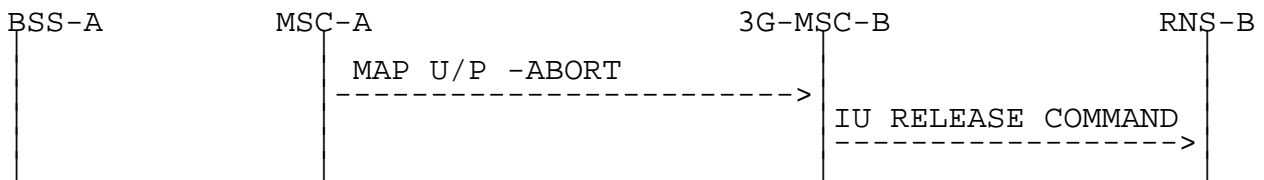


Figure 42: Signalling for Basic Inter-MSC Handover completion (Negative outcome)

NOTE 2: From interworking between MAP and RANAP point of view, when the call is released.

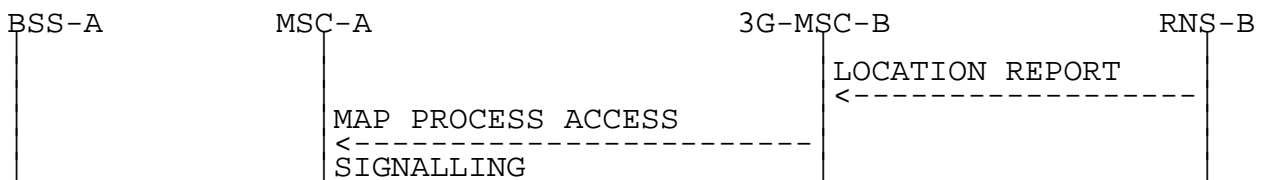


Figure 42a: Signalling for updating of anchor MSC after change of location in RNS

The handover procedure is normally triggered by BSS-A by sending a HANOVER REQUIRED message on A-Interface to MSC-A. The invocation of the Basic Inter-MSC handover procedure is performed and controlled by MSC-A. The sending of the MAP Prepare-Handover request to 3G_MSC-B is triggered in MSC-A upon receipt of the HANOVER REQUIRED message. The identity of the target RNC where the call is to be handed over in 3G_MSC-B area, provided in the HANOVER REQUIRED message in the information element Cell Identifier List (Preferred), is mapped to the target RNC Id MAP parameter and the HANOVER REQUEST message is encapsulated in the an-APDU MAP parameter of the Prepare-Handover MAP request. 3G_MSC-B can invoke another operation towards the VLR-B (allocation of the handover number described in 3GPP TS 29.002).

Additionally, if tracing activity has been invoked, the trace related message can be transferred on the E-Interface encapsulated in the an-APDU MAP parameter of the Prepare-Handover Request. If transferred, one complete trace related message at a time shall be included in the an-APDU MAP parameter after the HANOVER REQUEST message. Note: UMTS supports only CN initiated tracing.

The interworking between Prepare Handover and HANOVER REQUIRED is as follows:

	48.008	29.002	Notes
Forward message	HANDOVER REQUIRED	MAP PREPARE HANDOVER request	
	BSSMAP information elements	-ho-NumberNotRequired	1
		-target RNC Id	
		-IMSI	
		-Integrity protection info	2
		-Encryption info	
		-an-APDU(HANDOVER REQUEST, MSC INVOKE TRACE)	3
			4
Positive result		MAP PREPARE HANDOVER response	
		-handover number	5
		-an-APDU(HANDOVER REQUEST ACKNOWLEDGE or HANDOVER FAILURE)	
Negative result	HANDOVER REQUIRED REJECT	MAP PREPARE HANDOVER	6
	equipment failure	System Failure	
	equipment failure	No Handover Number available	
	equipment failure	UnexpectedDataValue	
	equipment failure	Data Missing	
	equipment failure	MAP CLOSE	
	equipment failure	MAP U/P -ABORT	

NOTE 1: The ho-NumberNotRequired parameter is included by MSC-A, when MSC-A decides not to use any circuit connection with 3G_MSC-B. No handover number shall be present in the positive result. Any negative response from 3G_MSC-B shall not be due to handover number allocation problem.

NOTE 2: Integrity protection information, encryption information and IMSI parameters are included by MSC-A, only when the MSC-A uses 29.002 as per release 99. These IEs are not included if the MSC-A is R98 or earlier.

NOTE 3: The process performed on the BSSMAP information elements received in the HANDOVER REQUIRED message is described in the 3GPP TS GSM Recommendation 48.008.

NOTE 4: The process performed on the BSSMAP information elements received in the MSC INVOKE TRACE message is described in subclause 4.5.5.6.

NOTE 5: The response to the Prepare-Handover request can include in its an-APDU parameter, identifying the GSM 08.06 protocol, either a BSSMAP HANDOVER REQUEST ACKNOWLEDGE or a BSSMAP HANDOVER FAILURE.

In the first case, the positive result triggers in MSC-A the sending on A-Interface of the HANDOVER COMMAND.

In the second case, the positive result triggers in MSC-A optionally the sending of the HANDOVER REQUIRED REJECT.

(The possible sending of the HANDOVER REQUIRED REJECT message upon receipt of the HANDOVER FAILURE is out of the scope of 3GPP TS 29.010 and lies in 3GPP TS 48.008).

NOTE 6: The possible sending of the HANDOVER REQUIRED REJECT message is described in 3GPP TS 48.008.

The interworking between Prepare Handover and RELOCATION REQUEST in 3G_MSC-B is as follows:

NOTE 2: The abortion of the dialogue or the rejection of the component triggers in 3G_MSC-B the clearing of its circuit connection with MSC-A, if any, of the Radio Resources on the Iu-Interface and the release of the SCCP connection between 3G_MSC-B and RNS-B.

The interworking between Send End Signal and CLEAR COMMAND in MSC-A is as follows:

	29.002	48.008	Notes
Forward message	MAP SEND END SIGNAL request -an-APDU (HANDOVER COMPLETE)	CLEAR COMMAND - Handover Successful	
Positive result			
Negative result			

The interworking between HANDOVER FAILURE in case of reversion to old channel of the MS and User Abort in MSC-A is as follows:

	48.008	29.002	Notes
Forward message	HANDOVER FAILURE - Reversion to old channel	MAP U -ABORT	
Positive result			
Negative result			

**** NEXT MODIFIED SECTION ****

4.7.4 BSSAP Messages transfer on E-Interface

The handling is described in chapter 4.5.4, additional cases are described in this chapter.

4.7.4.1 Assignment

The interworking between the BSSMAP assignment messages in MAP and the RANAP RAB assignment messages is as follows:

	29.002	25.413	Notes
Forward message	MAP PREPARE HANDOVER request -RANAP service handover SNA Access Information	RAB ASSIGNMENT REQ Service handover SNA Access Information	
	-an-APDU (ASSIGNMENT REQUEST) BSSMAP information elements: Channel Type	RANAP information elements: RAB parameters	
Positive result	MAP PREPARE HANDOVER request -an-APDU (ASSIGNMENT COMPLETE or ASSIGNMENT FAILURE) BSSMAP information elements: Cause	RAB ASSIGNMENT RESPONSE (positive result) RAB ASSIGNMENT RESPONSE (negative result) RANAP information elements: Cause	1
Negative result		MAP U/P -ABORT	

**** NEXT ADDED SECTION ****

4.7.5 Processing in 3G_MSC-B, and information transfer on E-interface

...

4.7.5.10 SNA Access Information

This information shall be stored by 3G_MSC-B and sent to an RNS in the Relocation Request message when 3G_MSC-B performs handover to UMTS.

Transfer of information:

The SNA Access Information is transferred to 3G_MSC-B in:

- the Prepare Handover Request MAP message.

**** NEXT MODIFIED SECTION ****

4.8 Inter-MSC Relocation

.....

4.8.5 Processing in 3G_MSC-B, and information transfer on E-interface

.....

4.8.5.10 SNA Access Information

This information shall be stored by 3G_MSC-B and sent to an RNS in the Relocation Request message when 3G_MSC-B performs handover to UMTS.

Transfer of information:

The SNA Access Information is transferred to 3G_MSC-B in:

- the Relocation Request RANAP message encapsulated in the Prepare Handover rRequest MAP message.

**** END OF MODIFICATIONS ****
